INTERIM REMEDIAL MEASURES WORK PLAN

DEMOLITION AND DECONTAMINATION ACTIVITIES
TRACT I SITE
3123 HIGHLAND AVENUE
NIAGARA FALLS, NIAGARA COUNTY, NEW YORK
SITE NO. 932131

SUBMITTED TO:

THE NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

Prepared for:

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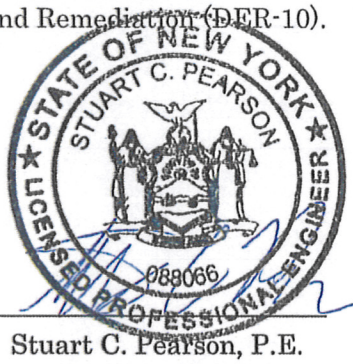
Robert E. Crowley
Senior Principal Scientist

I certify that I am currently a New York State registered professional engineer and that this Interim Remedial Measure Work Plan, where applicable, was prepared in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



Stuart C. Pearson, P.E.
Principal Engineer (MACTEC Engineering and Consulting, P.C.)
April 13, 2012

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ACRONYMS

ACM	Asbestos Containing Material
Amec	Amec Environment & Infrastructure, Inc.
BCP	Brownfield Cleanup Program
bgs	below ground surface
Brightfields	Brightfields, Inc.
CAMP	Community Air Monitoring Plan
CY	cubic yards
EA	EA Engineering, P.C.
E&E	Ecology & Environment, Inc.
ERP	Environmental Restoration Program
FER	Final Engineering Report
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NYSDEC	New York State Department of Environmental Conservation
OSC	Ontario Specialty Contracting
OSHA	Occupational Safety and Health Administration
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PID	Photo Ionization Detector
PPE	Personal Protective Equipment
SCGs	Standards, Criteria and Guidance
SCOs	Soil Cleanup Objectives
SI	Site Investigation
Site	Tract I Site
SMP	Site Management Plan
SVOCs	Semivolatile Organic Compounds
TAL	Target Analyte List
TCLP	Toxicity Characteristic Leaching Procedure
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOCs	Volatile Organic Compounds
WP	Work Plan
XRF	X-ray fluorescence

EXECUTIVE SUMMARY

This Interim Remedial Measure (IRM) Work Plan (WP) presents a plan to design and execute a Demolition IRM at the Tract I Site (Site) located at 3123 Highland Avenue in the city of Niagara Falls, Niagara County, New York. Brightfields, Inc. (Brightfields) has submitted an application under the New York State Brownfield Cleanup Program (BCP) concurrent with the submittal of this Work Plan. The New York State Department of Environmental Conservation (NYSDEC) has been involved with the Tract I Site since 1998, initially working with the City of Niagara Falls under the Environmental Restoration Program (ERP). The remedial investigation of the Site was completed in three efforts in 1999, 2009, and 2011. A Consolidated Remedial Investigation report will be submitted to the NYSDEC outlining the previous Site investigations and additional sampling to be conducted in a Supplemental Site Investigation on soil outside of the structure footprint and soil beneath the building foundation. Furthermore, the interior of the Power City Warehouse building was addressed in a Removal Action by the United States Environmental Protection Agency in 2009-2010. This WP addresses the demolition of portions of the building and the cleanup of the remaining debris located inside of the building. Following the Consolidated Remedial Investigation report, a Soil Remediation IRM WP will be issued, which will outline the interim remedial approach of the soil at the Site. An Alternatives Analysis Report (AAR) will also be prepared concurrent with the Soil Remediation IRM implementation that evaluates final remedies for the Site. Elements of the recommended alternative from the AAR will then be implemented,

Site Layout on Aerial Photograph

The Site consists of approximately 5.9 acres of industrial property and has been vacant since the 1980s. It is owned by the City and approximately 55 percent of the

Site is covered with structures. Immediately to the north of the Site is the Tulip Corporation property, which consists of approximately 5.7 acres located at 3125 Highland Avenue. To the south and east of the Site is the Tract II property (also owned by the City), which is approximately 18.5 acres in size. The western border of the Site is Highland Avenue. It is anticipated that the Tract I Site will be remediated and redeveloped in conjunction with similar work on the adjacent Tract II site.

The Highland Avenue community has a long history of activity to encourage and foster redevelopment of Tract II since the 1970s. New housing, called the Hope VI Project, has been constructed on the southern side of Beech Avenue. The Hope VI housing eliminated a park on Beech Avenue but only with the commitment of the City, that it would provide replacement park space on the Tract II Site. In order to support a viable redevelopment on the Tract II property, Brightfields has elected to enter the Tract I Site into the BCP, and remediate and redevelop it concurrent with the Tract II site. The potential future use of the Site is as an educational incubator for training the local work force. Building on past planning efforts and the City Draft Master Plan for the Highland Avenue area, this WP outlines a remedial approach that has been engineered to support a proposed redevelopment plan. The conceptual redevelopment plan has been discussed with the City, and the project team is in the process of gathering input from other stakeholders, particularly the community.

The combination of a remediation plan coupled with a viable redevelopment concept presents a unique opportunity to address legacy environmental issues with the Site and return an underutilized property back to productive use. This IRM WP includes input and analysis from a team of scientists, engineers, and urban planners, who have built upon past work, including the extensive planning efforts for the area.

The Demolition IRM for the Site is a portion of the Power City Warehouse Building will be demolished and debris that is located inside of the building will be disposed of. The floor slab from the demolished portion of the building will be left in place removed along with any associated frost walls or piping as part of the soil cleanup activities. The portion of the Power City Warehouse Building that remains standing will be reused.

