# Former Electruk Battery Site NIAGARA COUNTY, NEW YORK

Final Engineering Report

# NYSDEC Site Number: E932132

# Prepared for:

Town of Lockport 6560 Dysinger Road Lockport, New York

## Prepared by:

TVGA Consultants 620 Main Street Buffalo, NY 14202 716-849-0981

#### CERTIFICATIONS

I. EDWARD SCHILLER, am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the Interim Remedial Measures Work Plan was implemented and that all construction activities were completed in substantial conformance with the Department-approved Interim Remedial Measures Work Plan.

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the Interim Remedial Measures Work Plan and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established in for the remedy.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by Department.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. 1, , of 620 Main Street Buffalo, NY, am certifying as Owner's Designated Site Representative for the site.

066247

NYS Professional Engineer #

10/12

Date

Signature



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### LIST OF ACRONYMS

Acronym	Definition
CAMP	Community Air Monitoring Plan
СРР	Community Participation Plan
CQAP	Construction Quality Assurance Plan
EPS	Environmental Products & Services of Vermont Inc.
FF	Flowable Fill
HASP	Health and Safety Plan
IC	Institutional Controls
IRM	Interim Remedial Measures
IRMWP	Interim Remedial Measures Work Plan
NYSDEC	New York State Department of Environmental
	Conservation
NYSDOH	New York State Department of Health
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objectives
RI/AA	Remedial Investigation/Alternatives Analysis
RI/AAWP	Remedial Investigation/Alternatives Analysis Work
	Plan
ROD	Record of Decision
SAC	State Assistance Contract
SCG	Standards Criteria and Guidance
SCO	Soil Cleanup Objectives
S/MMP	Soil/Materials Management Plan
SMP	Site Management Plan
SOP	Site Operation Plan
SWPPP	Storm Water Pollution Prevention Plan
VOC	Volatile Organic Compound

#### FINAL ENGINEERING REPORT

#### **1.0 BACKGROUND AND SITE DESCRIPTION**

The Town of Lockport entered into a State Assistance Contract (SAC) with the New York State Department of Environmental Conservation (NYSDEC) in September, 2007, to investigate and remediate a 1.4-acre property located in the Town of Lockport, New York. The property was remediated to commercial use.

The site is located in the County of Niagara, New York and is identified as Block 0001 and Lot 055 on the Town of Lockport Tax Map # 108.00. The site is situated on an approximately 1.4-acre area bounded by undeveloped land and commercial businesses to the north and west, Enterprise Drive to the south, and Polycom-Huntsman Inc., a plastics manufacturer to the east across IDA Drive (see Figures 1). The boundaries of the site are fully described in Appendix A: Survey Map, Metes and Bounds.

An environmental easement was granted for the site on December 22, 2011 and a copy of this easement is included in Appendix D. The easement was recorded with the Niagara County Clerk's office on January 6, 2012 and a copy of the recording receipt is included in Appendix D.

Prior to the investigatory and remedial activities conducted under the above referenced SAC, Phase I and II Environmental Site Investigations performed on the Site identified the potential for a release of contamination into the environment. As a result the NYSDEC requested that the U.S. Environmental Protection Agency (EPA) perform an emergency removal at the Site to address the contamination. That action was completed in June 1999. A summary of this removal action is included in Section 2.0.

An electronic copy of this FER with all supporting documentation is included as Appendix B.

#### 2.0 SUMMARY OF SITE REMEDY

In June 1998, the Niagara County Health Department requested that the NYSDEC consider the site for an emergency removal action under the State superfund program. In July 1998, the NYSDEC requested that the U.S. Environmental Protection Agency (EPA) perform an emergency removal at the Site.

EPA subsequently commenced a Superfund removal action to address the contamination. That action was completed in June 1999. The removal action included the identification, removal, and disposal of all hazardous wastes from the Site, with the exceptions noted below. Material removed from the Site included 24 roll-off containers (695 cubic yards) of building debris and contaminated equipment, 99 drums of miscellaneous wastes, nine roll-off containers (180 cubic yards) of lead contaminated soil, three tanker loads (8,634 gallons) of hazardous liquids, 21 pallets (27.45 tons) of batteries and battery components and 3 cubic yards of spent sorbent and personal protective equipment. All materials were transported to permitted off-site disposal facilities.

Wipe sampling data collected by EPA after the decontamination of the building floor and ceiling beams confirmed the removal of gross contamination. However, some residual lead concentrations that meet EPA's removal criteria but exceed the residential guidelines used by the U.S. Department of Housing and Urban Development remain on the floor and ceiling beams. The lead concentrations remaining are indicative of lead bonded to surfaces in a manner that would require extensive, repetitive cleaning for removal or encapsulation prior to reuse of the building. It was therefore recommended that potential buyers or renters be informed that these surfaces should be encapsulated (e.g., by application of paint and/or insulation on the ceiling beams and either painting the floor or covering it with a fresh layer of concrete or other material) prior to utilizing the building.

EPA's action level for excavation of lead-contaminated soil at industrial sites was 750 parts per million (ppm). Although EPA removed all identified lead contaminated soil with concentrations above that level. Lead contamination at concentrations exceeding the NYSDEC's soil cleanup objective for Unrestricted Use, which is 63 ppm, remains in the on-site soils. The highest levels remaining are found against the building foundation and concrete storage pad. Figure 3 depicts the locations and analytical results of the post excavation sampling performed by the EPA. After reviewing the July 22, 1999 *Delineation of Lead Contamination by X-Ray* Fluorescence letter report prepared by Roy F. Weston Inc., the NYS Department of Health (NYSDOH) concluded that the remaining lead levels should not pose any exposure problems as long as the Site remains in its current intended use (commercial/industrial) and the areas remain undisturbed. Because the lead concentrations remain above Unrestricted Use cleanup guidelines, the

NYSDOH also recommended the placement of a formal deed restriction on the property to prevent the use of the site for residential or day care purposes.

EPA determined that no further Superfund action by EPA was needed and that it would not seek to recover the costs incurred while performing the removal action from the Town of Lockport.

Copies of the EPA reports documenting removal action, the delineation of lead contaminated soil, wipe sampling data and the March 9, 2000 NYSDOH letter indicating concurrence with the EPA removal action and recommended site restrictions are included in Appendix F.

The sections below summarize the Remedial Action Objectives (RAOs) and the selected remedy following the 2008 Remedial Investigation performed under the SAC.

#### 2.1 REMEDIAL ACTION OBJECTIVES

Based on the results of the 2008 Remedial Investigation, the following RAOs were identified for this site.

#### 2.1.1 Soil RAOs

The RAOs for the site include the elimination or reduction, to the extent practicable, of the exposure of human and environmental receptors to lead-contaminated surface soil via dermal contact, incidental ingestion or inhalation of particulates, and to prevent lead in the surface soil from impacting surface water runoff quality. The analytical data generated for the soil samples collected at the Site was compared to the Commercial Use Soil Cleanup Objectives listed in 6 NYCRR Part 375-6.8(b).

#### 2.1.2 Surface Water RAOs

The RAOs for the site include the elimination or reduction, to the extent practicable, of the exposure of humans and environmental receptors to contaminated surface water via dermal contact with or incidental ingestion of contaminated surface water.

#### 2.1.3 Sediment RAOs

RAOs for the site was to eliminate or reduce to the extent practicable the exposure of human and environmental receptors to metals in the trench sediments via dermal contact, incidental ingestion or inhalation of particulates, and to prevent metals in the sediment within Trench 1 from impacting surface water runoff quality.

#### 2.2 DESCRIPTION OF SELECTED REMEDY

The site was remediated in accordance with the remedy selected by the NYSDEC in the Interim Remedial Measures Work Plan dated December 1, 2008.

The factors considered during the selection of the remedy are those listed in 6NYCRR 375-1.8. The following are the components of the selected remedy:

- 1. Removal and proper disposal of contaminated water found in the three onsite concrete trenches;
- 2. Removal and proper disposal of contaminated sediments found in the three on-site concrete trenches;
- 3. Pressure washing the concrete surfaces of the three on-site concrete trenches;
- 4. Filling the concrete trenches with a flowable fill (FF) to prevent reaccumulation of water and sediment;
- 5. Execution and recording of an Environmental Easement to restrict land use to commercial use and prevent future exposure to any contamination remaining at the site;
- 6. Restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by New York State Department of Health (NYSDOH);
- 7. Development and implementation of a Site Management Plan (SMP) for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional Controls (ICs), and (2) reporting;
- 8. Periodic certification of the institutional controls listed above.

#### 3.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS AND REMEDIAL CONTRACTS

#### **3.1 INTERIM REMEDIAL MEASURES**

Environmental Products and Services of Vermont Inc. (EPS) performed Interim Remedial Measures at the site from January 20, 2009 through January 22, 2009. These activities were observed by TVGA Consultants and the NYSDEC.

#### **Description of the Work Areas**

The work area consists of two interior and one exterior man-made drainage trenches. Trench 1 is located in the concrete pad north of the building, while Trenches 2 and 3 are located in the northwest and southwest building interior, respectively. The locations of the trenches are depicted on Figure 2.

Contaminants of concern detected in the sediment included arsenic with concentrations ranging from 3 to 77.5 ppm, barium with concentrations ranging from 90.5 to 839 ppm and lead with concentrations ranging from 39.5 to 74,900 ppm in Trenches 1 through 3. The results of the TCLP analysis revealed that the sediment sample collected from Trench 2 contained a hazardous concentration of lead (i.e. greater than 5 ppm), which was detected at 64.4 ppm. The sediments from Trench 1 also had a very high total lead concentration (i.e. 45,700 ppm), but since no TCLP data existed, the sediments from this trench were also assumed to be hazardous. Contaminants of concern identified in the surface water within the trenches were limited to lead within Trench 3, which was detected at 302 parts per billion.

#### **IRM Activities Performed**

#### Water and Sediment Removal

A vacuum truck was used to remove all standing water from Trenches 1 and 3. The remaining sediment and ice within these trenches were removed with shovels and placed into 55-gallon drums.

Based on the hazardous concentration of lead in the sediment in Trench 2, an electric drum vacuum (i.e., a wet/dry vacuum connected to a 55-gallon drum) was used to remove the water and sediment from this trench.

Following the removal the water and sediment, the exposed surfaces within the trenches were cleaned utilizing high pressure power washing equipment. Upon completion, the wash water was removed with the vacuum truck or drum vacuum. All solids and water were disposed off-site. The disposal locations and quantities of these materials are listed below.

#### Backfill with Flowable Fill

Upon completion of the cleaning activities, the trenches were backfilled with 100 pounds per square inch flowable fill to an elevation matching the surrounding concrete slabs.

#### <u>Disposal</u>

A total of 1,414 gallons of water was removed from Trenches 1 and 3 for disposal as non-hazardous liquid waste. Additionally, the following materials were removed the trenches:

- Trench 1: Three 55-gallon drums of hazardous ice/sediment/wash water
- Trench 2: One 55-gallon drum of hazardous ice/sediment/wash water
- Trench 3: Eight 55-gallon drums non-hazardous ice/sediments/wash water

The non-hazardous liquids and solids were disposed at the EPS facility in Syracuse, New York and the hazardous liquids and solids were disposed at the Cycle Chem Inc. facility in Lewisberry, Pennsylvania. The manifests that identify the weight and location of final disposition of the contaminated sediment and water are included in Appendix B.

### **3.2 OPERABLE UNITS**

No operable units were part of the site remedy.

#### **3.3 REMEDIAL CONTRACTS**

No remedial contracts were part of the site remedy.

#### 4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

Remedial activities completed at the Site were conducted in accordance with the NYSDEC-approved Interim Remedial Measures Work Plan (IRMWP) for the Former Electruk Battery site (December, 2008). All deviations from the IRMWP are noted below.

#### **4.1 GOVERNING DOCUMENTS**

#### 4.1.1 Site Specific Health & Safety Plan (HASP)

All remedial work performed under these Interim Remedial Measures were in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Health and Safety Plan (HASP) was complied with for all remedial and invasive work performed at the Site.

#### 4.1.2 Quality Assurance Project Plan (QAPP)

Due to the limited scope of activities performed during the IRM, an IRM-specific QAPP was not prepared as part of the IRMWP. However, quality assurance procedures were handled in general accordance with those included in the NYSDEC-approved April 2008 Remedial Investigation/Alternatives Analysis Work Plan (RI/AAWP).

#### 4.1.3 Construction Quality Assurance Plan (CQAP)

Due to the limited scope of activities performed during the IRM, a CQAP was not prepared as part of the IRMWP. However, construction observation was handled in general accordance with those included in the NYSDEC-approved April 2008 RI/AAWP. TVGA and NYSDEC personnel were on-site to visually observe the work, which was not accepted until the work was satisfactory to both the NYSDEC and TVGA personnel onsite.

#### 4.1.4 Soil/Materials Management Plan (S/MMP)

The remedy for the site did not include any removal or disturbance of surface or subsurface materials therefore no Soil/Materials Management Plan (S/MMP) was created as part of the IRMWP.

#### 4.1.5 Storm-Water Pollution Prevention Plan (SWPPP)

The IRMWP does not include any remedial activities that remove or disturb surface or subsurface soil. Therefore no SWPPP was created as part of the IRMWP.

#### 4.1.6 Community Air Monitoring Plan (CAMP)

The remedial activities for the site included the removal and disposal of sediment and surface water from three trenches on the subject property. No soils were removed or disturbed during remedial activities. Due to the saturated conditions of the sediment the monitoring for airborne particulates was not required. Additionally, based on the absence of elevated organic vapors during the RI, monitoring for total organic vapors was not required. Therefore a CAMP was not created as part of the IRMWP.

#### 4.1.7 Contractors Site Operations Plans (SOPs)

No SOPs were created for the remedial activities performed at the site. Remedial activities at the site were completed in accordance with the scope of work outlined in the IRMWP submitted to and approved by the NYSDEC and NYSDOH prior to the start of work.

#### 4.1.8 Community Participation Plan

A Community Participation Plan (CPP) was implemented as part of the overall RI/AA program, and the participation procedures associated with the IRM were handled in general accordance with those included in the NYSDEC-approved April 2008 RI/AAWP.

#### 4.2 REMEDIAL PROGRAM ELEMENTS

#### 4.2.1 Contractors and Consultants

- Environmental Products and Services of Vermont Inc., Prime Contractor, performed removal, cleaning and disposal services
- Shirley's Concrete Pumping provided the pump truck to deliver the flowable fill to the trenches
- Lafarge delivered the flowable fill to the site
- TVGA Consultants designed the scope of the IRMs and provided full-time observation of the remediation activities

#### 4.2.2 Site Preparation

Due to the nature of the specific IRM activities, site preparation activities were not required. All remedial work was limited to the removal, cleaning, off-site disposal and backfilling of the three manmade trenches. The remedial activities did not include any soil disturbances; therefore, erosion and sediment controls along with utility marking were not necessary. The Interim Remedial Measures Work Plan was approved by the NYSDEC Region 9: Division of Environmental Remediation on December 4, 2008. Documentation of agency approvals required by the IRMWP is included in Appendix C. All substantive compliance requirements for attainment of applicable natural resource or other permits were achieved during this Remedial Action.

A NYSDEC-approved project sign was erected at the project entrance prior to remedial investigation and remained in place during all phases of the IRM.

#### 4.2.3 General Site Controls

Based on the location of the remedial work, general site controls were unnecessary. Two of the three trenches are located with the existing building which was locked when remediation activities were not in progress. The remedial activities associated with the trench outside were completed on the first day of activities. As stated above there were no soil disturbances as part of the IRM so erosion and sedimentation controls were not necessary. Equipment used on the site for remedial purposes were decontaminated by the contractor prior to removal from the site. Drums were closed and secured within the building at the end of each day's activities and were sipped off-site at the end of the IRM activities.

#### 4.2.4 Nuisance controls

Based on the project location and the limited nature of work, nuisance controls were not required.

#### 4.2.5 CAMP results

As previously stated, a CAMP was not created for the IRMWP and no air monitoring was performed during the IRM.

#### 4.2.6 Reporting

The site remedial activities were completed over the course of three days. Site inspection and observation was performed by TVGA Consultants. Daily inspection reports include personnel on site, working hours, equipment used, and a description of remedial activities performed.

All daily inspection reports, project photographs, waste disposal manifests and bills of landing are included on a CD labeled, Supporting Documents for the Final Engineering Report for the Environmental Remediation of the Former Electruk Battery Site, created January 2012. This CD is included in Appendix B.

#### **4.3 CONTAMINATED MATERIALS REMOVAL**

#### 4.3.1 Surface Water

Contaminated surface water was removed from three trenches located on the site. Two of the trenches are located inside of the building on site and the other is located outside the building on a concrete pad. The locations of the trenches are shown in Figure 2. Surface water in the trenches was removed by vacuum truck and disposed of off-site.

#### 4.3.1.1 Disposal Details

Contaminated surface water was removed from the trenches and disposed of by EPS. A total of 1,414 gallons of non-RCRA liquid waste was removed from the Site. The contaminated surface water was disposed of at the Environmental Products and Services of Vermont Inc., facility at 532 State Fair Boulevard, Syracuse New York on January 23, 2009. EPS was also the transporter for the waste. License numbers and other pertinent information can be found on the electronic copies of the Bill of Landing in the supporting documents compact disc.

#### 4.3.2 Sediments

The trenches located on the site contained various amounts of contaminated sediments. Sediments in the three trenches on the site were removed by manual means and placed into 55 gallon drums to be disposed of offsite. Two of the trenches are located inside of the building on site and the other is located outside the building on a concrete pad. The locations of the trenches are shown on Figure 2.

#### 4.3.2.1 Disposal Details

Sediments were removed from the trenches and transported of by EPS. Eight 55gallon drums containing 440 gallons of non-RCRA liquid waste were removed from the site on January 22, 2009 and disposed of at the Environmental Products and Services of Vermont Inc., facility at 532 State Fair Boulevard, Syracuse New York on January 23, 2009. Four 55-gallon drums, (220 gallons) of RQ, Waste Toxic Liquid, Inorganic, N.O.S. (lead), 6.1, UN3287, PG II was removed from the site and disposed of at Cycle Chem, Inc., 550 Industrial Dr., Lewisberry, Pennsylvania. License numbers and other information can be found on the electronic copies of the Manifest and Bill of Landing on the supporting documents compact disc. The letter from the disposal facility stating it is approved to accept the hazardous waste is also included on the supporting documents compact disc.

#### 4.4 REMEDIAL PERFORMANCE/DOCUMENTATION SAMPLING

Because each of the three trenches will be backfilled with a flowable fill, no postcleaning samples were required to confirm the efficacy of the cleaning process. However, TVGA and NYSDEC personnel were on-site to visually observe the work, which was not accepted until a result that is satisfactory to both the NYSDEC and TVGA was achieved.

#### 4.5 IMPORTED BACKFILL

Upon completion of the cleaning activities, the trenches were backfilled with 100 pounds per square inch flowable fill to an elevation matching the surrounding concrete slabs.

#### **4.6 CONTAMINATION REMAINING AT THE SITE**

The remaining contamination left on the Site encompasses surface soil/fill areas across the Site. The analytical results indicate that the contaminant of concern in the surface soil is lead. Concentrations ranged from 19.4 to 1,180 ppm. An attempt was made to confirm the highest concentration in that range, as the sample with the concentration of 1,180 ppm (CC3) was collected previously by EPA. Sample SS-10 was collected August 2008 from the same location as CC3 and revealed a lead concentration of 48.4 ppm, below the Unrestricted Use SCO. Therefore, while lead concentrations in the surface soil exceed the Residential Use SCO, these concentrations are below the Commercial Use SCO. The extent of lead contaminated surface soil based on the EPA and NYSDEC investigations exceeding the Residential Use SCO are depicted in Figure 3. Table 1 summarizes the degree of contamination for the contaminants of concern and compares the data with the Standards Criteria and Guidance values (SCGs) applicable to each medium sampled.

Since contaminated soil remains beneath the site after completion of the Remedial Action, Institutional Controls are required to protect human health and the environment. These Institutional Controls (ICs) are described in the following sections. Long-term management of these ICs and residual contamination will be performed under the Site Management Plan (SMP) approved by the NYSDEC.

#### 4.7 SOIL COVER SYSTEM

A soil cover/cap was not included as part of the site remedy.

#### **4.8 OTHER ENGINEERING CONTROLS**

The remedy for the site did not require the construction of any engineering control systems.

#### **4.9 INSTITUTIONAL CONTROLS**

The site remedy requires that an environmental easement be placed on the property to (1) limit the use and development of the Site to commercial uses only, which would also permit industrial use; (2) require compliance with the approve site management plan; (3) restrict the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the NYSDOH; and (4) require the property owner to complete and submit to the NYSDEC a periodic certification of institutional controls.

Due to the remaining surface soil/fill contamination on-site a Site Management Plan (SMP) was developed. The SMP was developed to define the institutional controls that will be implemented to protect the public and to manage the remaining contamination at the Site in perpetuity or until the Environmental Easement is extinguished.

The Environmental Easement is provided in Appendix D

#### 4.10 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

The remedial actions taken for the environmental restoration of the Electruk Battery Site were performed in accordance with that described in the IRMWP with no deviations.

# 5.0 PROJECT COSTS

As shown in Appendix E, the project costs for the IRM activities were \$13,225.

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 Nature and Extent of Contamination

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- Appendix BDigital Copy of the FER, Daily Inspection Reports, ProjectPhotographs, Waste Disposal Manifests and Bills of Landing (CD)
- Appendix C NYSDEC Approval Letter for the IRMWP
- Appendix D Environmental Easement
- Appendix E Project Costs
- Appendix F USEPA Sampling/Removal Action Reports and NYSDOH's March 9, 2000 Concurrence Letter

# TABLES

# TABLE 1Nature and Extent of Contamination

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm) <sup>a</sup>	SCG <sup>b</sup> (ppm) <sup>a</sup>	Frequency of Exceeding SCG
	pН	6.8 – 7.7		
	Lead (RI Samples)	19.4 – 296	1,000	0/10
	Lead (EPA samples) <sup>c</sup>	93 to 1,180	1,000	1/221

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm) <sup>a</sup>	SCG <sup>b</sup> (ppm) <sup>a</sup>	Frequency of Exceeding SCG
Volatile Organic	Carbon Disulfide	ND - 13	500	0/4
Compounds (VOCs)	TICs	13 - 41	NS	
Semivolatile Organic	TICs	160 - 770	NS	
Compounds (SVOCs)				
Metals	Arsenic	3.1 - 4.2	16	0/4
	Barium	78.9 - 161	400	0/4
	Chromium	9.3 – 27.4	1,500	0/4
	Lead	7.8 – 12.9	1,000	0/4
	Mercury	0.014 - 0.039	2.5	0/4
	Selenium	ND – 3.1	1,500	0/4
рН	рН	7.2 - 8		

SURFACE WATER	Contaminants of Concern	Concentration Range Detected (ppb) <sup>a</sup>	SCG <sup>b</sup> (ppb) <sup>a</sup>	Frequency of Exceeding SCG
Semivolatile Organic	TICs	ND - 23.6	NS	
Compounds (SVOCs)				
Metals	Barium	15.1 - 31.4	1,000	0/4
	Chromium	1.4 - 4.22	50	0/4
	Lead	7.4 - 302	50	1/4
	Silver	ND - 8.26	50	0/4
рН	pН	6.88 - 8.24		

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb) <sup>a</sup>	SCG <sup>b</sup> (ppb) <sup>a</sup>	Frequency of Exceeding SCG
Volatile Organic	Acetone	ND - 22	50	0/3
Compounds (VOCs)	Benzene	ND – 4.2	1	1/3
	Bromodichloromethane	ND - 0.75	50	0/3
	Chloroform	ND - 6.1	7	0/3
	2-Butanone	ND – 4.2	50	0/3
	Cyclohexane	ND – 1.8	NS	0/3
	Toluene	ND - 6	5	1/3
	m/p-Xylenes	ND – 3.2	5	0/3
	o-Xylene	ND – 1.4	5	0/3

Semivolatile Organic	3+4-Methylphenols	ND – 2.5	1	1/3
Compounds (SVOCs)	Bis(2- ethylhexyl)phthalate	ND – 4.1	5	0/3
	TICs	ND - 23	NS	
GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb) <sup>a</sup>	SCG <sup>b</sup> (ppb) <sup>a</sup>	Frequency of Exceeding SCG
Metals	Barium	43.7 - 87	1,000	0/3
	Chromium	2.56 - 2.87	50	0/3
	Lead	ND - 6.74	25	0/3
	Silver	ND – 2.42	50	0/3
рН	pН	7.11 – 7.97		

SUB-SLAB	Contaminants of Concern	Concentration Range Detected (ppm) <sup>a</sup>	SCG <sup>b</sup> (ppm) <sup>a</sup>	Frequency of Exceeding SCG
Metals	Lead	12.1 - 174	1,000	0/4

<sup>a</sup> ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;

ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

 $ug/m^3 = micrograms per cubic meter$ 

<sup>b</sup> SCG = standards, criteria, and guidance values for surface and sub-surface soil are from 6NYCRR Part 375.68(b) Environmental Remediation Programs December 2006 Edition using the Commercial Soil Cleanup Objectives, SCG for groundwater were derived from NYS Ambient Water Quality Standards TOGS 1.1.1 (Source of Drinking Water, Groundwater); for soil samples analyzed for TCLP metals 40 CRF Part 261.24 is the source of the regulatory value, which lists the maximum contaminant levels for the toxicity characteristic for determining if a solid waste is defined as a hazardous waste.

<sup>c</sup> The EPA sample results were obtained from July 22, 1999 *Delineation of Lead Contamination by X-Ray Fluorescence* letter report prepared by Roy F. Weston Inc. The highest concentration of lead detected during the EPA sampling was 1,180 ppm at CC3. Sample SS-10 was collected August 2008 from the same location as CC3 and revealed a lead concentration of 48.4 ppm.

ND Compound not detected

NS No Standard

# FIGURES







# APPENDIX A

SURVEY MAP, METES AND BOUNDS

MAY 27, 2011, AND UST 5, 2011 AS PR	THE ITEMS IN SCHEDULE	DATE OF SURVEY: JULY 15, 2009 LAST REVISION: SEPTEMBER 8, 2017
IF RECORD	FORMER ELECTRUK BATTE ERP SITE # E932132 4922 I.D.A. DRIVE LOCKPORT, NEW YORK	CERTIFICATION TO: THE PEOPLE OF THE STATE OF NEW YORK ACTING THROUGH ITS COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION THE TOWN OF LOCKPORT CHICAGO TITLE INSURANCE COMPANY THIS IS TO CERTIFY THAT THIS MAP AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY OF THIS SURVEY THE STATE OF NEW YORK, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.
	BOLT OF FIRE HYD AT P FOR LOCATION. TION. THE SURVEYOR MAKES IN THE AREA, EITHER IN ROUND UTILITIES SHOWN ARE IBLE FROM INFORMATION HE CONTRACTOR SHALL	<b>GENERAL NOTE:</b> 1. ALL ELEVATIONS BASED ON NAVD88 DATUM. BENCHMARK DESCRIPTION NORTH BONNET I SOUTHWEST CORNER OF I.D.A. DRIVE AND ENTERPRISE DRIVE. ELEVATION = 630.34 SEE MAI 2. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMA NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGR IN THE EXACT LOCATION INDICATED THOUGH THEY ARE LOCATED AS ACCURATELY AS POSSI AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. TH CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF EXCAVATION. 3. NO ENVIRONMENTAL ENGINEERING CONTROLS PROPOSED FOR SUBJECT PROPERTY.
	ARA AND STATE OF NEW RVEY, BOUNDED AND BY INSTRUMENT RECORDED IN WITH THE NORTH LINE OF DEEDS AT PAGE 49; POINT; T; T; T; LANDS DEDICATED BY THE EGINNING.	<ul> <li>SCHEDULE 'A' - DEED DESCRIPTION &amp; ENVIRONMENTAL EASEMENT / CHICAGO TITLE INSURANCE COMPANY, COMMITMENT NO. 1115–25074</li> <li>DATED AUGUST 5, 2011.</li> <li>ALL THAT TRACT OR PARCEL OF LAND, SITUATE IN THE TOWN OF LOCKPORT, COUNTY OF NIG PORK, BEING PART OF LOT 12, TOWNSHIP 14, RANGE 7 OF THE HOLLAND LAND COMPANY'S SUI DESCRIBED AS FOLLOWS:</li> <li>BEGINNING AT A POINT IN THE WEST LINE OF LANDS DEDICATED TO THE TOWN OF LOCKPORT B LIEFER 1888 OF DEEDS AT PAGCE 268, DISTANCE 10 FEET NORTHERLY FROM THE INTERSECTION V LANDS DEDICATED TO THE TOWN OF LOCKPORT BY INSTRUMENT RECORDED IN LIBER 2287 OF L THENCE NORTHERLY ALONG THE WEST LINE OF I.D.A. DRIVE, A DISTANCE OF 193.99 FEET TO A THENCE WESTERLY AT RIGHT ANGLES, A DISTANCE OF 308.25 FEET TO A POINT;</li> <li>THENCE SOUTHERLY AT INTERIOR ANGLE OF 89'51'06". A DISTANCE OF 193.99 FEET TO A POINT THENCE EASTERLY AT INTERIOR ANGLE OF 90'08'54" AND PARALLEL WITH THE NORTH LINE OF LATTER DEDICATION HERINABOVE DESCRIBED, A DISTANCE OF 307.75 FEET TO THE POINT OF BI CONTAINING 1.37 ACRES MORE OR LESS.</li> </ul>
	TAL EASEMENT	<u>ENVIRONMENTAL EASEMENT AREA ACCESS</u> THE DEC OR THEIR AGENT MAY ACCESS THE ENVIRONMEN AREA AS SHOWN HEREON THROUGH ANY EXISTING STREE BUILDING INGRESS/EGRESS ACCESS POINT.
	<i>urements in</i> of all Engineering (see example (see example replaced or replaced or replaced or naged, re with the nagement of the natural site the natural site	<ul> <li>ENGINEERING / INSTITUTIONAL CONTROLS</li> <li>Please show location of engineering controls with measus survey drawing with corresponding keys and decription a Controls and Institutional Controls covering subject site attached) (subject to Project Manager's comments)</li> <li>Soil Cover – Any breach of the natural site cover, i purposes of construction or utilities work, must be repaired according to the Site Management Plan (SN excavated and removed from the property must be characterized, and properly disposed of in accordance NYSDEC regulations and directives. Guidelines for ma subsurface soils/fill and long-term maintenance of the cover is provided in the SMP.</li> <li>Land Use – The use and development of the site is commercial and Industrial uses only.</li> </ul>
	Easement are set "). A copy of the the property. The ent of mediation, Site	This property is subject to an Environmental Easement h York State Department of Environmental Conservation pu of Article 71 of the New York Environmental Conservatior THE ENGINEERING AND INSTITUTIONAL CONTROLS for the I forth in more detail in the Site Management Plan ("SMP SMP must be obtained by any party with an interest in SMP may be obtained from the New York State Departm Environmental Conservation, Division of Environmental Rer Control Section, 625 Broadway, Albany, NY 12233 or at derweb@gw.dec.state.ny.us.



# APPENDIX B

# DIGITAL COPY OF THE FER, DAILY INSPECTION REPORTS, PROJECT PHOTOGRAPHS, WASTE DISPOSAL MANIFESTS AND BILLS OF LANDING (CD)

APPENDIX C

NYSDEC APPROVAL LETTER FOR THE IRMWP

# New York State Department of Environmental Conservation

**Division of Environmental Remediation, Region 9** 270 Michigan Avenue, Buffalo, New York, 14203-2999 Phone: (716) 851-7220 · FAX: (716) 851-7226 Website: www.dec.ny.us



Commissioner

December 4, 2008

Mr. Marc Smith Supervisor Town of Lockport Lockport Town Hall 6560 Dysinger Road Lockport, New York 14094-7970

Dear Supervisor Smith,

**Former Electruk Battery Site Interim Remedial Measure** Site #932132 Town of Lockport, Niagara County

The New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYS DOH) have reviewed the Interim Remedial Measure (IRM) Work Plan dated November 17, 2008 to address lead contamination on the building drains. This IRM work plan is approved with the following conditions:

- A paragraph is to be added that adds confirmatory inspections of the cleaned 1. drains prior to backfilling by representatives of the Town and the NYSDEC.
- A Health and Safety Plan (HASP) covering the proposed remedial work is to be 2. included.

Please submit a revised work plan that includes these modifications and a schedule for the implementation of the work.

If you have any questions please call me at 716-851-7220.

Sincerely, Mulait

Michael J. Hinton P.E. Enviromental Engineer II

MJHi/dcg hinton\smith-irm.ltr

Mr. Gregory P. Sutton P.E. Division of Environmental Remediation Region 9 cc: Mr. Matthew Forcucci, NYSDOH Western Regional Office, Buffalo Mr. Daniel E. Riker, P.G. TVGA, Elma NY 14059 Mr. Thomas Sullivan, Town of Lockport, Lockport NY 14094-7970

# APPENDIX D

**ENVIRONMENTAL EASEMENT** 

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

THIS INDENTURE made this 22<sup>th</sup> day of <u>December</u>, 20<u>//</u>, between Owner(s) TOWN OF LOCKPORT, a municipal corporation organized and existing under the Laws of the State of New York and having its place of business at 6560 Dysinger Road, Town of Lockport, County of Niagara, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233.

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

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

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

WHEREAS, Grantor, is the owner of real property located at the address of 4922 I.D.A. Park Drive in the Town of Lockport, County of Niagara and State of New York, known and designated on the tax map of the County Clerk of Niagara as tax map parcel numbers: Section 108.00 Block 1 Lot 55, being the same as that property conveyed to Grantor by deed dated May 26, 2011 and recorded on May 27, 2011 in the Niagara County Clerk's Office in Instrument Number 2011-08929. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 1.37 +/- acres, and is hereinafter more fully described in the Land Title Survey dated July 15, 2009 and revised September 8, 2011 prepared by Douglas R. Hager, P.L.S. of TVGA Consultants, which will be attached to the Site Management Plan. The Controlled Property description and survey is set forth in and attached hereto as Schedule A; and

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

Environmental Easement Page 1
**NOW THEREFORE**, in consideration of the mutual covenants contained herein and the terms and conditions of State Assistance Contract Number: C303480, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

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

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

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

# Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

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

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

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

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

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

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

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

Environmental Easement Page 2

[6/11]

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

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

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

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

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

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

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

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

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

[6/11]

Environmental Easement Page 3

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

the institutional controls and/or engineering controls employed at such site:
(i) are in-place;

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

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

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

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

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

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

(7) the information presented is accurate and complete.

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

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

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

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

5. Enforcement

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

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property. [6/11] C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

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

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

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

Parties shall address correspondence to:

Site Number: E932132 Office of General Counsel NYSDEC 625 Broadway Albany New York 12233-5500

With a copy to:

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

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

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

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

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

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

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

TOWN OF LOCKPORT :

Print Name: MARC R. SMITH

Title: Super	lisor.	Date:	91	13/11
Town	of Loc	kport-		

Grantor's Acknowledgment

### STATE OF NEW YORK ) ss: COUNTY OF NIAGARA)

On the 13th day of Sept., in the year 20 11, before me, the undersigned, personally appeared Marc R. Smith, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Notary Public - State of New York

CINDY L. MEAL Notary Public, State of New York Qualified in Niagara County My Commission Expires November 27, 2014 THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner.

By:

Despoyers, Director

Division of Environmental Remediation

Grantee's Acknowledgment

### STATE OF NEW YORK ) ) ss: COUNTY OF ALBANY )

On the <u>Ja</u> day of <u>Jeconica</u>, in the year 20<u>11</u>, before me, the undersigned, personally appeared Dale A. Desnoyers, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public - State of New York

David J. Chiusano Notary Public, State of New York No. 01CH5032146 Qualified in Schenectady County Commission Expires August 22, 20.14

#### SCHEDULE "A" PROPERTY DESCRIPTION

Address of Property: 4922 I.D.A. Park Drive, Lockport, New York Tax Map: 108.00-1-55

All that tract or parcel of land, situate in the Town of Lockport, County of Niagara and State of New York, being part of Lot 12, Township 14, Range 7 of the Holland Land Company's Survey, bounded and described as follows:

Beginning at a point in the west line of lands dedicated to the Town of Lockport by instrument recorded in Liber 1868 of Deeds at Page 268, distance 10 feet northerly from the intersection with the north line of lands dedicated to the Town of Lockport by instrument recorded in Liber 2287 of Deeds at Page 49;

Thence northerly along the west line of I.D.A. Drive, a distance of 193.99 feet to a point;

Thence westerly at right angles, a distance of 308.25 feet to a point;

Thence southerly at interior angle of 89°51'06". A distance of 193.99 feet to a point;

Thence easterly at interior angle of 90°08'54" and parallel with the north line of lands dedicated by the latter dedication hereinabove described, a distance of 307.75 feet to the point of beginning.

Containing 1.37 acres more or less.

**SURVEY** 

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

THE ENGINEERING AND INSTITUTIONAL CONTROLS for the Easement are set forth in more detail in the Site Management Plan ("SMP"). A copy of the SMP must be obtained by any party with an interest in the property. The SMP may be obtained from the New York State Department of Environmental Conservation, Division of Environmental Remediation, Site Control Section, 625 Broadway, Albany, NY 12233 or at derweb@gw.dec.state.ny.us.

# ENGINEERING / INSTITUTIONAL CONTROLS

<u>Please show location of engineering controls with measurements in</u> <u>survey drawing with corresponding keys and decription of all Engineering</u> <u>Controls and Institutional Controls covering subject site (see example</u> <u>attached) (subject to Project Manager's comments)</u>

- Soil Cover Any breach of the natural site cover, including for the purposes of construction or utilities work, must be replaced or repaired according to the Site Management Plan (SMP). Site soil excavated and removed from the property must be managed, characterized, and properly disposed of in accordance with the NYSDEC regulations and directives. Guidelines for management of subsurface soils/fill and long-term maintenance of the natural site cover is provided in the SMP.
- Land Use The use and development of the site is limited to Commercial and Industrial uses only.

# ENVIRONMENTAL EASEMENT AREA ACCESS

THE DEC OR THEIR AGENT MAY ACCESS THE ENVIRONMENTAL EASEMENT AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT.

# SCHEDULE 'A' - DEED DESCRIPTION & ENVIRONMENTAL EASEMENT AREA DESCRIPTION

CHICAGO TITLE INSURANCE COMPANY, COMMITMENT NO. 1115-25074 DATED AUGUST 5, 2011.

ALL THAT TRACT OR PARCEL OF LAND, SITUATE IN THE TOWN OF LOCKPORT, COUNTY OF NIAGARA AND STATE OF NEW YORK, BEING PART OF LOT 12, TOWNSHIP 14, RANGE 7 OF THE HOLLAND LAND COMPANY'S SURVEY, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE WEST LINE OF LANDS DEDICATED TO THE TOWN OF LOCKPORT BY INSTRUMENT RECORDED IN LIBER 1868 OF DEEDS AT PAGE 268, DISTANCE 10 FEET NORTHERLY FROM THE INTERSECTION WITH THE NORTH LINE OF LANDS DEDICATED TO THE TOWN OF LOCKPORT BY INSTRUMENT RECORDED IN LIBER 2287 OF DEEDS AT PAGE 49; THENCE NORTHERLY ALONG THE WEST LINE OF I.D.A. DRIVE, A DISTANCE OF 193.99 FEET TO A POINT;

THENCE WESTERLY AT RIGHT ANGLES, A DISTANCE OF 308.25 FEET TO A POINT;

THENCE SOUTHERLY AT INTERIOR ANGLE OF 89'51'06". A DISTANCE OF 193.99 FEET TO A POINT;

THENCE EASTERLY AT INTERIOR ANGLE OF 90'08'54" AND PARALLEL WITH THE NORTH LINE OF LANDS DEDICATED BY THE LATTER DEDICATION HERINABOVE DESCRIBED, A DISTANCE OF 307.75 FEET TO THE POINT OF BEGINNING.

# **GENERAL NOTES**

1. ALL ELEVATIONS BASED ON NAVD88 DATUM. BENCHMARK DESCRIPTION NORTH BONNET BOLT OF FIRE HYD AT SOUTHWEST CORNER OF I.D.A. DRIVE AND ENTERPRISE DRIVE. ELEVATION = 630.34 SEE MAP FOR LOCATION.

2. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED THOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF EXCAVATION.

3. NO ENVIRONMENTAL ENGINEERING CONTROLS PROPOSED FOR SUBJECT PROPERTY.

# CERTIFICATION

TO: THE PEOPLE OF THE STATE OF NEW YORK ACTING THROUGH ITS COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

THE TOWN OF LOCKPORT

CHICAGO TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NPS IN 2005. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA AND NPS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION AS A LAND SURVEYOR REGISTERED IN THE STATE OF NEW YORK, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

DATE OF SURVEY: JULY 15, 2009 LAST REVISION: SEPTEMBER 8, 201

DOUGLAS R. HAGER, P.L.S.

NEW YORK STATE LICENSE NO. 050204

FORMER ELECTRUK BATTERY ERP SITE # E932132 4922 I.D.A. DRIVE LOCKPORT, NEW YORK

# EASEMENTS OF RECORD

THIS SURVEY HAS BEEN REVISED WITH THE BENEFIT OF ABSTRACT SEARCH NO.1115-00450 DATED MAY 27, 2011, AND TITLE REPORT COMMITMENT NO. 115-25074 DATED AUGUST 5, 2011 AS PREPARED BY CHICAGO TITLE INSURANCE COMPANY.

THE ITEMS IN SCHEDULE B AFFECT THE PARCEL SHOWN HEREON: ITEM 3: 15' UTILITY EASEMENT TO NEW YORK STATE ELECTRIC & GAS AND NEW YORK TELEPHONE BY LIBER 2268 OF DEEDS AT PAGE 242 AS SHOWN.