1.0 INTRODUCTION

Amec Environment & Infrastructure, Inc. (Amec) has prepared this Interim Remedial Measures (IRM) Work Plan (WP) on behalf of Brightfields, Inc. (Brightfields) for the Tract I Site (Site) located at 3123 Highland Avenue, in the City of Niagara Falls (City), Niagara County, New York. Figure 1 shows the location of the Site on a United States Geological Survey (USGS) topographic map and Figure 2 shows the existing layout of the Site in plan view.

The Site is a former lead/acid battery manufacturing plant and has been the subject of three characterization efforts by the New York State Department of Environmental Conservation (NYSDEC) and a Removal Action by the United States Environmental Protection Agency (USEPA) between 1999 and 2011. Adjacent to the Site, to the south and east, is the Tract II property, which is being addressed under the State of New York Inactive Hazardous Waste Sites program.

The City has endeavored to redevelop both the Tract I and Tract II sites since closure of the industrial facilities in the early 1970's. In order to support a viable redevelopment on the Tract II property, Brightfields has elected to also remediate and redevelop the Tract I property. The Site will be remediated under the New York State Brownfield Cleanup Program (BCP). Site characterization work has occurred in three efforts under NYSDEC oversight in 1999, 2009, and 2011. Brightfields submitted the BCP application for the Site in December of 2011, in its capacity as a potential purchaser of the Site from the City.

In discussions with the NYSDEC, Brightfields agreed to submit a Consolidated Remedial Investigation report for the Tract I Site. The Consolidated Remedial Investigation report will summarize the previous Site investigations, and identify any remaining data gaps. Following the submittal of the Consolidated Remedial Investigation report, a Supplemental Site Characterization Work Plan will be submitted issued for NYSDEC approval.

The purpose of this WP is to convey and document the process that will be used to prepare the IRM design for the Site, as well as identifying critical elements of implementing the IRM that need to be considered during the design phase. The

IRM is intended to foster Site redevelopment and identify components of the redevelopment that may satisfy some of the remedial objectives.

1.1 SITE REDEVELOPMENT PLAN

A conceptual redevelopment plan is in the process of being prepared for the Site, and requires input from stakeholders, particularly the community. The conceptual redevelopment plan is consistent with the City Master Plan for the Highland Avenue area and contemplates commercial use at the Site. The combination of a remediation plan that supports a viable redevelopment concept presents a unique opportunity to address legacy environmental issues with the Site and return an underutilized property back to productive use.

1.2 SITE LOCATION AND HISTORY

The Site is located in an industrial area of the City of Niagara Falls and consists of approximately 5.9 acres located east of Highland Avenue, north and west of the Tract II site, and south of the active Tulip Corporation property (Figure 2). The Site was first developed in approximately 1910 as the Power City Warehouse, a battery manufacturing facility for U.S. Light and Heat Co., and later Autolite Co. The facility was acquired by Prestolite Co. in the 1960s for the manufacture of hard rubber battery cases, battery charging and filling. Battery manufacturing activities ceased in the 1970s and the Site was used as a warehouse and automotive body shop until the 1980s. By the late 1980s, the Site had been abandoned and various portions were in disrepair. At that time, the City acquired the property via tax foreclosure.

Site Layout on Aerial Photograph

1.3 SITE REGULATORY HISTORY

The Site was originally being addressed by the City under the New York State Environmental Restoration Program (ERP), and was assigned the site number B00160. In May 1999, a remedial investigation was conducted on the Site by Ecology and Environment, Inc. (E&E) for the City under a grant from the NYSDEC. The results of the investigation were presented in a site investigation report prepared by E&E (E&E, 2000). In late 2007, the NYSDEC contracted EA Engineering, P.C. (EA), who performed an additional site characterization. The results of that investigation were presented in a report prepared by EA (EA, 2009). Because the Site was remediated under the ERP, the NYSDEC revised the designation of the Site as site number 932131.

In late 2009 and 2010, the USEPA conducted a Removal Action within the Power City Warehouse. These activities included fencing the Site, decontamination of the interior of the building, disposing of water in the building basement and removal of some asbestos from the Site.

1.4 IDENTIFICATION OF APPLICABLE STANDARDS, CRITERIA, AND GUIDELINES

To select the applicable Soil Cleanup Objectives (SCOs) for the Site, the end use of the Site needs to be considered. Potential redevelopment concepts for the Site include an education incubator and commercial facilities. Based on a conceptual redevelopment scenario that is consistent with the City's Master Plan, the western portion of Tract I could be designated as commercial space, the central and eastern portion of the Site could be designated as an adult education incubator, which would also be consistent with a commercial use scenario. In accordance with DER-10, the commercial lead SCO is 1,000 milligrams per kilogram (mg/kg). Note that if the Site were limited to only industrial uses, the lead SCO would be 3,900 mg/kg. Additionally, some of the lead concentrations exceed the Toxicity Characteristic Leaching Procedure (TCLP) standard of 5 milligrams per liter (mg/L) lead in the TCLP extract. Therefore, the 5 mg/L TCLP standard for lead will also be considered an SCO for the Site.

Summary of Lead SCOs

	Units	Commercial/ Industrial
TCLP Lead	mg/L	5
Total Lead	mg/kg	1,000

The objectives of the remedial measures at the Site will include reducing the lead concentration in the surface soil, and controlling potentially complete exposure pathways to soil containing lead exceeding the appropriate SCOs. Finally, although not necessarily an objective of the BCP program, the physical hazards associated with the dilapidated buildings will also be addressed. No SCOs are proposed for groundwater because no groundwater cleanup is anticipated as part of this IRM.

1.5 SUMMARY OF PROPOSED DEMOLITION IRM

Portions of the interior of the Power City Warehouse building on the Site have been addressed by the USEPA Removal Action. The demolition and redevelopment plan will leave the existing concrete slab intact where portions of the building are to remain in place. As such, it is not likely that there is a potential for contact with lead present beneath the concrete floor and further remediation is not necessary beneath the footprint of the remaining building. In portions of the building which are demolished, the concrete floor along with any associated footers and piping, will be left in place and removed along with soil under an addendum to this WP following the completion of the additional Site characterization. Brick and brick bedding material (sand) will also be covered under WP addendum.