# NIAGARA COUNTY CLERK WAYNE F. JAGOW

#### RECEIPT

Create Time: 1/6/2012 2:22:26 PM RECEIPT # 2012105215

Recording Clerk: TH Account: cash2 Rec'd Frm: JUSTINE - CHICAGO By Mail/In Person (M/P): P

Instr#: 2012-00373 DOC: EASEMENT DEED STAMP: 2194 OR Party: TOWN OF LOCKPORT EE Party: PEOPLE OF THE STATE OF NEW

#### DEEDTP

Cover Page 1		\$8.00
Recording Fee 19		\$62.00
Cultural Ed 1		\$14.25
Records Management - County	1	\$1.00
Records Management - State	1	\$4.75
TP584-2 (Public Utilities)	1	\$1.00

Transfer Tax Transfer Tax

Receipt Summary	
TOTAL RECEIPT:>	\$91.00
TOTAL RECEIVED:>	\$91.00
Cash Back	\$0.00

\$0.00

#### PAYMENTS

Check # 17093 ->					\$91.00
SEAMAN	JONES	HOGAN	æ	BROOKS	

# APPENDIX E

**PROJECT COSTS** 



REMIT TO:

PO Box 315 Syracuse, NY 13209 (315) 451-6666 INVOICE NO. 2000353

DATE January 30, 2009

TVGA CONSULTANTS ATTN: ACCOUNTS PAYABLE 1000 MAPLE ROAD ELMA, NY 14059		JOB NUMBER: B1983				
			CONT	FACT: JAN	MES MANZELLA	
Site :	FORMER ELECTR	UK BATTERY SITE NY	PO#:		Page	e 1 of 2
Descri	ption		Quantity	Unit	Unit Price	Total
01/20/	2009					
VACU SHOV DRUM FOR I QUOT	UM AND PRESSUR 'EL DEBRIS FROM ' IS FOR DISPOSAL. DISPOSAL. 'ED AS:	E WASH TRENCHES #1, #2 AND #3. TRENCH #2 AND PLACE INTO TRANSPORTED WASTE WATER				
LABO	R AND EQUIPMEN	г	1.00	DAY	2,400.00	2,400.00
55-GA	LLON DRUMS, 17H	I	4.00	EACH	49.00	196.00
DISPO	DSAL OF HAZAROL	IS SOLIDS	4.00	DRUM	255.00	1,020.00
DISPO	OSAL OF WASTE W	ATER	812.00	GAL	0.65	527.80
01/21	/2009					
REMO WASH WITH	OVED ICE FROM TH HAND DRUM WATE SPEEDY DRY AND	RENCH #3 AND PITS. PRESSURE R FROM PIT #2, SOLIDIFY WATER DRUM ALL WASTE.				
LABC	R, EQUIPMENT AN	D MATERIALS	8.00	HOUR	240.00	1,920.00
55-G/	ALLON DRUMS, 17H	1	8.00	EACH	49.00	392.00
DISP	OSAL OF DRUMS C	F CONTAMINATED ICE.	8.00	DRUM	192.50	1,540.00
						Continued

Please reference the Invoice Number when submitting payment.

 $1\frac{1}{2}$ % per month Service Charge will be added to all past due invoices.



REMIT TO:

PO Box 315 Syracuse, NY 13209 (315) 451-6666 INVOICE NO. 2000353

DATE January 30, 2009

TVGA CONSULTANTS ATTN: ACCOUNTS PAYABLE 1000 MAPLE ROAD ELMA, NY 14059	JOB CON	NUMBER: TACT: JA	B1983 MES MANZELLA	
Site : FORMER ELECTRUK BATTERY SITE LOCKPORT NY	PO#:		Page	e 2 of 2
Description	Quantity	Unit	Unit Price	Total
01/22/2009 BACKFILL TO GRADE APPROXIMATELY 140 LINEAR FEET OF	-			
FLOOR TRENCHES WITH 100 PSI FLOWABLE FILL	1.00	DAY	2,700.00	2,700.00
VACUUM TRUCK, INDUSTRIAL, 3500GAL WITH OPERATOR	4.00	HOUR	140.00	560.00
FLOWABLE FILL	13.00	YARD	46.00	598.00
DISPOSAL OF CONTAMINATED WATER	602.00	GAL	0.65	391.30

**RECEIVED** FEB 0 2 2009

# TVGA

Sub Total:	12,245.10
Sales Tax:	979.61
Invoice Total:	13,224.71

Please reference the Invoice Number when submitting payment.

 $1^{1}/_{2}$  % per month Service Charge will be added to all past due invoices.

# APPENDIX F

# USEPA SAMPLING/REMOVAL ACTION REPORTS AND NYSDOH'S MARCH 9, 2000 CONCURRENCE LETTER



584 Delaware Avenue, Buffalo, New York 14202

Antonia C. Novello, M.D., M.P.H. Commissioner of Health

Mr. Dan King, P.E.

**Region 9 Office** 

270 Michigan Avenue Buffalo, NY 14203

Div. of Environmental Remediation

NYS Department of Environmental Conservation

March 9, 2000

Dennis P. Whalen Executive Deputy Commissioner

RECEIVED

MAR 1 0 2000

NYSDEC REG. 9 FOIL REL\_\_\_UNREL

Re: EPA Removal Action Final Report Electruk Battery Site NYS DOH #932845N Lockport (T), Niagara County

Dear Mr. King:

I reviewed the 1999 Final Report of the EPA Removal Action at the above-referenced site. EPA used a cleanup level of 750 ppm of lead based upon their guidance of 750 ppm to 1000 ppm for industrial sites. Lead levels remaining on this unoccupied site are below 750 ppm, with 70 percent of confirmatory samples below the upper background number obtained at the site (227 ppm). The highest levels remaining are found against the building foundation and the concrete storage pad. These levels should not pose any exposure problems so long as the site remains in its current intended use (commercial/industrial), and the areas remain undisturbed.

Since lead remains on the site above residential cleanup guidelines, it is recommended that the site be deed restricted to prevent the unlikely use of it for residential or day care purposes.

If you have any questions, please feel free to contact me at 847-4502.

Sincerely,

Matthew J.L.

Matthew J. Forcucci Public Health Specialist

cc: C. O'Connor, WRO Dr. G. A. Carlson, Ph.D./Mr. M. VanValkenburg Mr. Paul Dicky, NCHD Mr. Ed Belmore, DEC Albany



Roy F. Weston, Inc. Federal Programs Division Suite 201 1090 King Georges Post Road Edison, New Jersey 08837-3703 732-225-6116 • Fax 732-225-7037

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM EPA CONTRACT 68-W5-0019

July 22, 1999

Mr. Jeff M. Bechtel U.S. Environmental Protection Agency 2890 Woodbridge Avenue Edison, NJ 08837

RE: DELINEATION OF LEAD CONTAMINATION BY X-RAY FLUORESCENCE Electruk Battery Site, Lockport, NY TDD No: 02-98-09-0001 DCN: START-02-F-3695

Dear Mr. Bechtel:

Attached is the report detailing the results of the XRF analysis of samples from the Electruk Battery site in Lockport, NY obtained 12 May through 10 June 1999. It includes the results of the confirmation analysis done by an independent lab subsequent to the site visit.

If you have any questions, please call me at 732-225-6116.

Sincerely,

John F. Brennan START

cc: TDD File J. Soroka

#### ANALYSIS OF LEAD BY X-RAY FLUORESCENCE

### ELECTRUK BATTERY SITE

#### LOCKPORT, NEW YORK

Prepared by:

Superfund Technical Assessment and Response Team Roy F. Weston, Inc. Federal Programs Division Edison, New Jersey

Prepared for:

U.S. Environmental Protection Agency Region II Edison, New Jersey

DCN #: START-02-F-03695 TDD #: 02-98-09-0001 EPA Contract No.: 68-W5-0019

Approved by:

START

~\_\_\_\_

John F. Brennan, Project Manager

Date: 7/22/99

Joseph M. Soroka, Quality Assurance Officer

Date: 7/27/94

EPA

Jeff M. Bechtel, On-Scene Coordinator

Date: 8/26/99

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#### **1.0 Introduction**

The Region II Superfund Technical Assessment and Response Team (START) provided on-site analytical services for X-Ray Fluorescence (XRF) of soil samples at the Electruk Battery Site from 12 May 1999 through 10 June 1999 under TDD number 02-98-09-0001. The samples were analyzed using field laboratory techniques (i.e., using prepared XRF sample cups).

The objective of the project was to screen site samples for lead in order to assess the extent of contamination at the site. START screened a total of 308 soil samples during the course of the project. A Spectrace Model 9000 field portable XRF spectrometer (S/N Q44) was used for this project. A subset of the samples was sent to an independent laboratory to confirm the XRF results and qualify the XRF data as Quality Assurance Level 2 (QA-2) data.

#### 2.0 Methods

Region II START collected 308 soil samples during the course of this investigation. Areas of concern were chosen based on historical data generated by Chopra-Lee, Inc., a private consultant hired by the Lockport Industrial Development Agency (LIDA), from START's August 19, 1998, sampling event and a physical walk of the site. A 10' X 10' grid was set up around the facility which was designed to cover all of the areas of concern. Sample locations were identified using site references and documented in site logbooks. Samples are identified by their locations on the grid site. The prefix A, B, C... denotes where the sample is located on the East/West axis, while the suffix 0, 1, 2...denotes where the sample is located on the North/South axis.

#### 2.1 Sample Preparation - Prepared cup

After the surface vegetation was removed, the soil in a 12" x 12" area was mixed and placed into Ziplock bags for transportation back to the site laboratory. The samples were homogenized and a small aliquot (approximately 10 grams) of the sample was dried. Most samples were dried using a convection oven at 100°C, while other samples were air dried. Samples were then sieved through a 10 mesh stainless steel sieve and loaded into a XRF cup prior to sealing with 0.2 mil Mylar film. Duplicate samples were obtained by filling a second Ziplock bag from the sample location. The suffix DUP was added to the sample name for the second sample.

#### 2.2 XRF Analysis

A Spectrace Model 9000 (S/N Q-44) was used for the lead analysis. The instrument is equipped with three radioactive isotope sources; Fe-55, Cd-109 and Am-241. Because the analyte of

concern at the site was lead, the counting time for the Cd-109 source was set at 15 seconds, with the counting times for the other two sources at 15 seconds. A counting time of 15 seconds was expected to provide a minimum detection level (MDL) for the lead below the site specified action level of 750 ppm.

At the start of each day, an energy calibration check, resolution check and zero check were performed to assure that the instrument was operating within specifications. Additionally, three NIST standards and a sample of Ottawa sand (used as a blank to confirm that there was no cross-contamination) were analyzed periodically as detailed in the following sections.

Duplicate samples were collected for at least 10% of the sample locations. Duplicate samples were samples from the same sample location with unique sample numbers and were used to estimate sample soil homogeneity.

In addition to sample duplicates, replicate analysis of the same sample cup were also analyzed at a frequency >10%. The suffix REP was add to the sample name for the second analysis. Replicate samples were used to estimate instrument precision.

XRF analysis was conducted in accordance with EPA/ERT SOP #1713, Spectrace 9000 Field Portable X-Ray Fluorescence Operating Procedures, as well as, the instrument instruction manuals.

### 2.3 Detection and Quantitation limits

A low-concentration standard, NIST #2709 (lead = 18.9 ppm), was analyzed periodically at the beginning and end of each day and after every 10 samples. The standard deviation (SD) of the non-consecutive analysis was used to calculate the method detection limit (MDL) and method quantitation limits (MQL) for the analytes. The MDL is defined as three times the SD of the analyses in ppm, while the MQL is defined as 10 times the SD in ppm.

### 2.4 Application Model Verification

The Spectrace 9000 fundamental parameters model was verified by the analysis of a midconcentration standard, NIST #2711 (lead = 1,162 ppm) and a high-concentration standard, NIST #2710 (lead = 5,555 ppm), consecutive to the analysis of the NIST #2709 standards. The results of these standards are used to estimate the precision and accuracy of the Spectrace 9000.

### 2.5 XRF Confirmation by ICP

In order for the XRF data to qualify as QA-2 level data, at least 10% of the samples were sent to a laboratory for analysis by inductively coupled plasma emission spectrometry (ICPES). A

5

regression analysis of the ICPES and XRF data must yield a coefficient of determination,  $r^2$ , greater than 0.7 (*ERT/EPA Quality Assurance Technical Bulletin on Field Portable X-ray Fluorescence*, May 1991). The model obtained by the regression is used to validate or adjust the Spectrace 9000 results.

#### 3.0 Quality Assurance/Quality Control

The following Quality Assurance (QA) protocols were used to insure the integrity of the data collected by the Spectrace 9000:

- 1. The use of chain of custody forms and field logs.
- 2. Daily instrument checks (Energy Calibration Check, Resolution Check, and Zero Check).
- 3. Initial and continuing analysis of NIST standards and a sand blank.
- 4. Field duplicate samples were collected and analyzed for at least 10% of the sample locations.
- 5. Replicate XRF analysis were obtained on at least 10% of the samples.
- 6. Confirmation of at least 10% of the samples by ICP.
- 7. Minimum MDL and MQL were calculated for all analytes of interest.

### 4.0 Results and Discussion

#### 4.1 Sample Results

Table 1 contains a summary of the results of the site soil samples analyzed by XRF for lead. Including the replicate and duplicate samples, 380 samples were analyzed by XRF using prepared cup methods for the site. Concentrations ranged from non-detect to 93,700 ppm lead. All samples are identified by their grid location. All results are qualified with the following flags: J for data between the MDL and MQL, (92 - 277 ppm), and U for non-detect at 92 ppm.

### 4.2 NIST Results

Table 2 details the analysis of the NIST #2709 standard for Spectrace Model Q-044. MDL and MQL for Q-44 were 92 and 277 ppm, respectively. These MDL and MQL are consistent with previously obtained statistics for lead using XRF at the 15 second analysis time used.

Tables 4.1 and 4.2 detail the results of the non-consecutive analysis of standards NIST #2710 and NIST #2711. The NIST certified lead concentration in standard #2710 is 5,532 ppm. The average results for the XRF analysis was 4,565 ppm. For standard #2711, the NIST certified value for lead is 1,162 ppm. The average XRF results was 1,036 ppm. The lower results obtained by the XRF are as expected and are due to particle size effects. They are consistent with previous XRF results. Relative standard deviations ranged from 8.3% (NIST 2711) to 14.8% (NIST 2710) and are indicative of the precision of the XRF analysis.

#### 4.3 Replicate and Duplicate Results

Table 3.2 contains a summary of the duplicate samples analyzed by the Spectrace. Thirty eight samples were analyzed in duplicate. As detailed in the table, the relative percent differences between samples and duplicates ranged from 1.6% to 43.4% for non-qualified (i.e., not flagged with "U" or "J" designations) samples. The duplicate samples were relatively homogenous and the sampling methods were consistent.

Table 3.1 contains a summary of the replicate samples analyzed by the Spectrace using XRF cup methods. Thirty eight samples were analyzed in replicate. As detailed in the table, the relative percent differences between the samples and duplicates ranged from 1.3% to 35.2% for non-qualified samples. These results are representative of the relative precision of the XRF analysis.

#### 4.4 Application Model Verification

Table 5 details the results of the confirmation analysis. Thirty six samples were analyzed by Inductively Coupled Plasma Emission Spectroscopy (ICP) analysis. The results were subjected to a regression analysis to compare the XRF vs the ICP results.

The initial regression equation from the analysis included all of the data points (36 observations) and was as follows:

$$XRF = 0.5 ICP + 1547;$$
  $r^2 = 0.72$ 

Including all of the data in the regression equation skewed the regression line upward (y intercept  $\neq 0$ ) and produced a low slope (0.5). Despite this, the coefficient of determination (r<sup>2</sup>) was still acceptable (>.7). To improve the calculations, two data points were eliminated (A5 and B5). These two points were excessively high compared to the EPA action level (750 ppm) and the majority of the data points. Therefore, eliminating these two points would shift the focus of the regression line toward the majority of the data points.

The second regression equation from the analysis included all of the data points <40,000 ppm (leaving 34 observations) and was as follows:

$$XRF = 1.46 ICP + 145.74 r^2 = 0.82$$

The y intercept and coefficient of determination  $(r^2)$  are improved. If, however, all of the XRF data points >4,000 ppm are eliminated (leaving 30 observations), the following regression equation is generated:

$$XRF = 1.15 ICP - 15.17;$$
  $r^2 = 0.85$ 

The slope, y intercept and coefficient of determination  $(r^2)$  of this final regression equation are dramatically improved when compared to the initial equation. The y intercept is very close to 0 (-15), the slope is closer to 1 (1.15) and the coefficient of determination  $(r^2)$  is greater than 0.7 (0.85). While the data for all of the models qualifies as QA-2 data, eliminating the six data points allows the regression equation to focus on the data that is closest to the EPA removal action level of 750 ppm and provides a more accurate depiction of the application model. The figure in Table 5 illustrates the final regression model for the data (<4000ppm).

#### 5.0 Conclusions

Samples collected from various grid points at the Electruk Battery site were sampled and screened for lead by XRF using prepared cup methods. Concentrations ranged from non-detect at a MDL of 92 ppm to 93,700 ppm. Figure 1 details the results on a grid map A total of 380 samples were screened and analyzed, including replicate and duplicates the month long project. All of the data satisfied QA-2 level criteria as confirmed by ICP analysis.

The data generated from this sampling event illustrated that the majority of the contamination was located within 20 feet of the facility, specifically along the concrete pad on the north side of the facility. Significant contamination was also found in the soil adjacent to the north side of the

facility, in the parking lot on the northeast side of the facility, in the area surrounding the lead oxide silo on the south side of the facility, and in a debris pile (sample M7) located on the north side of the facility. A drainage ditch (Transects 8, 9, 10) which ran parallel to the north side of the facility was also examined. The slope of the ditch started about 83 feet north of the facility. Samples were collected from each side of the ditch and from the trough. Only one sample (A9) exceeded the EPA removal action level.

Once the initial six inches were excavated from the contaminated areas, post excavation samples were collected and analyzed. This process continued until lead levels in the soil fell below 750 ppm for all of the areas of concern. The areas that required the deepest excavation included:

- •Soil along the northeast edge of the concrete pad A5, D4 (12"below grade) and A7 (15" below grade);
- Soil along west end of the concrete pad I1, J1 (12" below grade);
- •Soil surrounding the silo R1, T1, V0 (12" below grade);
- Soil beneath the "southwest" gutter drain (12" below grade); and
- •The parking lot AA4, CC3, DD3 (12" below grade)

Several surficial (0-6") soil samples were collected which were not `located on the sample grid. None of the samples exceeded the EPA removal action level:

- Six background samples (Bck 1-6) were collected along the east and southeast sides of the facility;
- •Five samples were collected from the soil berm located on the west side of the property (Test 1-5);
- •Five samples were collected from the soil stockpile located on the adjacent (west) property (Test 6-10). This soil was used as clean-fill for the excavated areas; and
- •One sample was collected from beneath the trailer parked at the loading dock located on the east side of the facility (Trailer 1);

Several surficial (0-6") soil samples were collected beneath the three drainage gutters located on the south side of the facility (SouthWest, SouthCentral, and SouthEast). All three areas required excavation.

# FIGURE 1:

# SOIL CONTAMINATION LEVELS (LEAD) 0-6"



D: \CADFILE \4172 \4172.DWG

TABLE 1:

# XRF ANALYSIS OF ELECTRUK BATTERY SAMPLES FOR LEAD

I.