Asbestos and other debris that can be safely cleaned and removed will be characterized and managed prior to demolition of the building. Debris remaining inside areas of the structure deemed unsafe for entry will be sampled after the building has been stabilized or razed. Portions of the building thought to contain asbestos will be sampled and segregated as necessary after the building has been stabilized.

1.6 PROJECT ORGANIZATION

Amec will prepare the design documents and oversee any field aspects of this IRM on behalf of Brightfields, Inc. The Amec Professional Engineer will oversee the design and stamp any required design figures and the design documents. Amec

personnel will collect any samples, provide technical oversight, and direct any subcontractor(s) to complete work that has been deemed appropriate to achieve the project objectives.

Listed below are the key project personnel and their office/primary telephone numbers.

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1.7 WORK PLAN ORGANIZATION

The following sections of this Demolition IRM WP provide the information necessary to identify and evaluate the IRM for the Site. Those sections include: Background (Section 2.0), Demolition Interim Remedial Measures (Section 3.0), Permits and Other Authorizations (Section 4.0), Schedule (Section 5.0), Post-Construction Plans (Section 6.0), and References (Section 7.0).

1.8 LIMITATIONS

This WP presents a summary of information known to Amec concerning the Site that Amec considered pertinent to the scope of work and stated project objectives. Amec has performed this work with the care and skill ordinarily used by members of the profession practicing under similar conditions. The conclusions presented herein are those that are deemed pertinent by Amec based upon the assumed accuracy of the available information. No other warranty, expressed or implied, is made as to the professional advice included in this report. The information present in this report is not intended for any use other than the stated objectives of the project. This document was prepared for the sole use of Brightfields, Inc. and the NYSDEC, who are the only intended beneficiaries of our work.

2.0 BACKGROUND

This section provides a summary of the characterization of the Site and incorporates all of the available data collected in the various phases of the Site investigation. A discussion of the Site investigations and the results are provided.

2.1 SITE DESCRIPTION

The Tract I Site consists of approximately 5.9 acres of property located at 3123 Highland Ave. in Niagara Falls, Niagara County, New York. The Site is mostly covered by the former Power City Warehouse Building in various levels of disrepair. The western portion of the Site consists of a grassy area and a gravel drive to the loading dock area. Along the southern boundary of the Site are some trees and undergrowth with a segment of a retaining wall. The eastern portion of the Site has some grassy areas intermixed with broken asphalt and concrete sections of concrete pavement.

The Power City Warehouse Building covers a large portion of the Site (approximately 3.3 acres), and is a three-story masonry building. The building has had numerous additions to the original structure. Portions of the building roof have collapsed, making several areas of the warehouse building unsafe. Previous investigations of the Power City Warehouse Building have reported that concrete floors up to six inches thick cover approximately 70 percent of the rooms in the building. The concrete floors were noted to be intact (E&E, 2000). Some additions of the warehouse have brick floors as well. Drains and sumps were located throughout the building, and a basement access, containing several feet of water, was also discovered.

A second, considerably smaller, one-story building (approximately 462 square feet) is located in the northeast corner of Tract I. The smaller building is constructed of brick with a concrete floor. Past investigations have concluded that this building may have been used for chemical storage (E&E, 2000).

The Site consists of roughly 30 percent grass and concrete surface, 15 percent wooded and undergrowth, and approximately 55 percent building structures.

2.2 SITE GEOLOGY AND HYDROGEOLOGY

The Geologic Map of New York, Niagara Sheet published by the University of the State of New York indicates that the Site lies within the Silurian-aged Lockport Group. The Lockport Group consists of Geulph, Oak Orchard, Eramosa, and Goat Island Dolostones and the Gasport Limestone. The Tract II Site investigation revealed that bedrock is between 12.5 and 24.5 feet below ground surface in the vicinity of the Site. The unconsolidated material at the Site consists of various fill materials at the surface, underlain by silty clay. Dolostone bedrock is present below the silty clay.

Although no direct groundwater investigations have been performed on the Tract I Site, previous investigations conducted for the NYSDEC on the adjacent Tract II site indicate that there is no significant groundwater aquifer within the overburden soils or fill materials (EA, 2009). The groundwater flow at the Site appears to be generally toward the southwest, toward the Niagara River, on top of the Dolostone bedrock formation. The NYSDEC concluded (from previous site characterization reports) that groundwater in the vicinity of the Site was not likely to be used as drinking water due to the small amount of water available, a local ordinance prohibiting water supply wells in the City, and the fact that public drinking water is available throughout the area.

2.3 SUMMARY OF PREVIOUS REMEDIAL INVESTIGATIONS

The Site was previously investigated in three efforts between 1998 and 2011. These included the 1998-2000 E&E investigation, the 2008-2009 EA Supplemental Investigation, and the July 2011 Predesign Study investigation (Amec 2011). The following subsections summarize the findings of these Site characterization efforts.

2.3.1 1998-2000 E&E Site Investigation

In May 1999, E&E conducted the initial investigation of the Site. The E&E investigation consisted of collecting 10 composite and three grab surface soil samples from 13 surface locations (SS-PCW-01 through SS-PCW-13), two composite sediment samples from the central floor drains (SD-PCW-01 and SD-PCW-01/D), one composite lead paint sample (PT-PCW-01), and three potential asbestos containing material samples (AS-PCW-01 through AS-PCW-03). Three background soil samples were collected from areas around the Site. Soil samples were collected for semivolitile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and lead. Sample locations are shown in Figure 3. The results of this investigation were

reported in the *Site Investigation Report for the Power City Warehouse* (E&E, 2000). The following subsection summarizes the results.

2.3.1.1 E&E Site Investigation Results

Results from the Site Investigation conducted by E&E in 1999 indicated that lead and some additional polycyclic aromatic hydrocarbons (PAHs) exceeded the Site SCOs in sediment and debris inside of the building. Lead levels exceeded the SCOs in all 10 of the samples analyzed, with a concentrations ranging from 2,350 to 178,000 mg/kg. A table summarizing the results is located in Appendix A. PAHs, which exceeded the SCOs in five of the ten sample locations, were detected during the sampling event. The PAHs exceeding the SCOs included benzo(a)antracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene.

The areas with higher concentrations of lead are located in the former Lead Foundary Area and Storage Plate Area (Appendix A). These areas are located in the northwest corner of the building. Samples collected outside of the building footprint with exceedances of lead were SS-PCW-11 and SS-PCW-12, with concentrations of 8,240 and 2,790 respectively.

2.3.2 2007-2009 EA Final Site Characterization

EA conducted additional characterization activities at the Site for NYSDEC from September 2007 to March 2009. EA submitted the *Final Site Characterization Report* (EA, 2009) to the NYSDEC in May 2009. The EA investigation included sample identification and warehouse floor inspection, debris sampling, debris volume estimation, basement water characterization, and subsurface soil sampling. Sample locations are shown on Figure 3.

EA collected 19 debris samples throughout the building footprint area. Grab samples were collected from individual sumps and composite samples were collected from continuous floor drains and trenches. The samples were analyzed for SVOCs and Target Analyte List (TAL) and TCLP metals. Selected samples were also analyzed for Volatile Organic Compounds (VOCs) based upon field screening.

EA also characterized and discharged water from the basement of the former Power City Warehouse into the sanitary sewer. EA then collected one composite sample from the debris located in the basement, which was analyzed for TAL metals. EA

collected subsurface soil samples from 23 locations at the Site. Subsurface soil samples were collected at13 locations inside the footprint of the former Power City Warehouse and 10 soil samples were collected surrounding the structure. Shallow subssurface soil samples were collected from around the building from the 0 to 2 foot interval below ground surface (bgs). Additionally, subsurface soil was collected from areas from an interval that exhibited elevated Photo Ionization Detector (PID) readings, staining, or odors.

2.3.2.1 EA Supplemental Investigation Results

The former Power City Warehouse floor inspection determined that a large portion of the warehouse structure is constructed on a poured concrete foundation, including locations with a brick or asphalt floor. EA cored the concrete building foundation for subsurface soil sampling and determined that floor thicknesses were, on average, 6-inches thick. Subsurface soil samples were collected from 13 locations beneath the building sub-slab. Lead exceeded the Commercial SCOs in two locations (SB-08S and SB-12S) and chromium exceeded at SB-11S. There were no exceedances of VOCs or SVOCs beneath the building slab.

EA collected 19 debris samples from throughout the interior of the former Power City Warehouse. Metals results from the samples indicated exceedances of the Commercial SCOs for arsenic, barium, cadmium, copper, lead, mercury, and zinc. SVOCs that exceeded the Commercial SCOs were acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, 2-methylphenol, 4-methylphenol, naphthalene, phenanthrene, phenol, pyrene, and 1,2,4-tricholorbenzene. There were no VOCs that exceeded the Commercial SCOs. All of the debris samples were collected above the concrete slab in the buildings. The debris was collected and disposed of off-Site by the USEPA, and is, with the exception of inaccessible areas, no longer in the former Power City Warehouse building.

An inspection was performed on the basement walls and floor, which determined that the basement was constructed of poured concrete and was observed to be in good condition. Basement sampling results indicated arsenic, cadmium, and lead exceed the NYSDEC Commercial SCOs.

Subsurface soil samples from outside the building footprint were collected and analyzed for VOCs, SVOCs, and TAL metals at nine locations. Several of the metal results exceeded the NYSDEC Commercial SCOs; they include arsenic, lead, and copper. Sample results were tabulated by EA and are included in Appendix B. A figure showing the locations of the exceedances to the SCOs is also included in Appendix B.

2.3.3 Amec Predesign Study

In July of 2011, Amec implemented a NYSDEC-approved predesign study on the Site. The predesign study was performed on soils outside of the structure on the Tract I Site. Samples were collected from 11 soil borings (B-10 through B-20) as shown on Figure 3. Additionally, a hand-held X-ray fluorescence (XRF) meter was used to measure real-time lead concentrations for later correlation to laboratory results. A building evaluation was also performed to determine if the buildings could be used during the remediation.

The samples collected in the predesign study were analyzed for lead, tin, antimony, TCLP lead, and pH. The results of the predesign samples showed all of the lead concentrations exceeded the commercial SCOs and ranged between 1,210 to 16,900 mg/kg. TCLP lead results exceeded TCLP lead levels of 5 mg/L at four locations. Two of the locations B-10 and B-11 (18.4 and 46.5 mg/L respectively) are located in the northeast corner of the Site; additionally, two locations, B-17 and B-18, located along the southern boundary of the property, exceeded the TCLP standard (21 and 69.7 mg/L respectively). The pH levels in all of the samples ranged from 7.16 to 8.25.

2.4 REMOVAL ACTION

During the summer of 2010, the USEPA began a Removal Action within the Power City Warehouse. Prior to the start of work actions the USEPA fenced the former Power City Warehouse in order to secure the Site. The cleanup involved the removal of asbestos, SVOC and lead contaminated sediment and debris within the building, and removal of any containers of hazardous material on the property. The USEPA removed or stabilized sections of the building to facilitate work activities. Pollution Reports detailing work activities are included in Appendix C. Debris removal was completed only in portions of the warehouse building that were considered safe for entry. Areas that were not addressed during the Removal Action are shown in Figure 4.