## TABLE 1 XRF RESULTS

SAMPLE	)	DATE	LEAD	
"A5"	0-6"	05/25/99	40100	
"A5INTER"	0-6"	06/07/99	U	
"A5"	6-12"	06/05/99	2890	
"A5"	12-15"	06/07/99	U	
"A6"	0-6"	05/25/99	303	
"A7"	0-6"	05/25/99	1700	
"A7"	6-12"	06/05/99	969	
"A7"	12-15"	06/07/99	862	
"A7"	15-18"	06/07/99	U	
"A8"	0-6"	05/27/99	280	
"A9"	0-6"	05/27/99	782	
"A9"	6-12"	06/05/99	U	
"A10"	0-6"	05/27/99	U.	
"B5"	0-6"	05/25/99	93700	1
"B5"	6-12"	06/05/99	273J	
"B6"	0-6"	05/25/99	1370	
"B6"	6-12"	06/05/99	U	
"B7"	0-6"	05/25/99	U	
"B8"	0-6"	05/27/99	U	
"B9"	0-6"	05/27/99	151J	
"B10"	0-6"	05/27/99	U	
"C4"	0-6"	05/25/99	1140	
"C4"	6-12"	06/05/99	228J	
"C5"	0-6"	05/25/99	845	
"C5DUP"	0-6"	05/25/99	1010	
"C5REP"	0-6"	05/25/99	1140	
"C5REPREP"	0-6"	05/25/99	1160	
"C5"	6-12"	06/05/99	U	
"C6"	0-6"	05/25/99	177J	
"C7"	0-6"	05/25/99	637	
"C8"	0-6"	05/27/99	U	
"C9"	0-6"	05/27/99	348	
"D4"	0-6"	05/25/99	4170	
"D4INTER"	0-6"	06/07/99	115J	
"D4"	6-12"	06/05/99	3110	
"D4"	12-15"	06/07/99	410	_
"D5"	0-6"	05/25/99	1180	
"D5"	6-12"	06/03/99	308	
"D6"	0-6"	05/25/99	280	
"D7"	0-6"	05/25/99	250J	
"D8"	0-6"	05/27/99	U ·	

1

## TABLE 1 XRF RESULTS

SAMPLE ID		DATE	LEAD
"D9"	0-6"	05/27/99	υ
"D9DUP"	0-6"	05/27/99	U
"D9REP"	0-6"	05/27/99	U
"E4"	0-6"	05/25/99	601
"E5"	0-6"	05/25/99	12200
"E5DUP"	0-6"	05/25/99	12400
"E5REP"	0-6"	05/25/99	11900
"E5"	6-12"	06/03/99	U
"E6"	0-6"	05/25/99	190J
"E7"	0-6"	05/25/99	139J
"E8"	0-6"	05/27/99	U
"E9"	0-6"	05/27/99	189J
"F4"	0-6"	05/25/99	1053
"F4"	6-12"	06/05/99	U
"F5"	0-6"	05/25/99	568
"F6"	0-6"	05/25/99	294
"F7"	0-6"	05/25/99	U
"F8"	0-6"	05/27/99	U
"F9"	0-6"	05/27/99	140J
"G4"	0-6"	05/25/99	589
"G5"	0-6"	05/25/99	1560
"G5"	6-12"	06/03/99	U
"G6"	0-6"	05/25/99	439
"G7"	0-6"	05/25/99	U
"G7DUP"	0-6"	05/25/99	U
"G7REP"	0-6"	05/25/99	U
"G8"	0-6"	05/27/99	U
"G9 <b>"</b>	0-6"	05/27/99	U
"H4"	0-6"	05/25/99	1060
"H4INTER"	0-6"	06/07/99	U
"H4INTERDUP"	0-6"	06/07/99	U
"H4INTERREP"	0-6"	06/07/99	122J
"H4"	6-12"	06/05/99	1050
"H4DUP"	6-12"	06/05/99	1200
"H4REP"	6-12"	06/05/99	1210
"H4"	12-15"	06/07/99	U
"H5"	0-6"	05/25/99	1240
"H5"	6-12"	06/03/99	U
"H5DUP"	6-12"	06/03/99	U
"H5REP"	6-12"	06/03/99	U
"H6"	0-6"	05/25/99	115J

## TABLE 1 XRF RESULTS

SAMPLE	ID	DATE	LEAD	
"H7"	0-6"	05/25/99	112J	
"H8"	0-6"	05/27/99	U	
"H9"	0-6"	05/27/99	U	
"H9DUP"	0-6"	05/27/99	211J	
"H9REP"	0-6"	05/27/99	94J	
"10"	0-6"	05/25/99	210J	
" 1"	6-12"	06/07/99	5420	
"11"	12-15"	06/08/99	112J	
"12"	6-12"	06/07/99	U	
"13"	6-12"	06/07/99	111J	
"I3DUP"	6-12"	06/07/99	143J	
"I3REP"	6-12"	06/07/99	U	
" 4"	0-6"	05/25/99	341	
"15"	0-6"	05/25/99	732	
"16"	0-6"	05/25/99	U	
"I6DUP"	0-6"	05/25/99	U	
"I6REP"	0-6"	05/25/99	U	
"17"	0-6"	05/25/99	U	
"18"	0-6"	05/27/99	U	
"19"	0-6"	05/27/99	U	
"JO"	0-6"	05/25/99	247J	
"J1"	12-15"	06/08/99	175J	
"J4"	0-6"	05/25/99	588	
"J5"	0-6"	05/25/99	577	
"J6"	0-6"	05/25/99	140J	
"J7"	0-6"	05/25/99	U	
"J8"	0-6"	05/27/99	U	
"J9"	0-6"	05/27/99	U	
"K0"	0-6"	05/25/99	3290	
"K0"	6-12"	06/07/99	707	
"K1"	0-6"	05/25/99	384	
"K1DUP"	0-6"	05/25/99	280	Í
"K1REP"	0-6"	05/25/99	432	
"K2"	0-6"	05/25/99	484	
"K3"	0-6"	05/25/99	650	-
"K4"	0-6"	05/25/99	507	-
"K5"	0-6"	05/25/99	498	
"K6"	0-6"	05/25/99	U	
"K7"	0-6"	05/25/99	131J	
"K8"	0-6"	05/27/99	U	1
"K9"	0-6"	05/27/99	Ū	1
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## TABLE 1 XRF RESULTS

SAMPLE I	)	DATE	LEAD
"LO"	0-6"	05/25/99	339
"LODUP"	0-6"	05/25/99	302
"LOREP"	0-6"	05/25/99	484
"L1"	0-6"	05/25/99	748
"L2"	0-6"	05/25/99	602
"L3"	0-6"	05/25/99	343
"L4"	0-6"	05/25/99	437
"L5"	0-6"	05/25/99	U
"16"	0-6"	05/25/99	443
"L7"	0-6"	05/25/99	U
"L8"	0-6"	05/27/99	U
"L9"	0-6"	05/27/99	U
"L9DUP"	0-6"	05/27/99	U
"L9REP"	0-6"	05/27/99	118J
"L9REPREP"	0-6"	05/27/99	U
"MO"	0-6"	05/25/99	452
"MODUP"	0-6"	05/25/99	375
"MOREP"	0-6"	05/25/99	385
"MOREPREP"	0-6"	05/25/99	501
"M1"	0-6"	05/25/99	182J
"M2"	0-6"	05/25/99	193J
"M3"	0-6"	05/25/99	108J
"M4"	0-6"	05/25/99	U
"M5"	0-6"	05/25/99	179J
"M6"	0-6"	05/25/99	131J
"M7"	0-6"	05/25/99	2620
"M7"	6-12"	06/07/99	135J
"M8"	0-6"	05/27/99	U
"M9"	0-6"	05/27/99	210J
"N0"	0-6"	05/25/99	1570
"NODUP"	0-6"	05/25/99	1010
"NOREP"	0-6"	05/25/99	1190
"NO"	6-12"	06/07/99	U
"N1"	0-6"	05/25/99	U
"N2"	0-6"	05/25/99	147J
"N3"	0-6"	05/25/99	209J
"N <b>4"</b>	0-6"	05/25/99	153J
"N5"	0-6"	05/25/99	U
"N6"	0-6"	05/25/99	U
"N7"	0-6"	05/25/99	U
"N8"	0-6"	05/27/99	U .

## TABLE 1 XRF RESULTS

SAMPLE ID		DATE	LEAD
"N9"	0-6"	05/27/99	U
"00"	0-6"	05/25/99	911
"OODUP"	0-6"	05/25/99	717
"OOREP"	0-6"	05/25/99	863
"00"	6-12"	06/07/99	U
"01"	0-6"	05/25/99	140J
"02"	0-6"	05/25/99	103J
"O3"	0-6"	05/25/99	93J
"O4" 🤢	0-6"	05/25/99	165
"05"	0-6"	05/25/99	U
"O6"	0-6"	05/25/99	U
"07"	0-6"	05/25/99	U
"O8"	0-6"	05/27/99	U
"09"	0-6"	05/27/99	U
"P0"	0-6"	05/25/99	790
"PODUP"	0-6"	05/25/99	685
"POREP"	0-6"	05/25/99	924
"P0"	6-12"	06/07/99	196J
"P1"	0-6"	05/25/99	239J
"P2"	0-6"	05/25/99	181J
"P3"	0-6"	05/25/99	161J
"P4"	0-6"	05/25/99	U
"P5"	0-6"	05/25/99	U
"P6 <b>"</b>	0-6"	05/25/99	U
"P7"	0-6"	05/25/99	U
"P8"	0-6"	05/27/99	U
"P9"	0-6"	05/27/99	U
"P9DUP"	0-6"	05/27/99	U
"P9REP"	0-6"	05/27/99	U
"Q0 <b>"</b>	0-6"	05/27/99	U
"Q0DUP"	0-6"	05/27/99	93J
"QOREP"	0-6"	05/27/99	101J
"Q1"	0-6"	05/27/99	345
"Q2"	0-6"	05/27/99	105J
"Q3"	0-6"	05/27/99	U
"Q4"	0-6"	05/27/99	U
"Q5"	0-6"	05/27/99	U
"Q6"	0-6"	05/27/99	Ū
"Q7"	0-6"	05/27/99	U
"Q7DUP"	0-6"	05/27/99	U
"Q7REP"	0-6"	05/27/99	U

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# TABLE 1 XRF RESULTS

SAMPLE ID		DATE	LEAD
"Q8"	0-6"	05/27/99	U se
"Q9"	0-6"	05/27/99	U
"R0"	0-6"	05/25/99	6900
"RODUP"	0-6"	05/25/99	7110
"ROREP"	0-6"	05/25/99	6670
"R0"	6-12"	06/08/99	126J
"R1"	0-6"	05/25/99	11210
"R1"	6-12"	06/08/99	837
"R1"	12-15"	06/08/99	132J
"R1DUP"	12-15"	06/08/99	U
"R1REP"	12-15"	06/08/99	211J
"R2"	0-6"	05/25/99	623
"R3"	0-6"	05/25/99	2040
"R3"	6-12"	06/08/99	U
"R4"	0-6"	05/25/99	572
"R5"	0-6"	05/25/99	353
"R6"	0-6"	05/25/99	292
"R7"	0-6"	05/25/99	515
"RR0"	0-6"	05/27/99	109J
"RR0DUP"	0-6"	05/27/99	183J
"RROREP"	0-6"	05/27/99	U
"RR1"	0-6"	05/27/99	410
"RR2"	0-6"	05/27/99	U
"RR3"	0-6"	05/27/99	U
"RR4"	0-6"	05/27/99	U
"RR5"	0-6"	05/27/99	U
"RR6"	0-6"	05/27/99	U
"RR7"	0-6"	05/27/99	U
"RRR0"	0-6"	05/27/99	507
"RRRR0"	0-6"	05/27/99	264J
"RRRR0DUP"	0-6"	05/27/99	306
"RRRROREP"	0-6"	05/27/99	252J
"S0"	0-6"	05/25/99	343
"SODUP"	0-6"	05/25/99	228J
"SOREP"	0-6"	05/25/99	259J
"S1"	0-6"	05/25/99	892
"S1DUP"	6-12"	06/08/99	207J
"S1REP"	6-12"	06/08/99	163J
"S1"	6-12"	06/08/99	117J
"S2"	0-6"	05/25/99	676
"S3"	0-6"	05/25/99	226J

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## TABLE 1 XRF RESULTS

SAMPLE	ID	DATE	LEAD
"S4"	0-6"	05/25/99	131J
"S5"	0-6"	05/25/99	U
"S6"	0-6"	05/25/99	124J
"S7"	0-6"	05/25/99	366
"T1"	0-6"	05/25/99	1350
"T1DUP"	0-6"	05/25/99	1380
"T1REP"	0-6"	05/25/99	1270
"T1"	6-12"	06/08/99	2900
"T1"	12-15"	06/08/99	U
"T2"	0-6"	05/25/99	130J
"T3"	0-6"	05/25/99	U
"T4"	0-6"	05/25/99	U
"T5"	0-6"	05/25/99	U
"T6"	0-6"	05/25/99	U
"T7"	0-6"	05/25/99	206J
"U0"	0-6"	05/25/99	424
"UODUP"	0-6"	05/25/99	386
"UOREP"	0-6"	05/25/99	341
"U1"	0-6"	05/25/99	515
"U2"	0-6"	05/25/99	195J
"U3"	0-6"	05/25/99	U
"U4"	0-6"	05/25/99	U
"Ū5 <b>"</b>	0-6"	05/25/99	330
"U6 <b>"</b>	0-6"	05/25/99	U
"U7 <b>"</b>	0-6"	05/25/99	U
"V0"	0-6"	05/25/99	7940
"VODUP"	0-6"	05/25/99	7010
"VOREP"	0-6"	05/25/99	7580
"V0"	6-12"	06/08/99	3280
"V0"	12-15"	06/08/99	259J
"V1"	0-6"	05/27/99	1220
"V1"	6-12"	06/08/99	U
"V2"	0-6"	05/27/99	148J
"V3"	0-6"	05/27/99	U
"V4 <b>"</b>	0-6"	05/27/99	327
"V5 <b>"</b>	0-6"	05/27/99	142J
"V6 <b>"</b>	0-6"	05/27/99	U
"V7"	0-6"	05/27/99	285
"W0"	0-6"	05/27/99	624
"WODUP"	0-6"	05/27/99	716
"WOREP"	0-6"	05/27/99	544

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## TABLE 1 XRF RESULTS

SAMPLE ID		DATE	LEAD
"W1"	0-6"	05/27/99	1480
"W1"	6-12"	06/08/99	291
"W2"	0-6"	05/27/99	292
"W3"	0-6"	05/27/99	171J
"W4"	0-6"	05/27/99	U
"W5"	0-6"	05/27/99	U
"W6"	0-6"	05/27/99	228J
"W7"	0-6"	05/27/99	228J
"X0"	0-6"	05/27/99	278
"X1"	0-6"	05/27/99	631
"X2"	0-6"	05/27/99	103J
"SCDRAIN"	6-12"	06/10/99	568
"SEDRAIN"	6-12"	06/10/99	224J
"SEDRAINDUP"	6-12"	06/10/99	256J
"SEDRAINREP"	6-12"	06/10/99	316
"SWDRAIN"	12-15"	06/10/99	637
"SWDRAIN"	6-12"	06/10/99	8940
"DRAIN0"	0-6"	05/27/99	2060
"AA3"	0-6"	06/08/99	5230
"AA3"	6-12"	06/09/99	U
"AA4"	0-6"	06/08/99	2150
"AA4"	6-12"	06/09/99	2050
"AA4"	9-12"	06/09/99	1040
"AA4"	12"	06/09/99	853
"AA4"	12-15"	06/09/99	U
"AA5"	0-6"	06/08/99	2190
"AA5"	9-12"	06/09/99	495
"AA6"	6-12"	06/08/99	449
"AA6DUP"	6-12"	06/08/99	506
"AA6REP"	6-12"	06/08/99	502
"AA7 <b>"</b>	6-12"	06/08/99	715
"AA8"	0-6"	06/02/99	201J
"AA9"	0-6"	06/02/99	<u> </u>
"AA10"	0-6"	06/02/99	U
"AA10DUP"	0-6"	06/02/99	U
"AA10REP"	0-6"	06/02/99	U
"BB3"	0-6"	06/08/99	2990
"BB3"	6-12"	06/09/99	337
"BB4"	0-6"	06/08/99	1510
"BB4"	6-12"	06/09/99	655
"BB5"	0-6"	06/08/99	1480
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#### TABLE 1 XRF RESULTS

	SAMPLE	ID	DATE	LEAD
	"BB5"	6-12"	06/09/99	258J
	"BB6"	0-6"	06/08/99	1140
	"BB6"	6-12"	06/09/99	113J 🕤
	"BB7"	0-6"	06/08/99	271J
	"BB7DUP"	0-6"	06/08/99	203J
	"BB7REP"	0-6"	06/08/99	221J
	"CC3"	0-6"	06/08/99	1920
	"CC3"	6-12"	06/09/99	2130
	"CC3"	9-12"	06/09/99	1180
	"CC4"	0-6"	06/08/99	868
	"CC4"	6-12"	06/09/99	408
	"CC5"	0-6"	06/08/99	1000
	"CC5"	6-12"	06/09/99	247J
	"CC5DUP"	6-12"	06/09/99	142J
	"CC5REP"	6-12"	06/09/99	112J
	"CC6"	0-6"	06/08/99	698
	"CC7"	0-6"	06/08/99	376
	"DD2"	9-12"	06/09/99	852
	"DD2DUP"	9-12"	06/09/99	881
	"DD2REP"	9-12"	06/09/99	952
	"DD3"	0-6"	06/08/99	903
	"DD3"	6-12"	06/09/99	754
2 -	"DD3"	9-12"	06/09/99	1070
	"DD4"	0-6"	06/08/99	896
	"DD4"	6-12"	06/09/99	358
	"DD5"	0-6"	06/08/99	560
	"DD6"	0-6"	06/08/99	428
	"EE2"	0-6"	06/08/99	440
	"EE2DUP"	0-6"	06/08/99	390
	"EE2REP"	0-6"	06/08/99	334
	"EE3"	0-6"	06/08/99	298
	"EE4"	0-6"	06/08/99	373
	"EE5"	0-6"	06/08/99	448
	"BCK1"	0-6"	06/09/99	U
	"BCK2"	0-6"	06/09/99	U
	"BCK3"	0-6"	06/09/99	U
	"BCK3DUP"	0-6"	06/09/99	U
	"BCK3REP"	0-6"	06/09/99	U
	"BCK4"	0-6"	06/09/99	U
	"BCK5"	0-6"	06/09/99	U
Í	"BCK6"	0-6"	06/09/99	227

#### All concentrations in PPM Lead (mg/kg)

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#### TABLE 1 XRF RESULTS

SAMPLE I	D	DATE	LEAD
"TRAILOR1"	0-6"	06/07/99	121J
"TEST1"	0-6"	06/02/99	150J
"TEST2"	0-6"	06/02/99	U
"TEST3"	0-6"	06/02/99	130J
"TEST4"	0-6"	06/02/99	U
"TEST5"	0-6"	06/02/99	U
"TEST6"	0-6"	06/10/99	U
"TEST7"	0-6"	06/10/99	U
"TEST8"	0-6"	06/10/99	U'
"TEST9"	0-6"	06/10/99	U
"TEST10"	0-6"	06/10/99	U

J- estimated, between detection limit and quantitation limit U- below detection limit

#### TABLE 2:

#### XRF ANALYSIS OF THE LOW NIST STANDARD NIST 2709

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## TABLE 2XRF ANALYSIS OF THE LOW NIST STANDARD (NIST 2709)(RAW DATA)

ID	DATE	LEAD
"2709"	05/25/99	-25
"2709"	05/25/99	-76
"2709"	05/25/99	10
"2709"	05/25/99	-20
"2709"	05/25/99	-6
"2709"	05/25/99	-14
"2709"	05/25/99	-63
"2709"	05/25/99	-31
"2709"	05/25/99	-59
"2709"	05/25/99	-7
"2709"	05/25/99	4
"2709"	05/25/99	31
"2709"	05/25/99	2
"2709"	05/25/99	10
"2709"	05/25/99	8
"2709"	05/25/99	-24
"2709"	05/25/99	68
"2709"	05/27/99	-5
"2709"	05/27/99	33
"2709"	05/27/99	-16
"2709"	05/27/99	24
"2709"	05/27/99	7
"2709"	05/27/99	54
"2709"	05/27/99	-23
"2709"	05/27/99	38
"2709"	05/27/99	-2
"2709"	05/27/99	6
"2709"	06/02/99	-12
"2709"	06/02/99	18
"2709"	06/03/99	48
"2709"	06/03/99	-25
"2709"	06/05/99	-22
"2709"	06/05/99	19
"2709"	06/05/99	-1
"2709"	06/07/99	-8.5
"2709"	06/07/99	5
"2709"	06/07/99	-38
"2709"	06/07/99	67
"2709"	06/07/99	-2
"2709"	06/08/99	5

## TABLE 2XRF ANALYSIS OF THE LOW NIST STANDARD (NIST 2709)(RAW DATA)

ID	DATE	LEAD
"2709"	06/08/99	-28
"2709"	06/08/99	16
"2709"	06/08/99	63
"2709"	06/08/99	-4.9
"2709"	06/08/99	34
"2709"	06/09/99	-25
"2709"	06/09/99	-48
"2709"	06/09/99	3
"2709"	06/09/99	-6
"2709"	06/09/99	30
"2709"	06/10/99	29
2709"	06/10/99	39

AVERAGE:	1.97
STD:	30.8
MDL:	92.3
MQL:	277
NIST VALUE:	18.9

All concentrations in PPM Lead (mg/kg)

**TABLE 3.1:** 

#### COMPARISON OF REPLICATE SAMPLES

### TABLE 3.1COMPARISON OF REPLICATE SAMPLES

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SAMPLE ID		DATE	LEAD	RPD*
"C5"	0-6"	05/25/99	845	19.4
"C5REP"	0-6"	05/25/99	1140	8.7
"C5REPREP"	0-6"	05/25/99	1160	10.6
"D9"	0-6"	05/27/99	U	-
"D9REP"	0-6"	05/27/99	U	-
"E5"	0-6"	05/25/99	12200	
"E5REP"	0-6"	05/25/99	11900	2.5
				L
"G7"	0-6"	05/25/99	<u> </u>	
"G7REP"	0-6"	05/25/99	<u> </u>	-
"H4INTER"	0-6"	06/07/99	U	-
"H4INTERREP"	0-6"	06/07/99	122J	
"H4"	_6-12"	06/05/99	1050	
"H4REP"	6-12"	06/05/99	1210	14.2
"H5"	6-12"	06/03/99	<u> </u>	-
"H5REP"	6-12"	06/03/99	<u> </u>	
				ļ
"H9"	0-6"	05/27/99	<u> </u>	
"H9REP"	0-6"	05/27/99	94J	-
	0.401	00/07/00	4441	 
" 3"	6-12"	06/07/99		
"I3REP"	6-12"	06/07/99	<u> </u>	-
NC"	0.6"	05/25/00		
	0-0	05/25/99		
	-0-0	00/20/99	<u> </u>	
<sup>N</sup> K1 <sup>N</sup>	0-6"	05/25/99	384	
	0-6"	05/25/99	432	11.8
"I O"	0-6"	05/25/99	339	
"I OREP"	0-6"	05/25/99	484	35.2
"  9"	0-6"	05/27/99	U	-
"L9REP"	0-6"	05/27/99	118J	-
"L9REPREP"	0-6"	05/27/99	υ	-