3.0 DEMOLITION INTERIM REMEDIAL MEASURES

3.1 REMEDIAL ACTION OBJECTIVES

The goals of the NYSDEC remedial program are to meet the Standards, Criteria and Guidance (SCGs), and to be protective of human health and the environment. At a minimum, "the remedy must eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous substance and hazardous waste disposed at the Site through the proper application of scientific and engineering principles."

The proposed future use of the Site includes educational and commercial facilities, both of which are consistent with the commercial SCGs. Commercial uses are defined in the NYSDEC Technical Guidance DER-10, and are among the most restrictive site uses described in the land-use hierarchy.

Based on existing zoning, the proposed land uses, and land-use controls, the following are remedial objectives that will be protective of human health and the environment, meet the SCGs, and encourage redevelopment of the Site:

- Control the potential for human exposure to the constituents in debris exceeding the applicable SCOs; and
- Control the physical hazards associated with the buildings and other appurtenances on the Site.

3.2 SUMMARY OF AREAS REQUIRING REMEDIAL ACTION

The area which will be remediated is the Power City Warehouse Building. A portion of the building was cleaned in a Removal Action by the USEPA in 2010. The cleanup activities were completed primarily on the western portion of the building. The remaining portion of the building requiring cleaning is shown in Figure 4. Asbestos containing material (ACM) and miscellaneous debris which is located on or in the building, where safe to do so, will be removed from the building. ACM and debris which cannot be removed due to the dilapidated condition of the structure will be removed after sections of the building or the entire structure has been demolished.

Soil remediation activities will be detailed in a forthcoming addendum to this IRM WP. Groundwater remediation activities are not anticipated based on current information but may be evaluated pending completion of the Supplemental Site Investigation.

3.3 REMEDIAL APPROACH

A controlled demolition will be completed on areas of the building where sections of the building can be removed to allow for access into the structure. This process will be completed until the entire structure is down.

A portion of the structure will be left as part of the future Site development as shown in Figure 5. The demolition work will be completed in accordance with applicable laws and regulations and/or approved variances.

Demolition of the existing facility will include the following:

- Preparation and implementation of a demolition health and safety plan, to include requirements for employee training and medical monitoring, list of designated personnel, respiratory protection program, personal protective equipment (PPE), fire protection, site and community air monitoring programs, and emergency procedures;
- Implementation of a decontamination program;
- Implementation of a hazard communication program;
- Obtaining all required licenses, demolition permits and other permits, and approvals;
- Mobilization of equipment and site preparation;
- Removal of the existing chain link fence as necessary to facilitate the work and demolition activities. The fence will be replaced along an alignment determined by Brightfields once the Site remediation activities are completed.
- Capping/plugging of drains and sewer lines exposed during demolition;
- Cleaning (power washing, scouring, scabbling, where accessible and appropriate);
- Demolition/removal of buildings, tanks, piping, and ancillary structures, as required;
- Backfilling to grade (after cleaning) of pits and sumps where accessible;

- If appropriate, sealing of structural floor slabs that will remain in place;
- Implementation of dust control measures;
- Implementation of erosion and sediment control measures;
- Site restoration; and
- Preparation of reports and submittals, as necessary, to document the completion of demolition activities.

Additional details on some of these activities follows.

3.3.1 Hazardous Substance and Debris Removal

Prior to demolition activities, Brightfields will complete additional hazardous substance removal, including asbestos abatement and fluorescent light ballasts removal in areas of the building deemed safe for work activities.

Debris located inside of the building will be removed when the area is considered safe to do so. Debris located in the dilapidated section of the building will be sampled for waste characterization purposes prior to disposal off-Site or after a controlled demolition allows for the safe entrance into those areas for sampling.

Sumps or pits that contain fluids or sediments that are located in areas safe for sampling will be sampled prior to demolition activities. Sumps or pits that are not located in safe areas will be sampled following the controlled demolition activities allow safe access to those areas.

3.3.2 Asbestos Abatement

Asbestos abatement was completed on the western portion of the building by USEPA during the Removal Action; however, an asbestos evaluation will be completed on the remaining structure to identify where there are additional locations that will require abatement. Asbestos abatement will include:

- Preparation of an asbestos abatement health and safety plan, to include requirements for employee training and medical monitoring, list of designated personnel, respiratory protection program, PPE, site and community air monitoring, and emergency procedures;
- Implementation of a decontamination program;
- Implementation of a hazard communication program;

- Obtaining all required licenses, permits and approvals;
- Designation of regulated areas, including use of warning signs that can be removed as appropriate;
- Provisions for adequate exhaust ventilation;
- Removal of friable asbestos, including pipe insulation and other insulating materials;
- Removal of non-friable asbestos, including floor tile, roofing materials, and transite;
- Implementation of a final cleaning and visual inspection program;
- Off-site disposal of ACM at licensed disposal facilities; and
- Preparation of submittals and reports, as necessary, to document the asbestos abatement program.

Areas that cannot be accessed due to safety will be partially demolished to allow safe access for asbestos abatement in those areas.

3.3.3 Concrete Slab Management

Concrete slabs that will remain following building demolition will be left in-place for removal along with soil during additional remediation actions. After the structure walls and debris are removed from the building footprint, the following actions will be taken until the concrete floor and it associated sub-grade footers and piping are removed:

- Floor drains will be sealed with concrete at the surface;
- Basements, sumps, and pits will be inspected and cleaned. Basements, sumps, and pits will then be filled with either clean fill or clean recycled hardfill material (shown through sampling/testing to meet on-Site reuse criteria as specified in Section 3.3.4);
- Low spots will be leveled by placing a layer of stone or recycled hard fill to eliminate trip hazards.