#### TABLE 3.1 COMPARISON OF REPLICATE SAMPLES

SAMPLE I	)	DATE	LEAD	RPD*
"MO"	0-6"	05/25/99	452	1.3
"MOREP"	0-6"	05/25/99	385	13.7
"MOREPREP"	0-6"	05/25/99	501	12.4
"NO"	0-6"	05/25/99	1570	
"NOREP"	0-6"	05/25/99	1190	27.5
"00"	0-6"	05/25/99	911	
"OOREP"	0-6"	05/25/99	863	5.4
"PO"	0-6"	05/25/99	790	
"POREP"	0-6"	05/25/99	924	15.6
"PQ"	0-6"	05/27/99	U	
"P9REP"	0-6"	05/27/99	U	
"00"	0.6"	05/27/00		
"QOREP"	0-6"	05/27/99	101J	
#07#	0.6"	05/07/00	F 1	
"Q7REP"	0-6"	05/27/99	U U	
	0.0"	05/05/00		
"R0" "R0REP"	0-6"	05/25/99	6670 3.1	304 2
<u>"R1"</u>	12-15"	06/08/99	132J	
"R1REP"	12-15"	06/08/99	211J	46.2
"RR0"	0-6"	05/27/99	109J	-
"RROREP"	0-6"	05/27/99	U	-
"RRRR0"	0-6"	05/27/99	264J	
"RRRROREP"	0-6"	05/27/99	252J	4.7
"S0"	0-6"	05/25/99	343	
"SOREP"	0-6"	05/25/99	259J	28.1
"S1"	6-12"	06/08/99	117J	
"S1REP"	6-12"	06/08/99	163	33.1

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#### TABLE 3.1 COMPARISON OF REPLICATE SAMPLES

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SAMPLE ID	····	DATE	LEAD	RPD*
"T1"	0-6"	05/25/99	1350	
"T1REP"	0-6"	05/25/99	1270	6.1
"U0"	0-6"	05/25/99	424	
"UOREP"	0-6"	05/25/99	341	21.5
		·····		
"V0"	0-6"	05/25/99	7940	
"VOREP"	0-6"	05/25/99	7580	4.6
"WO"	0-6"	05/27/99	624	
"WOREP"	0-6"	05/27/99	544	13.6
			· · · · · · · · · · · · · · · · · · ·	
"SEDRAIN"	6-12"	06/10/99	224J	
"SEDRAINREP"	6-12"	06/10/99	316	34.4
"AA6"	6-12"	06/08/99	449	
"AA6REP"	6-12"	06/08/99	502	11.1
"AA10"	0-6"	06/02/99	υ	-
"AA10REP"	0-6"	06/02/99	U	-
		· · ·		
"BB7"	0-6"	06/08/99	271J	
"BB7REP"	0-6"	06/08/99	221J	20.4
"CC5"	6-12"	06/09/99	247J	
"CC5REP"	6-12"	06/09/99	112J	75
		<u>,,,</u>		
"DD2"	9-12"	06/09/99	852	
"DD2REP"	9-12"	06/09/99	952	11.1
"EE2"	0-6"	06/08/99	440	
"EE2REP"	0-6"	06/08/99	334	27.4
"BCK3"	0-6"	06/09/99	U	-
"BCK3REP"	0-6"	06/09/99	U	-

J- estimated, between detection limit and quantitation limit

U- below detection limit

**TABLE 3.2:** 

#### COMPARISON OF DUPLICATE SAMPLES

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#### TABLE 3.2 COMPARISON OF DUPLICATE DATA

1

SAMPLE ID	· · · · · · · · · · · · · · · · · · ·	DATE	LEAD	RPD*
"C5"	0-6"	05/25/99	845	
"C5DUP"	0-6"	05/25/99	1010	17.8
"D9"	0-6"	05/27/99	U	-
"D9DUP"	0-6"	05/27/99	Ü	-
	<u></u>			
"E5"	0-6"	05/25/99	12200	
"E5DUP"	0-6"	05/25/99	12400	1.6
"G7"	0-6"	05/25/99	U	-
"G7DUP"	0-6"	05/25/99	<u> </u>	-
		0.0107.000		
"H4INTER"	0-6"	06/07/99	U	-
"H4INTERDUP"	0-6"	06/07/99	<u> </u>	-
11 1 41	6 10	06/05/00	1050	
	6 10"	06/05/99	1200	12.2
	0-12	00/05/99	1200	10.0
"H5"	6-12"	06/03/99	U	_
"H5DUP"	6-12"	06/03/99	Ū	
"H9"	0-6"	05/27/99	U	-
"H9DUP"	0-6"	05/27/99	211J	-
		· · · · · · · · · · · · · · · · · · ·		
" 3"	6-12"	06/07/99	111J	
"I3DUP"	6-12"	06/07/99	143J	25
" 6"	0-6"	05/25/99	<u> </u>	-
"I6DUP"	0-6"	05/25/99	<u> </u>	-
<u>"K1"</u>	0-6"	05/25/99	384	
"K1DUP"	0-6"	05/25/99	280	31.5
"	0.6"	05/25/00	330	
	0-0	05/25/99	302	11.5
	0-0	00/20/99	002	<u> </u>
"L9"	0-6"	05/27/99	U	-
	0-6"	05/27/99	Ū	-
"MO"	0-6"	05/25/99	452	
"MODUP"	0-6"	05/25/99	375	18.5