3.3.4 Post Demolition Sampling

Building material that is demolished from areas that are clear of ACM may be reused on-Site if the hard fill passes sampling analysis. Areas were the building is

demolished prior to the full removal of ACM or debris will not be reused onsite as a backfill and will be disposed of off-Site.

Hard fill material that will be reused on-Site will be sampled to meet the requirements of Section 5.4(e) of DER-10. Sampling frequencies have been modified from the DER-10 per section 5.4(e)8 which states "For all remedial programs except those developed pursuant to the BCP, DEC may issue a site-specific exemption for one or more of the requirements set forth in this section, based upon site-specific conditions". A site-specific sampling protocol is requested for a number of the exemptions listed in DER-10 which include: volume of backfill material, depth of the placement of the backfill material relative to groundwater, and use and redevelopment of the Site. Because of the large amount of hard fill, the sampling frequency will be reduced, assuming that a trend of compliance is established. Samples will be collected from the first 100 cubic yards (CY), then from the next 500 CY, then one sample for every subsequent 1,000 CY of demolished building material. Building material re-use samples will be analyzed for TCL VOCs, TCL SVOCs, TAL metals, PCBs, and pesticides and compared to the Restricted Commercial Use Allowable Constituent Level for Imported Fill or Soil in Appendix 5 of DER-10.

4.0 PERMITS AND OTHER AUTHORIZATIONS

4.1 SOIL EROSION AND SEDIMENTATION PLAN

A soil erosion and sedimentation plan will be included in the Demolition IRM Design submitted to the NYSDEC prior to the disturbance of soils.

4.2 LOCAL PERMITS

Any local permits including but not limited to demolition, asbestos, or utilities will be received prior to the start of work by Brightfields or its subcontractor. Permits necessary for the start of work, including demolition, will be listed in the RD document.

4.3 HEALTH AND SAFETY

Amec has prepared a Site-specific Health and Safety Plan (HASP) for the IRM WP, a copy of which is provided in Appendix D. The HASP will be used by Amec employees and will address the potential hazards associated with the proposed work. The HASP has been prepared in accordance with Occupational Safety and Health Administration (OSHA) standards and includes an identification of the anticipated Site hazards, requirements for PPE and air monitoring, action levels for upgrading PPE levels, and emergency procedures. Amec will require that visitors to the Site, including client and regulatory agency personnel, comply with Amec's HASP or provide their own HASP.

A Community Air Monitoring Plan (CAMP) will be provided prior to demolition activities, which will detail work activities and procedures.

5.0 SCHEDULE

The anticipated schedule for the Tract I Site Demolition IRM includes the Demolition IRM Design, CAMP Submittal, and demolition activities as detailed below. The schedule below also shows other Tract I Site activities including Supplemental Site Investigation, Soil Remediation IRM, and Completion of an Alternatives Analysis Report (AAR). Depending on the findings of the Supplemental Site Investigation and the AAR, a final remedy may be implemented in 2011 that adds environmental easements and a Site Management Plan (SMP) to the activities detailed in the demolition and soil remediation IRMs. The schedule below shows execution of easements and submission of the SMP prior to completing a Final Engineering Report (FER) that covers both IRMs and the final remedy. This schedule could change if the AAR recommends additional remediation activities. The schedule indicates approximately eight months will elapse between the beginning of Site mobilization to submittal of the FER. The anticipated schedule for submission of documents and field activities is listed below. Final "as-built" drawings will be submitted with the Final Remedial Design following the completion of construction activities. The actual schedule may vary and will depend on, among other things, subcontractor availability, weather conditions, and regulatory agency review time.

Ontario Specialty Contracting (OSC) has been selected to perform many of the phases of the work at the Site.

SCHEDULE

Demolition and Decontamination IRM WP Submittal	4/13/2012
Supplemental Remedial Investigation Work Plan Submittal	4/27/2012
CAMP Submittal	5/11/2012
Demolition Design Submittal	5/25/2012
Start Demolition IRM Activities	6/1/2012
Soil Remediation IRM WP Submittal	6/29/2012
Soil Remediation IRM Design Submittal	7/20/2012
Start Soil Remediation IRM (Excavation and Disposal/Consolidation)	9/3/2012
Start Soil Remediation IRM (Cover System Installation)	10/15/2012
Alternative Analysis Report Submittal	11/30/2012
Execution of Easements	12/31/2012
Site Management Plan Submittal	3/1/2013
Final Engineering Report	3/29/2013

6.0 POST-CONSTRUCTION PLANS

Although the demolition work is being conducted as an IRM, it is anticipated that the work will, in combination with a Soil Remediation IRM, contribute to a final remedy for the Site. The demolition IRM does not require post construction activities specifically related to the demolition activities other than to maintain security of the Site through fencing. Anticipated post-construction activities following the Soil Remediation IRM and possibly made part of a final remedy include engineering controls (a soil cover), environmental easements, and post-remedial monitoring. These elements will be detailed in the Soil Remediation IRM WP and subsequent documents.

7.0 REFERENCES

Ecology and Environment Engineering, P.C., May 31, 2000, "Site Investigation Report for the Power City Warehouse, Niagara Falls, New York".