#### TABLE 3.2 COMPARISON OF DUPLICATE DATA

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SAMPLE I	)	DATE	LEAD	RPD*
"NO"	0-6"	05/25/99	1570	
"NODUP"	0-6"	05/25/99	1010	43.4
			~~~	
"00"	0-6"	05/25/99	911	
"OODUP"	0-6"	05/25/99	717	23.9
"P0"	0-6"	05/25/99	790	
"PODUP"	0-6"	05/25/99	685	14.2
"P9"	0-6"	05/27/99	U	-
"P9DUP"	0-6"	05/27/99	U	-
				····
"Q0"	0-6"	05/27/99	U	-
"QODUP"	0-6"	05/27/99	93J	-
		<i></i>		
"Q7"	0-6"	05/27/99	U	-
"Q7DUP"	0-6"	05/27/99	U	-
<u></u>				
"R0"	0-6"	05/25/99	6900	
"RODUP"	0-6"	05/25/99	7110	3
,,,				-
<u>"R1"</u>	12-15"	06/08/99	132J	-
"R1DUP"	12-15"	06/08/99	0	-
	0.01		1001	
"RR0"	0-6"	05/27/99	109J	<u> </u>
"RR0DUP"	0-6"	05/27/99	183J	50.2
	0.01	05/07/00	0041	
"RRRR0"	0-6"	05/27/99	264J	14 5
"RRRRUDUP"	0-6"	05/2//99	306	14.5
	0.0"	05/05/00	242	
"SU"	0-0	05/25/99	343	40.3
"SUDUP"	0-0	05/25/99	220J	40.5
"01"	6 1 2"	06/08/00	1171	
"SI "C1DLID"	6 12	06/08/00	2071	55.6
5100-	0-12	00/00/99	2013	
<u>ייד</u> ווי	0.6"	05/25/00	1350	<u> </u>
	0-0	05/25/00	1380	22
	0-0	00120199	1300	<i>L.L</i>
"LIO"	0.6"	05/25/00	121	
	0-0	05/25/00	396	03
UUUUP	0-0	00120199	300	9.0

#### TABLE 3.2 COMPARISON OF DUPLICATE DATA

ı.

SAMPLE ID		DATE	LEAD	RPD*
"V0"	0-6"	05/25/99	7940	
"VODUP"	0-6"	05/25/99	7010	12.4
"W0"	0-6"	05/27/99	624	
"WODUP"	0-6"	05/27/99	716	13.7
"SEDRAIN"	6-12"	06/10/99	224J	
"SEDRAINDUP"	6-12"	06/10/99	256J	13.4
		-		
"AA6"	6-12"	06/08/99	449	
"AA6DUP"	6-12"	06/08/99	506	11.9
"AA10"	0-6"	06/02/99	U	-
"AA10DUP"	0-6"	06/02/99	U	-
"BB7"	0-6"	06/08/99	271J	
"BB7DUP"	0-6"	06/08/99	203J	28.7
"CC5"	6-12"	06/09/99	247J	
"CC5DUP"	6-12"	06/09/99	142J	54.2
	-			
"DD2"	9-12"	06/09/99	852	
"DD2DUP"	9-12"	06/09/99	881	3.4
"EE2"	0-6"	06/08/99	440	
"EE2DUP"	0-6"	06/08/99	390	12
"BCK3"	0-6"	06/09/99	<u> </u>	-
"BCK3DUP"	0-6"	06/09/99	U	-

J- estimated, between detection limit and quantitation limit

U- below detection limit

#### **TABLE 4.1:**

#### APPLICATION MODEL VERIFICATION NIST 2710

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#### TABLE 4.1 APPLICATION MODEL VERIFICATION (NIST 2710) (RAW DATA)

ID	DATE	LEAD
"2710"	05/25/99	4552
"2710"	05/25/99	4669
"2710"	05/25/99	4353
"2710"	05/25/99	4363
"2710"	05/25/99	4769
"2710"	05/25/99	4764
"2710"	05/25/99	4767
"2710"	05/25/99	4476
"2710"	05/25/99	4600
"2710"	05/25/99	4470
"2710"	05/25/99	4458
"2710"	05/25/99	4506
"2710"	05/25/99	4782
"2710"	05/25/99	4716
"2710"	05/25/99	4639
"2710"	05/25/99	4562
"2710"	05/27/99	4794
"2710"	05/27/99	4951
"2710"	05/27/99	4665
"2710"	05/27/99	4324
"2710"	05/27/99	4897
"2710"	05/27/99	4370
"2710"	05/27/99	4426
"2710"	05/27/99	4974
"2710"	05/27/99	4576
"2710"	05/27/99	4986
"2710"	06/02/99	4644
"2710"	06/02/99	4235
"2710"	06/03/99	4765
"2710"	06/03/99	4782
"2710"	06/05/99	4329
"2710"	06/05/99	4722
"2710"	06/05/99	4726
"2710"	06/07/99	4456
"2710"	06/07/99	4754
"2710"	06/07/99	4667
"2710"	06/07/99	4824
"2710"	06/07/99	4921
"2710"	06/08/99	4230
"2710"	06/08/99	5065

#### TABLE 4.1 APPLICATION MODEL VERIFICATION (NIST 2710) (RAW DATA)

DATE	LEAD
06/08/99	4944
06/08/99	4698
06/08/99	4708
06/08/99	5015
06/09/99	4400
06/09/99	4718
06/09/99	4589
06/09/99	4369
06/09/99	4756
06/10/99	39
06/10/99	4845
06/10/99	4760
	DATE 06/08/99 06/08/99 06/08/99 06/09/99 06/09/99 06/09/99 06/09/99 06/09/99 06/09/99 06/10/99 06/10/99

AVERAGE:	4565
STD:	674
RSD(%):	14.8
NIST VALUE:	5532
RPD(%):	17.5

All concentrations in PPM (mg/kk) Lead

#### **TABLE 4.2:**

#### APPLICATION MODEL VERIFICATION NIST 2711

#### TABLE 4.2 APPLICATION MODEL VERIFICATION (NIST 2711) (RAW DATA)

ID	DATE	LEAD					
"2711"	05/25/99	1174					
"2711"	06/05/99	1036					
"2711"	06/09/99	1077					
"2711"	06/02/99	937					
"2711"	06/09/99	1047					
"2711"	05/25/99	923					
"2711"	05/25/99	1003					
"2711"	05/27/99	1124					
"2711"	06/09/99	917					
"2711"	06/05/99	938					
"2711"	05/25/99	953					
"2711"	06/10/99	1010					
"2711"	06/05/99	1039					
"2711"	05/25/99	1119					
"2711"	05/25/99	1066					
"2711"	06/03/99	1013					
"2711"	06/10/99	1162					
"2711"	06/09/99	1234					
"2711"	05/27/99	1105					
"2711"	06/02/99	997					
"2711"	06/08/99	1218					
"2711"	06/07/99	911					
"2711"	05/27/99	936					
"2711"	06/08/99	1009					
"2711"	05/27/99	945					
"2711"	06/07/99	892					
"2711"	05/27/99	1095					
"2711"	06/07/99	911					
"2711"	06/08/99	1071					
"2711"	05/27/99	1137					
"2711"	06/09/99	1049					
"2711"	06/08/99	949					
"2711"	06/07/99	953					
"2711"	06/07/99	886					
"2711"	06/08/99	975					
"2711"	05/27/99	1033					
"2711"	06/08/99	1154					
"2711"	05/27/99	1058					
"2711"	05/27/99	1102					
2711"	06/03/99	1101					

#### TABLE 4.2 APPLICATION MODEL VERIFICATION (NIST 2711) (RAW DATA)

ID	DATE	LEAD
"2711"	05/27/99	943
"2711"	05/25/99	1063
"2711"	05/25/99	983
"2711"	05/25/99	1007
"2711"	05/25/99	1103
"2711"	05/25/99	1067
"2711"	05/25/99	1129
"2711"	05/25/99	1084
"2711"	05/25/99	1085
"2711"	05/25/99	1086
"2711"	05/25/99	1023

AVERAGE:	1036
STD:	86
RSD(%):	8.3
NIST VALUE:	1162
RPD(%):	10.8

All concentrations in PPM Lead (mg/kg)

#### TABLE 5:

#### XRF RESULTS v. ICP DATA

# TABLE 5 XRF RESULTS V. ICP DATA

ICP	J 9.2	J 118	J 61.6	J 19.3	J 26	J 40.3	J 22.8	J 50.7	J 71.3	J 9.2	J 26.4	101	92.5	98.8	J 229	J 200	J 230	316	317	668	797	813	799	2440	770	1120	1400		879	879 1860	879 1860 4350	879 879 1860 4350 7730	879 879 1860 4350 7730 15300	879 879 1860 4350 7730 15300 46,200	1500 1500 1500 15300 15300 15300 15300 15300 15300 15300 15300 15300 15300 15300	1400 879 879 1860 4350 15300 15300 46,200 36700 6950	1400 879 1860 1860 15300 15300 15300 6950 6950
- 77	ר 65 ר	ן 1 סב ר	ר 35 ר	ם 35 ר	ה 32 ר	ר 65 ר	92 L	92 L	ך 32 ר	37 L	92 L	ם 35 ר	105 J	195 J	196 J	201 J	239 J	327	376	410	631	637	782	892	911	1220	1480	1570		2040	2040 3280	2040 3280 5230	2040 3280 5230 11200	2040 3280 5230 11200 40110	2040 3280 5230 11200 40110 93700	2040 3280 5230 11200 40110 93700 93700	2040 3280 5230 11200 40110 93700 1240
Ч.Е	.9-0	0-6'	0- <b>6'</b>	-9-0	.9-0	.9-0	0-6'	12-15"	.9-0	.9-0	0-6'	6-12"	.9-0	.9-0	6-12"	0-6'	<b>0-</b> 6'	.9-0	.9-0	.9-0	0-6'	,9-0	.9-0	,9-0	.9-0	,9-O	.9-0	0-6'	0.6	5	6-12"	6-12" 0-6"	0-6"	6-12" 0-6" 0-6'	0-6' 0-6'	6-12" 0-6" 0-6' 0-6'	0-61 0-61 0-61 0-61
SAMF	A10	F7	W5	T3	07	KG	J7	H4	69	K8	D9	AA3	Q2	U2	P0	AA8	P1	V4	cc7	RR1	X1	C7	A9	S1	00	V1	W1	NO	ň	2	29	VO A3	VO R1	V0 R1 A5	VO AA3 A5 B5	R1 H5 H5	AA3 AA3 H5 H5

4

Constant (Y intercept) X Coefficient(s) R Squared No. of Observations Degrees of Freedom

	<u>xrf&lt;4000</u>	-15.1725	1.150603	0.85112022	30	28
all data	less 40000	145.7452	1.456938	0.817621	34	32
	<u>all data</u>	1546.557	0.501772	0.720926	36	34



#### APPENDIX A - CHAIN OF CUSTODY FORMS

										<u> </u>	* •.=
1.1. Jan	CHAIN (	DF CJ	STC	DY	RE	COI	RD	Matra I	ox No.		Teservative Box No.:
EP.No.								1. Sector	• Water	1	. HCI
4819		ᢉᡃ᠋ᢉᢧᢋ	C in	<u>S</u> V	1	J		2. Ground	Water		L HN03
DNo			)U&	J	- [0	FT		3. Losche	to s		I. Na2504
							1	4. Rinsets	•	4	. H2SO4
7002147	SUPERFUND	ECHNICAL /	LSSESSM	ent ya	D RESPO	ONSE TE	MA	5. Soil/Se	diment		S. Other (Specify)
	 •	EPA CONT	7.ACT 68	-₩5-00	19			6.01			S. Ice Only
		Pane: 904-225-	-5116 ži=	904-224	-7037			1. WARE	(Specify)		
		For	- Wear		USEP	Region	<u>л П Sī</u>	ART	()	!	
End Vertell and w		Smire	201 10	90 Kin	George	a Frat I	losa. 3	Laison, I	iew Jerni	ev 0883	7-5705
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Saction Manage	MM/DD/YY/Time	Matrix Low-L	Туре	Preserv.	YOA INN	(PERIP	CHITAI	ICH DEN	COX INTA	<u>i</u>	C12-1
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I ·	l	box n High-	Cab-G	) hax (m)	<u>   </u>	1	<u> </u>		1 1	1	
15 (0-6")	5/12/11	5	G	N			<u> </u>	<u>   </u>		To	AL LEAD
er (A-(*)				}							
			<u> </u>				Ť				
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-7 (0-6")			<u>-</u>								1
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r7 [0-6"]							1			<u> </u>	
K6 (0-6")			+			<u>   </u> 	<u> </u>				
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07 (0-6")	<u>     </u>		+						<u>   </u> 	<u> </u>	
P/ (0-6")			₩								¥
XRF C	UP SOIL SA	MAES									
erson Assuming R	sponsibility for Sample								Ti	ime	Date (hOM/DD/YY)
JOHN	BRENNAN										Chan al Carate
ample Number	Relinquished By:		Time	Date	Receive	i By:	~		R	minon ICT	Carrier of Caroly
ALL	49h7b	$\sim$	1130	4/1/45	7	ec	Еx			Spin	O TO CAB
Sample Number	Reinquished By:		Time	Der:	Receive	d B <del>y.</del>			R	ruson for	Change of Casody
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Semple Number	  Relinquined By:		  11256	Dec	Receive	d By:			i	rauon íca	Change of Chancy
				<u> </u>							

Loy F. Wesson, Inc. EDERAL PROGRAMS DIVISION

in Association with Resource Applications, Inc., R.E. Services Associates, PRC Environmental

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PNC	CHAIN C	)FC	7210	JD I	K	EC	JU.	RL	Mat	n.B	DX N	0	Prese	retive Box No.:	
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end vertal and w	ani vertal and written results to: Roy F. Westen, Inc., USEPA Region II START Strite 201, 1090 King Georges Fost Road, Edison, New Jersey 08857-5705 Attention: Smite Sumbaly, START Analytical Coordinator Sample Number   Sample Collection   Sample   Conc.   Sample   Sam														
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H5 (4-6")							,								
RR1 (0-6")															
02 (0.6")													Ś		
pmments:				<b>-</b> .				_							
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Roy F. Wester, Inc. FEDERAL PROGRAMS DIVISION

in Association with Resource Applications, Inc., R.E. Services Associates, PRC Environmental

			<u>a</u> m a			<b>~</b> ~~	. <b></b> F			20000000	The second s				
REP.No.	CHAIN	OFU	SIC	)DY	RE	COR	$\mathbf{D}_{\mathbf{i}}$	Matrix E	oz:No.	Pro	ervative Box No.:				
			<b></b>		1 /			i. Surface	Water	1. H	a				
4817		\ <b>Y</b> , <b>Y</b> ,I,E,	乙酮		2	ne 4		2. Ground	Water	2.H	DN03				
PO No.								3. Losche		3. 1	12304				
				арат <b>а</b> )		NSE TEA	w l	4. <u>Kunian</u> 5. Soil/Se	diment	5.0	ther (Specify)				
002147	· · · · ·		ZACT 6	↓-₩5-X	)19			6.01		6. I	c= Only				
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Sena vercai má w	TITLES TESTING TO:	Roy	r. West	00 F.	., USERA	Kegion	тот. Тот.	AKI			702				
1	Attention: Smith Sumbaly, START Analytical Coordinator														
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19 (0-6")	5/26/99					<u>   </u>				<u>  Toti</u>	AL LEAD				
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K8 (0-6")										<u> </u>					
XI (0-6")															
910 [0-6"]										<u> </u>					
AAB (0-6")	· ·									<u> </u>					
A5 (6-12")	6/4/99									 					
H4 (12-15")	6/4/99						<u> </u>								
10 (6-12")	6/7/99														
VO (6-12")	6/7/99								<u>  .</u>		<u>.</u>				
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Person Assuming Re	aponsibility for Semi	le:				<u> </u>		v	Tim	z D					
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Sample Number	Relinquighed By:		Time	Date	Received	By:			Re	uon for Chi	inge of Castody				
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Sample Number	Rainquished By:	<u> </u>	i iTize	Derra	Received	By:			Re	son Icr C	ange of Camody				
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Roy F. Wenn, Inc. FEDERAL PROGRAMS DIVISION

In Association with Resource Apolications, Inc., R.E. Services Associates, PRC Environmental

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erson Assuming Re	eponsibility for Sample	:						Time	Date (MM/DD/YY)
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Roy F. Wesson, Inc. FEDERAL PROGRAMS DIVISION

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**APPENDIX B - DAILY INSTRUMENT CALIBRATION WORKSHEETS** 

SPECTRACE 9000 FPXRF D	AILY INSTRUMENT CHECKOUT WORKSHEE	Т
DATE: <u>MAY 25, 1999</u>	SPECTRACE SERIAL NO: $0044$	200/200/200
SITE: ELECTRUK BATTERY SITE	TDD#	
ENERGY CALIBRATION	CHECK RESULTS (SAFETY SHIELD IN PLACE	)
Source: Cd 109 Range	Source: Fe55 Range	
Pb La <u>10.555</u> KeV (10.50 - 10.58)	$S K\alpha = 2.3026$ KeV (2.29 - 2.33)	
Pb $L\beta$ /2.633 KeV (12.57 - 12.65)	Source Line $3.8907$ KeV $(3.37 - 5.91)$	
Pb $L\gamma$ <u>776</u> KeV (14.72 - 14.80)	)	
Source Line <u>221027</u> Rev (22.00 * 22.14		
Source: Am 241	Range	
Pb Lα <i>Ν</i> . 524 KeV (	(10.49 - 10.59)	
Pb Lβ KeV	(12.56 - 12.66)	
Source Line <u>59.525</u> KeV (59.	3 - 59.7)	1200/200
IRON Ka RESOLUTION	CALCULATION RESULTS (Cd 109, IRON PURE	)
The second result height (APH) = (	$\sqrt{2.24}$ counts (MPH> 1000 at 6.40 +/- 0.02 KeV)	
$\begin{array}{c} \text{Iron at maximum peak height (MI II)} = \frac{1}{2} \\ 1/2 \text{ MPH} = \frac{5663}{6} \\ \end{array}$		
1/2 MI II - <u> </u>		
right (high energy) side of 1/2 MP	H left (low energy) side of 1/2 MPH	C204
<u>6053</u> counts at <u>6.27</u> KeV	$\frac{6211}{2000}$ counts at $\frac{63304}{6000}$ KeV $\frac{6}{6000}$	21
5/67 counts at $6-2569$ KeV	3349 counts at $6.5770$ Rev $-6.77$	7609
Calculated FWHM = $\{-}$	<u>0.2609</u> KeV (<0.300)	
OPTIONAL: RESOL	UTION CHECK (MPH AT 6.40 +/- 0.02 KeV)	40/00/60-
	Cd 109 Intensity Check	Criteria
FI Pass [] Fail: Counts 1/2 MPH at 6	.25 KeV Fe 0.956 (>0.96 and <1.	02) @
	Mn <u>0.00185982</u> (<+/-0	.003) 🕢
🗹 Pass 🗆 Fail: Counts 🗳 1/2 MPH at 6	$55 \text{ KeV Co} \underline{0.00122575} (<+1-0.003)^{0.00}$	$\mathbf{D}$
BLAN	K CHECK SAMPLE RESULTS	60/60/60
Check One: Quartz I Teflon	□ Sand □ Other (Specify)	
9.16 ST DEV 14.2 ST DE	·	ons of zero
Pass L Fail: All target elemen	is Cr ( $z=24$ ) and higher are within $+7-3$ std. deviation	
Pass 🛛 Fail: All non target ele	ments Cr ( $z=24$ ) and higher are within $\pm 7-5$ std. de	viations of zero
Comments: <u>Tefler: Calcium</u>	fuil ( 25 x ST DEV.)	/
	de each source	Initials B
NUTE: All acquisition unles 2 ou secon	nlication)	
(All churs will boll bampies Ap		

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SPECTRACE 9000 FPXRF DA	ILY INSTRUMENT CHECKOUT WORKSHEET
DATE: MAY 27, 1999	SPECTRACE SERIAL NO: $QOYY$
SITE: ELECTRUK BATTERY SITE	TDD# Zoc/200/200
ENERGY CALIBRATION C	HECK RESULTS (SAFETY SHIELD IN PLACE)
Source: Cd 109 Range Pb La <u>10.550</u> KeV (10.50 - 10.58) Pb L $\beta$ <u>12.627</u> KeV (12.57 - 12.65) Pb L $\gamma$ <u>1269</u> KeV (14.72 - 14.80) Source Line <u>22.112</u> KeV (22.06 - 22.14)	Source: Fe55 Range S Kc_ <u>2.30/6</u> KeV (2.29 - 2.33) Source Line <u>5.9078</u> KeV (5.37 - 5.91)
Source: Am 241 $Ph L \alpha = 10.579$ KeV (1)	Kange 0.49 - 10.59)
Pb $L\beta$ <u>12.615</u> KeV (1)	2.56 - 12.66)
Source Line <u>59.538</u> KeV (59.3	- 59.7)
IRON K $\alpha$ RESOLUTION CA Iron at maximum peak height (MPH) = /// 1/2 MPH =	ALCULATION RESULTS (Cd 109, IRON PURE) $2\omega/2\omega/2000$ $2\omega/2\omega/2000$ $2\omega/2\omega/2000$ $2\omega/2\omega/2000$ $2\omega/2\omega/2000$ left (low energy) side of 1/2 MPH <u>60495</u> counts at <u>6.2722</u> KeV <u>6.5307</u> <u>5762</u> counts at <u>6.2567</u> KeV <u>6.2722</u> <u>0.2579</u> KeV (<0.300) FION CHECK (MPH AT 6.40 +/- 0.02 KeV) <u>6u/20260 JB</u> Cd 109 Intensity Check Criteria <u>5 KeV Fe</u> <u>0.963652</u> (>0.96 and <1.02) Mn <u>0.0034</u> (<+/- 0.003) 55 KeV Co <u>- 0.000479735}(&lt;+/- 0.003)</u>
BLANK	CHECK SAMPLE RESULTS 6/60
Check One: Quartz Teflon Pass Fail: All target elements Pass Fail: All non target elements Comments:	□ Sand □ Other (Specify) Cr (z=24) and higher are within +/- 3 std. deviations of zero , ents Cr (z=24) and higher are within +/- 5 std. deviations of zero $\Lambda$ ↓
NOTE: All acquisition times ≥ 60 seconds (All checks with Soil Samples Appli	each source Initials <u>JB</u> (cation)

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SPECTRACE 9000 FPXRF DA	ILY INSTRUMENT CHECKOUT WORKSH	EET
DATE: 6-2-99	SPECTRACE SERIAL NO: 094	200/200/200
SITE: <u>Electrik Kattery</u>	[DD#	
ENERGY CALIBRATION CI	HECK RESULTS (SAFETY SHIELD IN PLAT	UE)
Source: Cd 109 Range Pb La <u>10.54</u> KeV (10.50 - 10.58) S	Source: Fe55 Rang $S K\alpha = \frac{2.302.9}{2.302}$ KeV (2.29 - 2.33)	e
Pb LB <u>72.679</u> KeV (12.57 - 12.65) S Pb Ly <u>74.762</u> KeV (14.72 - 14.80) Source Line $22.093$ KeV (22.06 - 22.14)	Source Line <u>077932</u> Kev (5.57 5.51)	• <u> </u>
	Perce	
Source: Am 241 Pb $L\alpha$ <u>10.525</u> KeV (10	(10.59)	
Pb $L\beta$ /2.622 KeV (12)	2.56 - 12.66) - 59 7)	
Source Lille		DT)
<b>IRON K</b> $\alpha$ <b>RESOLUTION CA</b>	$\frac{1}{2} CULATION RESULTS (CU 109, IRON 10)}{24.3988} KeV$	200/200/200
Iron at maximum peak height (MPH) = $\frac{1}{2}$ 1/2 MPH = $\frac{5}{229}$ counts	$\frac{457}{2}$ counts (MPH ≥ 1000 at 6.40 +/- 0.02 KeV	n <u>-</u>
right (high energy) side of 1/2 MPH	left (low energy) side of 1/2 MPH	Grafb
$\frac{6183}{5327}$ counts at $\frac{65277}{5327}$ KeV $\frac{5327}{5327}$ counts at $\frac{65277}{554}$ KeV	<u>5906</u> counts at <u>6.2699</u> KeV <u>5092</u> counts at <u>6.2538</u> KeV	6-5277 -6-2649
Calculated FWHM = $\mathcal{O} \cdot \mathcal{Z}$	<u> </u>	0.2578
OPTIONAL: RESOLUT	TION CHECK (MPH AT 6.40 +/- 0.02 KeV)	
	Cd 109 Intensity Check	Criteria
Pass □ Fail; Counts ≥ 1/2 MPH at 6.2.	5 KeV Fe <u>0. 961049</u> (>0.96 and <	< 1.02)
IV Pass [] Fail: Counts > 1/2 MPH at 6.5	$\frac{Mn - 0.0073 2207}{5 \text{ KeV Co}} (< +/-0.003)$	)
	CUTCV SAMDIE DESILITS	the least
BLANK	CHECK SAMPLE RESULTS	0/00/60
Check One: D Quartz D Teflon	Sand Other (Specify)	
Pass Fail: All target elements	Cr ( $z=24$ ) and higher are within $\pm/-3$ std. deviate Cr ( $z=24$ ) and higher are within $\pm/-5$ std.	ations of zero
Pass Li Fail: All non target eleme	$\frac{1}{2} = \frac{1}{2} + \frac{1}{2} \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{1}{2} + \frac{1}$	
Comments: T Cateron faits tor Tetten	715 Piny	
NOTE: All acquisition times $\geq 60$ seconds	each source	Initials
(All checks with Soil Samples Appli-	callon)	11

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SI	PECTRACE 9000 FPXRF DAII	LY INSTRUM	ENT CHECKOUT	WORKSHEET	
DATE: 6.	3-99	SPECTRA	CE SERIAL NO:_	Q044	
SITE: Elec	truk Battery TI	DD#			
at I	ENERGY CALIBRATION CHI	ECK RESULT	S (SAFETY SHIE	LD IN PLACE)	
<pre> Source: Pb LαS Pb Lβ Pb Lγ Source Line</pre>	Cd 109 Range <u>44</u> KeV (10.50 - 10.58) S J <u>423</u> KeV (12.57 - 12.65) So <u>767</u> KeV (14.72 - 14.80) <u>22.100</u> KeV (22.06 - 22.14)	Source: Ka <u>2294</u> ource Line <u>5</u>	Fe55 GKeV (2.29 <u>&amp;970</u> KeV (5.3	Range - 2.33) 37 - 5.91)	200/200/200
Source: Pb Lα Pb Lβ Source Line_	Am 241     Ra       10.529     KeV (10.4)       12.626     KeV (12.3)       59.554     KeV (59.3 - 1)	inge 49 - 10.59) 56 - 12.66) 59.7)			
Iron at maxim 1/2  MPH = 1 right ( 5.88 - 5.765 cou $5.36 \times 2$ cou	IRON K $\alpha$ RESOLUTION CAL num peak height (MPH) = $\frac{1/.93}{5.71\%}$ counts (high energy) side of 1/2 MPH unts at $\frac{6.5293}{6.5293}$ KeV unts at $\frac{6.57959}{6.5959}$ KeV	CULATION F <u>6</u> counts (MF left (low e <u>7265</u> counts <u>7979</u> counts	<b>RESULTS (Cd 109</b> $\mathcal{D}_{4.4004}$ PH≥ 1000 at 6.40 + energy) side of 1/2 at <u>6.2554</u> K	, IRON PURE) -/- 0.02 KeV) MPH eV 6.5 eV - 6.27	Zoc/200/200 2
1	Calculated FWHM = $\mathcal{O}$ .	2578	KeV (<0.300)		
	OPTIONAL: RESOLUTI	ON CHECK (	MPH AT 6.40 +/-	0.02 KeV)	
☑ Pass □ ☑ Pass □	Fail: Counts ≥ 1/2 MPH at 6.25 Fail: Counts ≥ 1/2 MPH at 6.55	Co KeV Fe <u>0.9</u> M KeV Co <u>-0</u>	1 109 Intensi 66 5 <sup>-19</sup> (7 n <u>0.007 3 656</u> 00 100 75 6 (	ty Check $C$ > 0.96 and < 1.0 $\frac{9}{(< +/- 0.003)}$	riteria 2) 203)
	BLANK C	HECK SAMP	LE RESULTS		62/62/60
Check One:	Quartz E Teflon	Sand	Other (Specify)	1.3 std. deviation	
□ Pass □ Pass	☐ Fail: All target elements Ci ☐ Fail: All non target elemen	(z=24) and $n'''its Cr (z=24) a$	nd higher are withi	$n \pm 1/-5$ std. dev	iations of zero
Comments:_	+ Calcium tot +1-5 Da	VIATIONS OF	2020 540/100	B FOR TEFLOM	<u>,                                     </u>
NOTE: All (All c	acquisition times ≥ 60 seconds ex hecks with Soil Samples Applica	ach source ution)		]	initials <u>1</u> 3

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	SPECTRACE 9000 FPXRF DAILY INSTI	RUMENT CHECKOUT WORKSHEET	• •
	DATE: 6-5-99 SPEC	CTRACE SERIAL NO: $QOYY$	
	SITE: Electruk Kathery TDD#		
$\sum$	ENERGY CALIBRATION CHECK RES	SULTS (SAFETY SHIELD IN PLACE)	2 w/200/200
/	Source:Cd 109RangeSourcePb La $12.552$ KeV (10.50 - 10.58)S KaPb L $\beta$ $12.636$ KeV (12.57 - 12.65)Source LinePb L $\gamma$ $14.772$ KeV (14.72 - 14.80)Source Line $22.683$ KeV (22.06 - 22.14)	ce: Fe55 Range <u>2.3020</u> KeV (2.29 - 2.33) <u>5.8925</u> KeV (5.37 - 5.91)	2007 000
	Source: Am 241 Range		
	Pb $L\alpha$ <u>10.527</u> KeV (10.49 - 10.55 Pb $L\beta$ <u>(12.56 - 12.66</u>		
1	Source Line <u>59.548</u> KeV (59.3 - 59.7)		