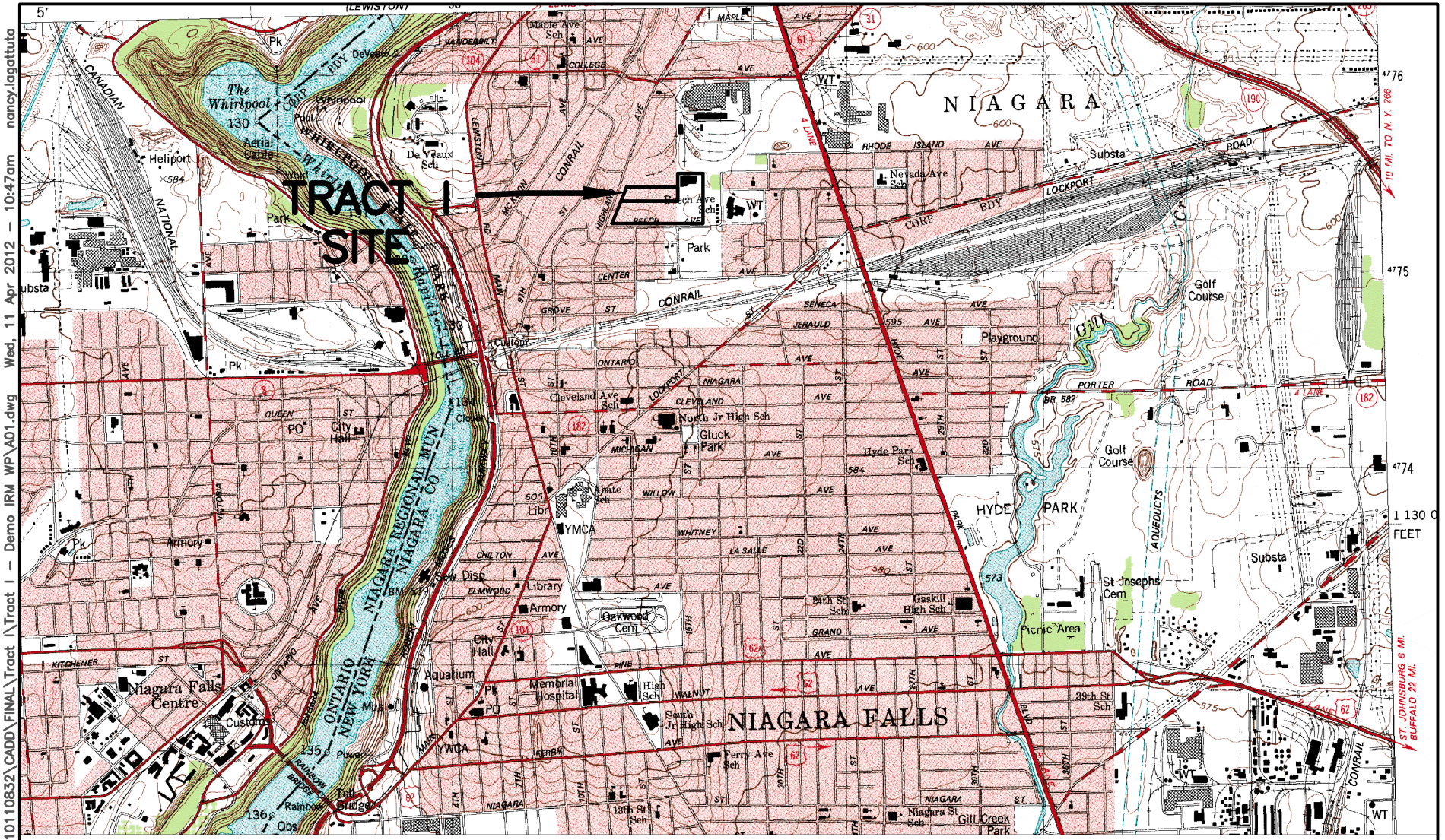
EA Engineering, P.C., May 2009, "Final Site Characterization Report Power City Warehouse Site Highland Avenue (9-32-131), Niagara Falls, Niagara County, New York".

NYSDEC, 2010, *DER-10 Technical Guidance for Site Investigation and Remediation*, DEC Program Policy

Mactec Engineering and Consulting, Inc., June 20, 2011, "Predesign Study Work Plan Tract I and Tract II Sites, Niagara Falls, New York".

FIGURES

DRAWN BY: NEL 2-6-2012 APPROVED BY: ESW 4-11-2012



SCALE 1:24000

1 0.5 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0.5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

NIAGARA FALLS QUADRANGLE

HONEYWELL INTERNATIONAL INC.
NIAGARA FALLS, NEW YORK

Project No.: 3410110832

amec MACTEC Engineering & Consulting Inc.

Environment & Infrastructure
800 North Bell Avenue, Suite 200
Pittsburgh, Pennsylvania 15106

SITE LOCATION MAP

Figure: 1

1

P:\PROJECTS\Honeywell\Niagara Falls\3410110832\CADD\FINAL\Tract I\Tract I - Demo IRM WP\A01.dwg Wed, 11 Apr 2012 - 10:47am nancy.lagattuta

DRAWN BY: NEL 12-15-2011 APPROVED BY: ESW 4-11-2012

HIGHLAND AVENUE
(70' WIDE)

TENNESSEE AVENUE
(66' WIDE)

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE

80 0 80
SCALE: 1"= 80'

HONEYWELL INTERNATIONAL, INC.
NIAGARA FALLS, NEW YORK

Project No.: 3410110832

amec MACTEC Engineering & Consulting Inc.