CH	IRON K $\alpha$ RESOLUTION CALCULATI Iron at maximum peak height (MPH) = <u>//, 46.8</u> count 1/2 MPH = <u><math>\int 23.4\%</math></u> counts right (high energy) side of 1/2 MPH left ( <u><math>\int 20.4\%</math></u> counts at <u><math>\int 2.2.2\%</math></u> KeV <u><math>\int 20.4\%</math></u> co <u><math>\int 10.2\%</math></u> counts at <u><math>\int 2.2.5\%</math></u> KeV <u><math>\int 2.5.7\%</math></u> Calculated FWHM = <u><math>0.2.5.7\%</math></u>	ON RESULTS (Cd 109, IRON PURE) $\mathcal{D}_{6,400,7}$ s (MPH $\geq$ 1000 at 6.40 +/- 0.02 KeV) (low energy) side of 1/2 MPH punts at $\underline{6.2717}$ KeV $\underline{6.57}$ punts at $\underline{6.2556}$ KeV $\underline{6.271}$ $\underline{6.271}$ KeV (< 0.300)	200/200/200 96 7
	OPTIONAL: RESOLUTION CHE	CK (MPH AT 6.40 +/- 0.02 KeV) -	646460 JB
	<ul> <li>□ Pass □ Fail: Counts ≥ 1/2 MPH at 6.25 KeV Fe_</li> <li>□ Pass □ Fail: Counts ≥ 1/2 MPH at 6.55 KeV Co_</li> </ul>	Cd 109Intensity CheckC $0.966127$ (>0.96 and <1.02Mn $0.00127134$ (<+/-0.00 $-0.000105386$ (<+/-0.003)	riteria 2) )03)
╞	BLANK CHECK SA	AMPLE RESULTS	60/60/60
1	Check One: 🗹 Quartz 🗂 Teflon 🗆 Sand	Other (Specify)	
•	Pass $\Box$ Fail: All target elements Cr (z=24) a $\Box$ Pass $\Box$ Fail: All non target elements Cr (z=2) Comments:	and higher are within $+/-3$ std. deviation 24) and higher are within $+/-5$ std. devi	ations of zero
	NOTE: All acquisition times ≥ 60 seconds each source (All checks with Soil Samples Application)	. I	nitials

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•	SPECTRACE 9000 FPXRF D	AILY INSTRUME	NT CHECKOUT	r workshee	Γ
-	DATE: 6/7/99	SPECTRAC	E SERIAL NO:_	Q044	
	SITE: Electruk Battery	TDD#			
$\sum_{i=1}^{n}$	ENERGY CALIBRATION (	CHECK RESULTS	(SAFETY SHIE	LD IN PLACE	)
AC	Source: Cd 109 Range Pb $L\alpha$ <u>70.756</u> KeV (10.50 - 10.58) Pb $L\beta$ <u>72.637</u> KeV (12.57 - 12.65) Pb $L\gamma$ <u>780</u> KeV (14.72 - 14.80) Source Line <u>22.097</u> KeV (22.06 - 22.14)	Source: S Ka2_303_3 Source Line_ <u>5_840</u> )	Fe55 KeV (2.29 50KeV (5.	Range 9 - 2.33) 37 - 5.91)	200/201/200
	Source:       Am 241         Pb $L\alpha$ $10 \cdot 527$ KeV (         Pb $L\beta$ $12 \cdot 624$ KeV (         Source Line $57 \cdot 584$ KeV (59.10)	Range 10.49 - 10.59) 12.56 - 12.66) 3 - 59.7)			
,cm	IRON Kα RESOLUTION C Iron at maximum peak height (MPH) = $\frac{1}{1/2}$ MPH = $\frac{5,788}{2000}$ counts	CALCULATION RI	ESULTS (Cd 109 𝒫𝔅. 𝑘𝔅 I≥ 1000 at 6.40	9, IRON PURE +/- 0.02 KeV)	) 200/200/200
	right (high energy) side of 1/2 MPH <u>6268</u> counts at <u>6.5257</u> KeV <u>5117</u> counts at <u>6.5457</u> KeV Calculated FWHM =	H left (low en 5787 counts at 4454 counts at 2578	ergy) side of 1/2 <u>6.2719</u> <u>6.2558</u> KeV (< 0.300)	MPH KeV KeV - (	6-5297 6-2719 0-2578
	OPTIONAL: RESOLU	JTION CHECK (M	PH AT 6.40 +/	- 0.02 KeV)	
	☐ Pass □ Fail: Counts $\ge$ 1/2 MPH at 6. ☐ Pass □ Fail: Counts $\ge$ 1/2 MPH at 6.	Cd 25 KeV Fe <u>0.968</u> Mn 55 KeV Co <u>0.0</u>	109 Intens 22E9 ( 0.00200844 00914059 (	ity Check > 0.96 and < 1. (< +/- 0 < +/- 0.003)	Criteria 02) .003)
F	BLANH	CHECK SAMPL	E RESULTS	64	66/60
	Check One: Quartz Teflon Pass Dail: All target elements Pass Fail: All non target elements Comments:	Sand Sand Sand Sand Sand Sand Sand Sand	Other (Specify)_ her are within + I higher are with	/- 3 std. deviation in +/- 5 std. de	ons of zero , viations of zero
	NOTE: All acquisition times ≥ 60 second (All checks with Soil Samples App	ls each source lication)			Initials $IB$

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	SPECTRACE 9000 FPXRF DAILY INSTRUM	IENT CHECKOUT WORKSHEET
	DATE: <u>6/8/99</u> SPECTR	ACE SERIAL NO: <u><i>Q044</i></u>
	SITE: Electric Entten TDD#	
K	ENERGY CALIBRATION CHECK RESUL	IS (SAFETY SHIELD IN PLACE) 200/200/24
	Source:Cd 109RangeSource:Pb La $10.540$ KeV (10.50 - 10.58)S Ka $2.30$ Pb L $\beta$ $12.618$ KeV (12.57 - 12.65)Source LinePb L $\gamma$ $14.777$ KeV (14.72 - 14.80)Source Line $22.041$ KeV (22.06 - 22.14)	Fe55 Range <u>28 KeV (2.29 - 2.33)</u> <u>5:8784</u> KeV (5.37 - 5.91)
	Source:Am 241RangePb La $10.524$ KeV (10.49 - 10.59)Pb L $\beta$ $12.624$ KeV (12.56 - 12.66)Source Line $59.569$ KeV (59.3 - 59.7)	
cut	IRON K $\alpha$ RESOLUTION CALCULATION Iron at maximum peak height (MPH) = <u>(1, 321)</u> counts (M 1/2 MPH = <u>5, 661</u> counts right (high energy) side of 1/2 MPH left (low <u>607 Y</u> counts at <u>6.5 283</u> KeV <u>5, 624</u> counts <u>5069</u> counts at <u>6.5 797</u> Calculated FWHM = <u>0.257 P</u>	RESULTS (Cd 109, IRON PURE) $\mathcal{D}_{6.3794}$ PH > 1000 at 6.40 +/- 0.02 KeV) $200/200/200$ energy) side of 1/2 MPH         at $\underline{6.2705}$ KeV $\underline{6.2705}$ KeV $\underline{6.2705}$ KeV $\underline{6.2705}$ KeV $\underline{6.2705}$ KeV (<0.300)
	<b>OPTIONAL:</b> RESOLUTION CHECK (	MPH AT 6.40 +/- 0.02 KeV)
	Consider the set of t	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	BLANK CHECK SAMP	LE RESULTS (w/(w/60)
	Check One: Quartz Teflon Sand Pass Fail: All target elements $Cr (z=24)$ and hi Pass Fail: All non target elements $Cr (z=24)$ and hi Comments:	Other (Specify) igher are within +/- 3 std. deviations of zero and higher are within +/- 5 std. deviations of zero
-	NUTE: All acquisition times ≥ 60 seconds each source (All checks with Soil Samples Application)	Initials $\checkmark$

SPECTRACE 9000 FPXRF DAILY INSTRUMENT CHECKOUT WORKSHEET
DATE: 6 9 99 SPECTRACE SERIAL NO: 044
STTE: Clectuk Battery TDD#
$\mathbf{E} = \mathbf{E} = \mathbf{E} \mathbf{E} \mathbf{E} \mathbf{E} \mathbf{E} \mathbf{E} \mathbf{E} \mathbf{E}$
Source:Cd 109RangeSource:Fe55RangePb La $10.5Y2$ KeV (10.50 - 10.58)S Ka $2.3033$ KeV (2.29 - 2.33)Pb L $\beta$ $12.637$ KeV (12.57 - 12.65)Source Line $5.8460$ KeV (5.37 - 5.91)Pb L $\gamma$ $14.7260$ KeV (14.72 - 14.80)Source Line $23.0466$ KeV (22.06 - 22.14)
Source: Am 241 Range
Pb La <u>10.527</u> KeV (10.49 - 10.59)
Pb L $\beta$ /2.624 KeV (12.56 - 12.66)
Source LineKeV (59.3 - 59.7)
<b>IRON Ka RESOLUTION CALCULATION RESULTS (Cd 109, IRON PURE)</b> $z \propto / 2 \sigma c / 2$
right (high energy) side of 1/2 MPH $\underline{5926}$ counts at $\underline{6.5293}$ KeV $\underline{5923}$ counts at $\underline{6.2717}$ KeV $\underline{6.5293}$ $\underline{5925}$ counts at $\underline{6.5793}$ KeV $\underline{4928}$ counts at $\underline{6.2553}$ KeV $\underline{6.2717}$ $\underline{5925}$ counts at $\underline{6.5793}$ KeV $\underline{7929}$ KeV $\underline{6.2717}$ $\underline{5925}$ counts at $\underline{6.2573}$ KeV $\underline{6.2717}$
$Calculated FWHM = \underbrace{U \cdot U \cdot J \cdot I}_{Calculated FWHM} KeV (<0.500)$
OPTIONAL: RESOLUTION CHECK (MPH AT 6.40 +/- 0.02 KeV)
$\square Pass \square Fail: Counts \ge 1/2 MPH at 6.25 KeV Fe \underbrace{0.4622.65}_{Mn} (>0.96 and <1.02)$ $\square Pass \square Fail: Counts \ge 1/2 MPH at 6.55 KeV Co \underbrace{-0.0002(3441)}_{(<+/-0.003)}$
BLANK CHECK SAMPLE RESULTS (ec/60/60
Check One: Quartz Teflon Sand Other (Specify)
Pass $\Box$ Fail: All target elements Cr (z=24) and higher are within +/- 3 std. deviations of zero Pass $\Box$ Fail: All non target elements Cr (z=24) and higher are within +/- 5 std. deviations of zero Comments: TEFLEN Culcum FAIL 540/108; When the second second
NOTE: All acquisition times ≥ 60 seconds each source (All checks with Soil Samples Application)

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	SPECTRACE 9000 FPXRF DAILY INSTRUMENT CHECKOUT WORKSHEE	Γ.
' - 	DATE: 6/10/99 SPECTRACE SERIAL NO: 0044 STTE: Electrick Battery TDD#	
P	ENERGY CALIBRATION CHECK RESULTS (SAFETY SHIELD IN PLACE)	200/200/200
	Source:Cd 109RangeSource:Fe55RangePb La $\ell_{0.5}$ YOKeV (10.50 - 10.58)S Ka $2.2947$ KeV (2.29 - 2.33)Pb L $\beta$ $\ell_{2.6}$ KeV (12.57 - 12.65)Source Line $5.8948$ KeV (5.37 - 5.91)Pb L $\gamma$ $\ell_{4.7}$ Ce/KeV (14.72 - 14.80)Source Line $2.2.168$ Source Line $2.2.168$ KeV (22.06 - 22.14)	
	Source:Am 241RangePb $L\alpha$ $10.525$ KeV (10.49 - 10.59)Pb $L\beta$ $12.622$ KeV (12.56 - 12.66)Source Line $59.571$ KeV (59.3 - 59.7)	
L the	<b>IRON K</b> $\alpha$ <b>RESOLUTION CALCULATION RESULTS (Cd 109, IRON PURE)</b> $\mathcal{D}_{\ell.9007}$ Iron at maximum peak height (MPH) = $\underline{11,561}$ counts (MPH $\geq$ 1000 at 6.40 +/- 0.02 KeV) $1/2$ MPH = $\underline{5,281}$ counts	204200/200
	right (high energy) side of 1/2 MPH left (low energy) side of 1/2 MPH $\frac{6027}{5(35)}$ counts at $\frac{6.5297}{4919}$ KeV $\frac{5889}{4919}$ counts at $\frac{6.2718}{5(257)}$ KeV $\frac{6.2757}{6}$ KeV $\frac{7919}{6}$ Calculated FWHM = $\frac{0.2579}{6.2579}$ KeV (<0.300)	2712
ł	OPTIONAL: RESOLUTION CHECK (MPH AT 6.40 +/- 0.02 KeV)	
	Cd 109 Intensity Check C $\square$ Pass $\square$ Fail: Counts $\ge$ 1/2 MPH at 6.25 KeV Fe $\underbrace{0.964826}_{Mn}$ (>0.96 and <1.02 $\underbrace{Mn  0.00087/374}_{Mn}$ (<+/- 0.02 $\square$ Pass $\square$ Fail: Counts $\ge$ 1/2 MPH at 6.55 KeV Co $\underbrace{0.0094'6367}_{C}$ (<+/- 0.003)	riteria 2) 103)
 	BLANK CHECK SAMPLE RESULTS	
}	Check One: Quartz Teflon Sand Other (Specify)	6./(c/6C
	Pass $\Box$ Fail: All target elements Cr (z=24) and higher are within +/- 3 std. deviation Pass $\Box$ Fail: All non target elements Cr (z=24) and higher are within +/- 5 std. devia	s of zero ations of zero
1	Comments: TEELON Culcur forled 820/100; None	
	NOTE: All acquisition times ≥ 60 seconds each source Ir. (All checks with Soil Samples Application)	itials $\overline{\mathcal{T}}$

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FILE VIA PJB Non-Peleasable

Electruk Battery Lockport(T), Niagara County USEPA Removal Action Final Joint Inspection June 15, 1999

Attendees: Jeff Bechtel, USEPA Matt Forcucci, NYSDOH Dan King, NYSDEC

#### Background/Purpose

At the request of NYSDEC, the USEPA conducted an emergency removal action at the former Electruk Battery manufacturing facility located in the Lockport(T) Industrial Park. This action was prompted by plant site conditions that potentially posed an immediate threat to public health and the environment. These site conditions included 1) the abandoned an unsecured state of the site, 2) the significant presence of lead, lead dust, lead waste and lead contaminated soil at the facility, and 3) the presence and spill of approximately 1000-2000 gallons of sulfuric acid within the building in 1998.

The USEPA removal action included:

- decontamination of the building interior, primarily lead dust and acid spill cleanup,
- decontamination of the concrete staging pad located outside the building,
- decontamination or disposal of plant equipment, waste and raw materials,
- removal of lead contaminated soils exterior to the building, and
- cleaning and sampling of building sumps and drains.

The emergency removal action has been completed by USEPA and site demobilization is expected to be completed on June 16, 1999. The purpose of the June 15, 1999 inspection was to provide both NYSDEC and NYSDOH the opportunity to review and discuss the cleanup efforts with USEPA and determine if further action at the State level was needed.

#### Inspection Findings

The joint inspection revealed the following:

• The entire plant interior including the manufacturing area, office, change room and lunch room has been cleaned. Major elements of this action include;

ceiling and wall insulation and office carpeting were removed and disposed as lead contaminated,

steel roof beams and floors were vacuumed and washed with lead removal reagents,

the majority of manufacturing equipment was found to be lead contaminated and therefore disposed as hazardous waste, a few larger equipment pieces were decontaminated and remain on site,

raw materials (primarily lead ingots) were sold as scrap,

acids and miscellaneous low-volume chemicals were disposed as hazardous wastes,

sumps and drains were cleaned of sediment and liquids,

the furnace providing building heating was scrapped due to lead contamination (heating duct work was removed or cleaned in place) and

pre- and post-remediation sampling was conducted

• Remedial actions on the exterior of the building included;

excavation and disposal of 6"-12" of lead contaminated soils from areas north and south of the building and roof drain down spouts (areas backfilled with clean soil, seeded and mulched),

removal and disposal of all lead waste, scrap metal and unused material located on the exterior concrete staging pad and wash down of the pad with lead removal reagents and

pre- and post-remediation sampling

Post-remedial wipe samples of the plant interior indicates that the horizontal areas of the roof beams and floor still contain elevated levels of lead that has apparently bonded to these surfaces.

This is despite repeated attempts by USEPA to remove the material utilizing various reagents. USEPA will recommend to the Town IDA that the beams and floor be painted to encapsulate the residual lead.

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For soil removal, a USEPA cleanup goal of 750 ppm was utilized. However, given the tight soils in the area, it is anticipated that the removal action will result in residuals much less than this guideline.

Two floor drains are located within the building and one is located in the exterior concrete staging pad. USEPA's investigation of these drains show that they are not connected to exterior sewers, but are simply blind sumps without outflow/discharge piping. Presumably the sumps were unused or emptied through sump pump and surface discharge. Such a sump pump operation was utilized to control groundwater and rainwater collecting in the loading ramp area at the plant. USEPA had dewatered the sumps only to have them refill with shallow perched groundwater. Based on this information, significant groundwater contamination is not expected at this site.

#### Next Steps

The USEPA will prepare a final report on the site remediation that delineates the actions taken, summarizes the site sampling data and provides recommendations to the IDA relative to the floor and roof beams discussed above.

#### **Conclusions**

The USEPA cleanup action was found to be extensive and most effective in eliminating potentially significant threats to public health and the environment. Based on the information presented and the observations made during this inspection, the site does not warrant further NYSDEC involvement in regards to follow-up investigation and possible listing as an inactive hazardous waste site. The final remedial action report and sampling data to be submitted by USEPA will be reviewed to insure confirmation of the inspection findings and support of this conclusion.

Dan King

June 15, 1999



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Roy F. Weston, Inc. Federal Programs Division Suite 201 1090 King Georges Post Road Edison, New Jersey 08837-3703 732-225-6116 • Fax 732-225-7037

Post cleaning interior Wipe sample results

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM EPA CONTRACT 68-W5-0019

June 29, 1999

Mr. Jeff Bechtel, Task Monitor USEPA Region II Response and Prevention Branch 2890 Woodbridge Avenue Edison, NJ 08837

RECEIVED

DEC 0 1 1999 NYSDEC REG. 9 \_\_REL\_\_UNREL

#### EPA CONTRACT NO: 68-W5-0019 TDD NO: 02-98-09-0001 DOCUMENT CONTROL NO: START-02-F-03528 SUBJECT: WIPE SAMPLING TRIP REPORT - ELECTRUK BATTERY SITE

Dear Mr. Bechtel:

Enclosed please find the Sampling Trip Report for the May 11, 21, and 24, 1999, wipe sampling events at the Electruk Battery Site located in Lockport, Niagara County, New York.

If you have any questions, please do not hesitate to call me at (732) 225-6116.

Very truly yours,

ROY F. WESTON, INC.

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John Brennan START

Enclosure

cc: TDD File

#### SAMPLING TRIP REPORT

- SITE NAME: Electruk Battery Site DCN #: START-02-F-03528 TDD #: 02-98-09-0001
- EPA I.D. NO.: LU

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SAMPLING DATES: May 11, 21, 24, 1999

- 1. Site Location: 4922 IDA Park Drive, Lockport, NY 14094 (Refer to Figure 1)
- 2. Sample Locations: Refer to Table 1
- 3. Sample Descriptions and Preliminary Results (Refer to Table 1):

A total of 37 wipe samples were collected in addition to three blind replicate samples. Two field blanks were supplied to the laboratory as well. All samples collected were analyzed for total lead. Refer to Table 1 for specific sampling information.

- 4. Preliminary Results: Refer to Table 1.
- 5. Laboratory Receiving Samples:

Sample Type	Name and Address of Laboratory
Wipe	Scilab Albany, Inc. 15 Century Hill Drive Latham, NY 12110 (518)786-8100
,	

6. Sample Dispatch Data:

The samples were shipped to Scilab Albany, Inc., via Federal Express airbill numbers 810158220866 (5/11/99) and 81015822099 (5/24/99). The samples collected on 5/21/99 were shipped with those collected on 5/24/99. Attachment A contains the Federal Express Forms and chain of custody forms. The analytical turnaround time that was requested by the TM was one week verbal and two weeks for written results.

7. On-Site Personnel:

NameOrganizationDuties on SiteJohn F. BrennanRegion II STARTSampler/Documentation

Weather Conditions: 8.

> Partly sunny skies with temperatures in the low 70's to high 60's on all three sampling days.

9. Additional Comments:

> Samples were collected to illustrate the total lead contamination level remaining on the I-Beams and the concrete floors. The I-Beams and floor surfaces had previously been cleaned with a HEPA-vacuum and wiped with tri-sodium phosphate (TSP) solution by the ERRS contractor. More heavily contaminated portions of the floor were also cleaned with TechX-Tract<sup>®</sup> solution.

> The I-Beams were numbered 1-7, with No. 1 being the westernmost I-Beam and No. 7 being the easternmost I-Beam (Figure 4).

> The interior concrete floor surface was divided into 20' X 20' sections, except for the eastern most sections, which were divided into 10' X 10' sections (Figure 3). A wipe sample was collected from the approximate middle of each section. Wipe samples 73 and 74 were not collected as the entire floor area of that section was covered by the 2nd floor break room.

All samples were collected using a one foot square (1  $ft^2$ ) template.

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Report Prepared by: John F. Brennan

Date: <u>7/1/59</u> Date: <u>7/1/99</u>

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TABLE 1

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WIPE SAMPLE LOCATIONS

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# TABLE 1WIPE SAMPLE LOCATIONSELECTRUK BATTERY SITELOCKPORT, NEW YORK

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SAMPLE ID	DATE	TIME	SAMPLE DESCRIPTION
Wipe-36	5/11/99	1325	East side of the I-Beam No.1
Wipe-37	5/11/99	1330	East side of the I-Beam No. 2
Wipe-38	5/11/ <b>99</b>	1335	West side of the I-Beam No. 3
Wipe-39	<b>5/11/99</b>	1345	West side of the I-Beam No. 4
Wipe-40	<b>5/11/99</b>	1355	Replicate sample of Wipe-39
Wipe-41	5/11/99	1400	East side of the I-Beam No. 5
Wipe-42	5/11/99	1410	West side of the I-Beam No. 6
Wipe-43	5/11/99	1420	West side of the I-Beam No. 7
Wipe-44	5/21/99	0925	Concrete floor surface
Wipe-45	5/21/99	0930	Concrete floor surface
Wipe-46	5/21/99	0935	Concrete floor surface
Wipe-47	5/21/99	0940	Concrete floor surface
Wipe-48	5/21/99	0945	Concrete floor surface
Wipe-49	5/21/99	0950	Concrete floor surface
Wipe-50	5/21/99	0955	Concrete floor surface
Wipe-51	5/21/99	1000	Concrete floor surface
Wipe-52	<b>5/21/99</b>	1005	Concrete floor surface
Wipe-53	5/21/99	1010	Concrete floor surface
Wipe-54	5/21/99	1015	Concrete floor surface
Wipe-55	5/21/99	1020	Concrete floor surface
Wipe-56	5/21/99	1025	Concrete floor surface
Wipe-57	5/21/99	1030	Concrete floor surface
Wipe-58	5/21/99	1035	Concrete floor surface
Wipe-59	<b>5/2</b> 1/99.	1040	Concrete floor surface
Wipe-60	<b>5/21/99</b>	1045	Concrete floor surface

Wipe-61	5/21/99	1050	Concrete floor surface	_
Wipe-62	5/21/99	1055	Concrete floor surface	
Wipe-63	5/21/99	1100	Concrete floor surface	
Wipe-64	5/24/99	1650	Concrete floor surface	
Wipe-65	5/24/99	1655	Concrete floor surface	
Wipe-66	5/24/99	1700	Concrete floor surface	
Wipe-67	5/24/99	1705	Concrete floor surface	
Wipe-68	5/24/99	1710	Concrete floor surface	
Wipe-69	5/24/99	1715	Concrete floor surface	
Wipe-70	5/24/99	1720	Concrete floor surface	
Wipe-71	5/24/99	1725	Concrete floor surface	
Wipe-72	5/24/99	1730	Concrete floor surface	
Wipe-73	N/A	N/A	Not collected (floor surface was covered by 2nd floor cafeteria)	
Wipe-74	N/A	N/A	Not collected (floor surface was covered by 2nd floor cafeteria)	
Wipe-75	5/24/99	1735	Concrete floor surface	
Wipe-76	5/21/99	0950	Replicate of Wipe-49	
Wipe-77	5/24/99	1740	Replicate of Wipe-66	
FB051199	5/11/99	1315	Field Blank for 5/11/99	
FB052199	5/21/99	0920	Field Blank for 5/21/99	

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## FIGURE 3

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## SAMPLE LOCATION PLAN CONCRETE FLOOR WIPE SAMPLES



D: \CADFILE\ELECT2.DWG

## FIGURE 4

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### SAMPLE LOCATION PLAN I-BEAM WIPE SAMPLES



D: \CADFILE \ELECT2AA.DWG

# ATTACHMENT A

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FEDERAL EXPRESS FORMS & CHAIN OF CUSTODY FORMS

RFP Na.:	CHAIN C	F	USI	[0]	DY	R	EC	202	RI	) אַ		c Bo	τNo	).: · · · ·	Pr	<b>3CIVE</b>	ive Box	No.:
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101366	SUPERFUND T	ECTENICJ EPA CC State: 904-	AL ASSE	SSME 77 62-1 71 52 9	NT AN W5-00	TD RE 19 7157	SPO	ISE T	ЕАМ	4. 5. 6. 17. 80	5. Soil/Sodiment 6. Oil 7. Waste 8. Other (Specify)					<ul> <li>A. H2SOA</li> <li>5. Other (Specify)</li> <li>6. Ice Only</li> <li>N. Not Preserved</li> <li>See Comments</li> </ul>		
Send verbal and t	written results to:	R S A	ioy F. V inite 201 Antention	Vester , 1090 e Sm	in Inc. O Kiny in Su	, US g Geo mixeir,	ЕРА л <u>е</u> са y, SI	Regia Fost ART	m II Rose Am	STA 1. Ed ilytic	RT ison al C	, Ne ooni	w Je instr	твеу п	08837-	-3703	·	
Sampie Number	Sample Collection MM/DD/YY/Time	Semeric C. Materix L. (Enter M bex 1) H	and International Internationa	ады́с (3) ≍ Р аду-С(0) аду-С(1)	анарыс 70-колт. Самат Халт (ка)	YOA	ENA	TANA TESTI	CYAR C34				ANAI	MACI		CIE	<b>EX</b>	
WIPE 36	05/11/99 1325	8	LIC	5	N								 	1	<u> 701</u>	1 2	EAD	
WIAE 37	/330	8	$\frac{L}{c}$		<u>N</u> .					 					<u></u>	+	<u> </u>	
WIPE 38	/3 35	8	$\frac{L}{L}$	<u>~ </u> ~	<u>א</u> א		 											
WIFE 40	/355	8	LC	5	<u>א</u>													
WIPE 41	1400	8	LG		Ŋ	<u> </u>	   								, ,			~
WH PE 42	1410	<u>8</u>   <u>a</u>	$\frac{L}{L}$		<u>N</u>	<u> </u>	<u> </u>	 								-	<u> </u>	
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# SCILAP ALBANY, INC.

15 CENTURY HILL DRIVE . PO BOX 787 LATHAN, NY 12110 TEL: (518) 788-8100 + FAX: (518) 785-7700

> Data Received: 5/12/99 Date Analyzed 5/15/99

SciLab Job Number: \$9-06-3136



Load Analysis Results Dust Wipes EPA Nethod 3050/7420

Roy F. Weston, Inc. Edison, NJ

Job Site: RFP 4600

	Cilant		Sample	(12)	(10/12)
Şçilêd V 99.65.3138	Number		Location	1	8.910
01	Wipe 35	1326		1	1,810
~	Wipe 37	1330		1.	7,970
V6	Wipe 38	1335		1	808
04 04	Wipe 39	1345		1	1,370
05	Wipe 40	1355		1	700
09	Wipe 41	1400		· 1	18,500
00	Wine 42	1410		1	1,650
07	Wipe 43	1420		1	-25
00	FB 051199	1315	· · · ·		

REPLICATE OF WIPE 39 XNIDE 40 15

+ WIRF 36 STARTS DWEST SIDE

43 ENDS DEAST SIDE OF FACILITY

HUD Guidelines for dust wipes are: 106 up/82 for floors, 506 up/82 for interfor window sills. 300 up/82 for interfor window wells. SCILAS reporting insit is 25 up/82.

Baulawad by

Ó٩ Laboratory Director

OF FACILITY !

ELAP No: 10358

Page 1 of 1

ew york + los angeles + boston + albany - richmond

#### 05-02-99 10:16AM FROM REGION II START Jun 01 88 11:56a

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SCILAB Albany, Inc.

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(518) 788-7700

SCIL 1 RELANDING AND GREAT CHARLES COURSE

SCILA" ALBANY, INC. 15 CENTURY HILL DRIVE . PO BOX 787 LATHAM, NY12110 TEL: (618) 786-8100 - FAX: (518) 788-7700

> Date Received: 5/25/00 Data Analyzed 6/1/99

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P.2

Scillab Job Number: 90-05-3270

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Post decon Floor nipes

Load Analysia Results Dust Wipee EPA Method 3050/7420 Roy F. Weston, Inc.

s intrafels

Edison, NJ

Job Sile: RFP 4579

561.80 F 99-05-3270	Number		Bampie Leostion	Arius (112)	Lead (µg/fiz)
01	WIPE-44	0925		- ,	61,700
02	WIPE-40	0830		1	78,800
03	WIPE-48	0935		1	122,000
- 04	WIPE-47	0940		1	2,420
05	WIPE-48	0945		1	48.400
00	WIPE-49	0950		. 1	3,410
07	WIPE-50	0955		. 1	32,700
<b>08</b>	WIPE-61	1000		1	11.400
09	WIPE-62	1005	×	1	169.000
10	WIPE-63	1010		1	10,900
41	WIPE-54	1015	,	1	7,060
12	WIPE-55	1020		٦	8,980
13	WIPE-56	1025		1	57,900
14	WIPE-57	1030		1	7,040
15	WIPE-66	1035		. 1	9,020
16	WIPE-69	1040 ~		· 1	32,400
17	WIPE-60	1045		1 -	12,000
18	WIPE-61	1050		1	8,530
19	WIPE-62	1055		· • • • •	6,160
20	WIPE-63	1100		<sup>1</sup> 1	134,000
21	WIPE-64	1650	·	. 1	8.970
22	WIPE-66	1665		1	17.800
23	WIPE-64	1700		1	12.100
24	WIPE-67	1705		1	34,000

HUD C lallinge för dust v 100 ug/fi2 for floars. BDC ug/fi2 for interior window sills, 800 ug/fi2 for interior window wells.

SCILAB reporting limit is 25 ug/t/2.

'O'Hehl David

Laboratory Director

Reviewed by:

10358 ELAP NO:

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NEW YORK + LOS ANGELES + BOSTON + ALBANY - RICHNOND

06-02-99 10:16AM FROM REGION II START TO 17164391854 P003 Jun 01 89 11:56a SCILAB Albany, Inc. (516) 786-7700



## SCILAT ALBANY, INC.

15 CENTURY HILL DRIVE + PO BOX 787 LATHAM, NY12110 TEL: (518) 786-8100 + FAX: (518) 788-7700

A CENTREME ALMADRITY DUSINGSS SHTURPOSS

Scillab Job Number: 99-95-3270

Data Received: 5/25/99 Data Analyzed 5/1/99

Leed Analysis Results Dust Wipes EPA Nathod 3050/7420

Roy F. Weston, Inc.

Edison, NJ

Job Sita: RFP 4579

Scilus # 30-05-3270	Client Number		Semple Location	 	A100 (f12)	Lead (ug/ft2)
26	WIPE-68	1710			1	32,100
	MIDC.80	1716			1	15,100
20		17 10			1	5,930
27	WiPE-70	1720			à	3 630
28	WIPE-71	1725			1	0,000
	14/4015-77	1790			1	15,100
29	VICTOP 2	11.00		•	1	7,950
30	WIPE-75	1735				1.940
11	WIPE-76	0950			1	4,31V
		4448			1	13,300
32	VIII C	1740	•		4	<b>1</b> 25
33	FB052199	0920			•	-20

HUD Quidelines for flast vipte ere: 100 up/12 for flaore. 500 up/12 for flaore. 900 up/12 for interior window wells. SCILA8 reporting limit is 25 up/12. Reviewed by:

Denvid J. 07 hk

Laboratory Director

SLAP No. 10050

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NEW YORK + LOS ANGELES + BOSTON + ALEANY + RICHMOND

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NYSDEC - REG. 9 FOIL XREL \_\_UNREL

#### U.S. ENVIRONMENTAL PROTECTION AGENCY POLLUTION REPORT

I. HEADING

Date: June 29, 1999

From:

1 hr. ho

Jeff M. Bechtel, OSC Response and Prevention Branch

To:

B. Sprague, 2ERRD-RPBJB. Bellow, 2CD7R. Cahill, 2CD-PATJR. Byrnes, EPA, 2OIGHJ. LaPadula, 2ERRD-NYRBHM. Basile, 2CD-POBHM. O'Toole, NYSDEC7D. King, NYSDECMD. Mugleston, EPA CIDS

J. Daloia, 2ERRD-RPB T. Johnson, 5202G J. Witkowski, 2ERRD-RAB P. Simon, 2ORC-NYSFB D. Solorion, 2ORC-NYSFB B. Dease, 2ERRD-RAB T. Vickerson, NYSDEC M. Forcucci, NYSDOH START

Subject: Electruk Battery Site Lockport, Niagara County, New York

E-FILED

POLREP NO.: Eight (8) and Final

#### II BACKGROUND

Site No: Delivery Order No: Response Authority: NPL Status: State Notification: Action Memorandum Status:

Start Date: Completion Date: RCRA ID: LU 2001-02-173 CERCLA N/A NYSDEC Verbal on August 19, 1998 December 7, 1998 August 19, 1998 June 30, 1999 NYD002464410

#### III SITE INFORMATION

The Electruk Battery Enterprises site is located at 4922 IDA Park Drive in the Lockport Industrial Park in Lockport, Niagara County, New York. The site was used as a lead/acid battery manufacturing facility from 1990 until 1996 at which time the company entered into Chapter 7 bankruptcy. The site was abandoned and numerous drums of acids, lead compounds and solvents were left behind.

A preliminary investigation was conducted in June of 1997 by a contractor retained by the Lockport Industrial Park. Approximately twenty 55 gallon drums and two vats containing identified lead sludge were observed outside the building open to the elements along with four 30 gallon drums of sulfuric acid, one of which was cracked and only half full.

Inside the building were more drums of methyl ethyl ketone, sulfuric acid and xylene along with many smaller containers of paint related materials. Two bulk acid storage tanks were present and full.

The site resides in the custody of the bankruptcy court. The court had awarded Key Bank the opportunity to sell any assets present on the property to offset their lost investment in the company.

The interior of the building was covered with lead dust at concentrations exceeding state and federal guidelines. Several areas of surficial soil lead contamination were also identified in the 1997 investigation.

#### IV RESPONSE INFORMATION

A. Situation

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1. Current situation

Neither the state nor local agencies had the ability to perform a response mitigation. EPA initiated a CERCLA Removal Action.

2. Removal activities to date

During the period of June 1 thru June 16, 1999 ETI completed excavation of surface soil in those areas where lead levels exceeded 750 ppm.

The following shipments of lead contaminated soil were shipped via Freehold Cartage to the CWM Chemical Services landfill in Model City, NY for disposal: 21.5 tons and 18 tons on June 3, 2 loads of 22 tons each on June 7, and 2 loads of 21 tons each on June 8.

On June 8, 1999 two 30 cubic yard rolloff containers of contaminated debris from the dismantling of the lead oxide tower were shipped via Freehold Cartage to the CWM Chemical Services landfill in Model City, NY.

START collected a total to date of 308 surficial soil samples, ran XRF analyses for lead to facilitate excavation activities and shipped 36 soil samples out for laboratory analysis to confirm the XRF results.

The 32 confirmation wipe samples from the floor showed final surface lead levels ranging from 2,420 to 169,000 ug/square ft. The eight confirmation wipe samples from the ceiling beams showed final surface lead levels ranging from <25 to 18,500 ug/square ft.

Backfilling operations were completed using soil from a construction project on a neighboring property. As a precaution, the backfill was sampled and tested for lead with the XRF. No lead was present in the fill. The filled areas were then seeded with a contractor grade grass seed and mulched with straw.

On June 15, 1999 EPA gave representatives from the NYSDEC and Niagara County DOH a final site tour. The Niagara Falls EPA PIO was notified of the removal action completion.

Site security was discontinued and all equipment and personnel were demobed. The bankruptcy trustee was notified of the completion of the removal action and the site keys were sent to him.

This concluded the on-site activities associated with the completion of this removal action.

3. Enforcement

A 104(e) letter is being drafted for the PRP. A petition was filed by ORC with the bankruptcy court for cost recovery from the estate.

B. Planned removal activities

Identification, sampling, and disposal of all hazardous materials.

C. Next Steps

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The site was referred back to the NYSDEC to investigate any soil or groundwater contamination.

D. Key Issues

While lead remains present on the floor and ceiling beams, the loose dust and residues were removed during the decon process. The lead concentrations remaining are indicative of lead bonded to these surfaces in such a manner as to require extensive, repetitive cleaning to remove it. It is recommended that prior to reutilization of the building, the beam surfaces be encapsulated by the application of paint and/or insulation while the floor may be painted or covered with a fresh layer of concrete.

#### V. COST INFORMATION

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The following table contains information on estimated costs for the response investigation.

	Amount Budg	<u>geted</u>	<u>Cost to Date</u>	<u>Re</u>	maining Project Fun	<u>ds</u>
ERCS	\$ 50,000	\$	50,000	\$	0	
ERRS*	\$ 500,000	\$	447,852	\$	52,148	~J
START**	\$ 80,000	\$	80,000	\$	0	
EPA	\$ 110,000	\$	99,200	\$	10,800	
TOTAL	\$ 740,000	\$	677,052	\$	62,948	

\* Costs as of June 11, 1999

\*\* Costs as of June 11, 1999

The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The cost accounting provided in this report does not necessarily represent an exact monetary figure, which the EPA may include in any claims for cost recovery.

Final Polrep: X

Further Polreps Forthcoming:\_\_\_\_

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Load	Date	Manifest #	Waste Stream	Quantity	Total	WI.	Transporter	Designated Facility	Treatment
NO; 1	10/21/98	NYG0564057	RQ Waste Sulfuric Acid, Solution 8,	(Tenker)	Quan. 868	gallons	Envirite of Ohio, Inc.	Envirite of Ohio, Inc.	
2	10/22/98	MI7092547	RQ Hazardous Waste, Solid, N.O.3. (D008) 9,	(Tanker)	20	cu.yds.	Tonawanda Tank	Envotech Mgmt. Services	Landfill/
3	10/22/98	NJA2991585	RQ Waste Sulfuric Acid (D002) 8,	(Drums)	2,440	gailons		Cycle Chem	
3	10/22/98	same	RQ Hazardous Waste Solid, N.O.S. (D008) 9, NA3077, III	(Drums)	13,000	lbs.	Environmental Transport Group	Cycle Chem Elizabeth, NJ	
3	10/22/98	same	RQ Hazardous Waste Solid, N.O.S. (D008) 9, NA3077, Ill	6 (Drums)	3000	lbs.	Environmental Transport Group	Cycle Chem Elizabeth, NJ	
3	10/22/98	same	RQ Hazardous Waste Solid, N.O.S. (D008) 9, NA3077, III	3 (1 yd Box)	1200	lbs.	Environmental Transport Group	Cycle Chem Elizabeth, NJ	
4	10/22/98	NJA2991586	RQ Waste Flammable Liquid, N.O.S. (D001, F003) 3, UN1993, II	5 (Drum)	275	gallons	Environmental Transport Group	Cycle Chem Elizabeth, NJ	
4	10/22/98	same	Petroleum Mixture Liquid Non RCRA, Non DOT	1 (Drum)	5	gallons	Environmental Transport Group	Cyck: Chem Elizabeth, NJ	
5	10/22/98	NJA2991587	RQ Waste Paint Related Material (D001, F003) 3, UN1263, II	4 (Drum)	700	lbs.	Environmental Transport Group	Cycle Chem Elizabeth, NJ	
5	10/22/98	same	RQ Waste Aerosol (D001, F002, F003) 2.1, UN1950	2 (Drum)	50	lbs.	Environmental Transport Group	Cycle Chem Elizabeth, NJ	
5	10/22/98	same	RQ Hazardous Waste, Solid, N.O.S. (D008) 9, NA3077, III	1 (Drum)	20	lbs.	Environmental Transport Group	Cycle Chem Elizabeth, NJ	
5	Total			85 Drums 3 (1) yd Bo 1 (20) yd R	xes oll-off				
				1 Tanker T	ruck				

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# Rolloff Containers

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Load	Date	Manifest #	Waste Stream	Quantity	Total	Wł.	Transporter	Designated Facility	Treatment
No.					Quan.	Unit			
1	03/02/99	NYG1108188	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
2	03/02/99	NYG1108197	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
3	03/03/99	NYG1108206	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	25	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
4	03/04/99	NYG1108215	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
5	03/04/99	NYG1108224	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
6	03/05/99	NYG1111482	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
7	03/09/99	NYG1108899	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Mode, City, NY	Treatment
8	03/09/99	NYG1108944	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	25	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
9	03/12/99	NYG1108926	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
10	03/12/99	NYG1108917	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
ື້ 11	03/19/99	NYG1108908	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III	·			Group	Model City, NY	Treatment
12	03/25/99	NYG1476144	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
13	03/25/99	NYG1476108	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
14	05/11/99	NYG1476126	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
15	05/11/99	NYG1476117	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	25	cu. <b>yds</b> .	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Modei City, NY	Treatment

16	05/19/99	NYG1108935	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
17	05/21/99	NYG1476153	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	) cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
18	05/21/99	NYG1476135	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	- 30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
19	05/27/99	NYG1476819	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill
			NA3077, III				Group	Model City, NY	Treatment
20	05/27/99	NYG1476774	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Hazmat Enviromental	CWM Chemical Services, LLC,	Landfill/
			NA3077, III				Group	Model City, NY	Treatment
7	06/08/99	NYB7628364	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/
			NA3077, III			_		Model City, NY	Treatment
8	06/08/99	NYB7628517	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	) cu.yds.	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/
			NA3077, III					Model City, NY	Treatment
12	06/11/99	NYB7628508	RQ Hazardous Waste, solid, n.o.s. (D008), 9,	1	30	cu.yds.	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/
			NA3077, III					Model City, NY	Treatment
	Total			23	675	cu.yds			

## **Drummed Waste**

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Load	Date	Manifest #	Waste Stream	Quantity	Total	Wt.	Transporter	Designated Facility	Treatment
1	03/23/99	MI7615652	RQ, Waste Corrosive Liquid, n.o.s., 8,	5 Drums	2500	lbs.	Tri-State Motor	City Environmental, Inc.	Stabilization/
1	03/23/99	same	UN1760, III (D002, D008) RQ, Hazardous Waste Solid, n.o.s., 9, NA3077 III (D008)	2 Drums	620	lbs.	Transit, Co. Tri-State Motor Transit, Co.	Detroit, MICity Environmental, Inc.	Nuetralization/
	03/23/99	same	Waste Corrosive Solid, n.o.s., 8, UN1759, III (Soda Ash)	5 Drums	1950	lbs.	Tri-State Motor Transit, Co.	City Environmental, Inc. Detroit, MI	Stabilization/ Landfill
13	06/11/99	NYB7628589	RQ, Hazardous Waste Solid, n.o.s. (Lead) 9, NA 3077, III (D008)	2 Drums	1000	lbs.	Freehold Cartage, Inc.	Environmental Enterprises Cincinnati, Ohio	
	Total			14 Drums	6070	lbs.			

# Bulk Liquids

Load No,	Date	Manifest #	Waste Stream	Quantity	Total Quan.	Wt. Unit	Transporter	Designated Facility	Treatment
1	03/25/99	NYG1476171	RQ Hazardous Waste, Liquid, n.o.٤. (D008),	1 Tanker	3,766	gal.	Hazmat Environmental	CECOS International, Inc.	W/W Treatment
			9, NA3082, III				Group	Niagara Falls, NY	
2	05/26/99	NYG1476801	RQ Hazardous Waste, Liquid, n.o.s. (D008),	1 Tanker	4,000	gal.	Hazmat Environmental	CECOS International, Inc.	W/W Treatment
			9, NA3082, III				Group	Niagara Falls, NY	
Ĺ	Totai			2 Tankers	7,766	gal.			

# ) Contaminated Soil

Load	Date	Manifest #	Waste Stream	Quantity	Total	Wł.	Transporter	Designated Facility	Treatment	
No.					Quan.	Unit				
1	06/03/99	NYB7628391	RQ Hazardous Waste, Solid, n.o.s. (D008),	1 (18 tons)	20	cu.yds.	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/	
			9, NA3077, III					Model City, NY	Treatment	
2	06/03/99	NYB7628382	RQ Hazardous Waste, Solid, n.o.s. (D008),	1 (22 tons)	20	cu.yds.	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/	
			9, NA3077, III					Model City, NY	Treatment	
3	06/07/99	NYB7628463	RQ Hazardous Waste, Solid, n.o.s. (D008),	1 (22 tons)	20	cu.yds.	. Freehold Cartage, Inc.	CWN: Chemical Services, LLC,	Landfill/	
			9, NA3077, III					Model City, NY	Treatment	
4	06/07/99	NYB7628454	RQ Hazardous Waste, Solid, n.o.s. (D008),	1 (22 tons)	20	20 cu.yds. I	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/	
			9, NA3077, III					Model City, NY	Treatment	
5	06/08/99	NYB7628427	RQ Hazardous Waste, Solid, n.o.s. (D008),	1 (21 tons)	1 (21 tons)	20	cu.yds.	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/
Ĺ			9, NA3077, III	]				Model City, NY	Treatment	
E e	06/08/99	NYB7628436	RQ Hazardous Waste, Solid, n.o.s. (D008),	1 (21 tons)	20	cu.yds.	Freehoid Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/	
}			9, NA3077, III					Model City, NY	Treatment	
j 9	06/09/99	NYB7628418	RQ Hazardous Waste, Solid, n.o.s. (D008),	1 (21 tons)	20	cu.yds.	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/	
			9, NA3077, III					Model City, NY	Treatment	
10	06/09/99	NYB7628445	RQ Hazardous Waste, Solid, n.o.ɛ. (D008),	1 (21 tons)	20	cu.yds.	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/	
			9, NA3077, III					Model City, NY	Treatment	
11	06/10/99	NYB7628472	RQ Hazardous Waste, Solid, n.o.s. (D008),	1 (21 tons)	20	cu.yds.	Freehold Cartage, Inc.	CWM Chemical Services, LLC,	Landfill/	
			9, NA3077, III					Model City, NY	Treatment	
	Total			9 (189 tons)	180	cu.yds				

## Non-Hazardous Materials

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Load	Date	Manifest #	Waste Stream	Quantity	Total	Wt.	Transporter	Designated Facility	Treatment
1	03/16/99	Bill of Lading	Battery, Electric Storage Wet (Filled With Acid), Corrosive Material 8, UN2794, III	4 pallets	12,940	lbs.	J&M Schaefer, Inc.	J&M Schaefer, Inc. Lancaster, NY	Recycling
2	03/16/99	Bill of Lading	Battery, Electric Storage Wet (Filled With Acid), Corrosive Material 8, UN2794, III	3 pallets	7,550	lbs.	J&M Schaefer, Inc.	J&M Schaefer, Inc. Lancaster, NY	Recycling
) 3	05/12/99	Bill of Lading	Non-Regulated Oxidized Lead Plates for Recycling	2 pallets			Hazmat Environmental Group	East Penn Manufacturing	Recycling
4	05/27/99	Bill of Lading	Lead (Waffle Plates)	12 pallets	34,425	lbs	Steel City Recycling	Steel City Recycling, Inc. Lackawanna, NY	Recycling
	Total			21 pallets	54,915	lbs.			