Environment & Infrastructure
800 North Bell Avenue, Suite 200
Pittsburgh, Pennsylvania 15106

PLAN VIEW MAP OF SITE

Figure: 2

2

P:\PROJECTS\Honeywell\Niagara Falls\3410110832\CADD\FINAL\Tract 1\Tract 1 - Demo IRM WP\PCW-Lead w Tract 1 Base.dwg Wed, 11 Apr 2012 - 2:29pm nancy.lagattuta

DRAWN BY: NEL 12-14-2011 APPROVED BY: ESW 4-11-2012

HIGHLAND AVENUE (70' WIDE)

TENNESSEE AVENUE (66' WIDE)

B-10 B-11 B-12 B-13 B-14 B-15 B-16 B-17 B-18 B-19 B-20

SB-01 SB-02 SB-03 SB-04 SB-05 SB-06 SB-07 SB-08 SB-09 SB-10 SB-11 SB-12 SB-13 SB-14 SB-15 SB-16 SB-17 SB-18 SB-19 SB-20 SB-21 SB-22 SB-23

DS-01 DS-04 DS-05 DS-06 DS-07 DS-08 DS-09 DS-10 DS-11 DS-12 DS-13 DS-14 DS-15 DS-16A DS-16B DS-16C DS-17 DS-18 DS-19A DS-19B DS-20A DS-20C DS-20D DS-21

SD-PCW-01

AS-PCW-01 AS-PCW-02 AS-PCW-03

1a 1b 1c 2a 2b 2c 3a 3b 3c 4 5a 5b 5c 6a 6b 6c 7a 7b 8 9 10a 10b 10c 11a 11b 12a 12b 12c 12d 12e 13a 13b 13c

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- B-18 AMEC SOIL BORING
- 10b E&E COMPOSITE SOIL SAMPLE LOCATION
- SD-PCW-01 E&E COMPOSITE SLUDGE SAMPLE LOCATION
- AS-PCW-03 E&E ASBESTOS SAMPLE LOCATION
- SB-02 EA SUBSURFACE SOIL SAMPLE LOCATION
- DS-08 EA DEBRIS SAMPLE LOCATION

80 0 80
SCALE: 1"= 80'

HONEYWELL INTERNATIONAL, INC.
NIAGARA FALLS, NEW YORK

Project No.: 3410110832

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800 North Bell Avenue, Suite 200
Pittsburgh, Pennsylvania 15106

SAMPLE LOCATION MAP

Figure: 3

3

P:\PROJECTS\Honeywell\Niagara Falls\3410110832\CADD\FINAL\Tract 1\Tract 1 - Demo IRM WP\PCW-Lead w Tract 1 Base.dwg Wed, 11 Apr 2012 - 2:29pm nancy.lagattuta

DRAWN BY: NEL 12-15-2011 APPROVED BY: ESW 4-11-2012

HIGHLAND AVENUE
(70' WIDE)

TENNESSEE AVENUE
(66' WIDE)

AREA NOT ADDRESSED IN
USEPA REMOVAL ACTION

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE

80 0 80
SCALE: 1"= 80'

HONEYWELL INTERNATIONAL, INC.
NIAGARA FALLS, NEW YORK

Project No.: 3410110832

amec MACTEC Engineering & Consulting Inc.

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800 North Bell Avenue, Suite 200
Pittsburgh, Pennsylvania 15106

AREA NOT ADDRESSED IN
USEPA REMOVAL ACTION

Figure: 4

4

P:\PROJECTS\Honeywell\Niagara Falls\3410110832\CADD\FINAL\Tract 1\Tract 1 - Demo IRM WP\PCW-Lead w Tract 1 Base.dwg Wed, 11 Apr 2012 - 2:29pm nancy.lagattuta

DRAWN BY: NEL 12-15-2011 APPROVED BY: ESW 4-11-2012

HIGHLAND AVENUE
(70' WIDE)

TENNESSEE AVENUE
(66' WIDE)

AREA NOT ADDRESSED IN USEPA REMOVAL ACTION

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- FENCE
- STRUCTURE TO REMAIN FOLLOWING DEMOLITION
- PROPOSED SOIL COVER AREAS
- CONCRETE TO BE REMOVED WITH SOIL COVER

80 0 80
SCALE: 1"= 80'

HONEYWELL INTERNATIONAL, INC.
NIAGARA FALLS, NEW YORK

Project No.: 3410110832

amec MACTEC Engineering & Consulting Inc.

Environment & Infrastructure
800 North Bell Avenue, Suite 200
Pittsburgh, Pennsylvania 15106

SOIL COVER AREAS AND STRUCTURE TO REMAIN FOLLOWING DEMOLITION

Figure: 5

5

P:\PROJECTS\Honeywell\Niagara Falls\3410110832\CADD\FINAL\Tract 1\Tract 1 - Demo IRM WP\PCW-Lead w Tract 1 Base.dwg Wed, 11 Apr 2012 - 2:29pm nancy.lagattuta

APPENDIX A

ECOLOGY AND ENVIRONMENT SITE INVESTIGATION REPORT

ecology and environment engineering, p.c.

BUFFALO CORPORATE CENTER
368 Pleasant View Drive, Lancaster, New York 14086
Tel: 716/684-8060, Fax: 716/684-0844

May 31, 2000

Christopher Schmidt
Environmental Assistant
Office of Environmental Services
Niagara Falls City Hall
745 Main Street
Niagara Falls, New York 14302-0069

Re: Site Investigation Report for the Power City Warehouse, Niagara Falls, New York

Dear Mr. Schmidt:

Ecology and Environment Engineering, P.C. (E & E) is pleased to submit to the City of Niagara Falls this Final Site Investigation (SI) Report for the Power City Warehouse, Niagara Falls, New York. This report includes a description of the field activities, a site location map (Figure 1) and an illustration showing the sample locations (Figure 2), summaries of the samples collected and descriptions of their exact locations (Tables 1 and 2), a discussion of the field investigation results, tabulated summaries of the positive analytical results for each sample location and a tabulated comparison summary of the analytical results with regulatory screening levels (Tables 3 through 7), a summary of the asbestos analyses (Table 8), a photolog (Attachment A), the Data Usability Summary Report (Attachment B), and a Remedial Cost Analysis (Attachment C).

E & E conducted this SI to characterize the nature and extent of contamination at the site. The investigation was conducted in compliance with the requirements of the New York State Department of Environmental Conservation (NYSDEC) guidelines and under the review of the United States Environmental Protection Agency (USEPA) Region 2.

This report is being submitted in final form as per your request stated during the May 22, 2000 telephone conversation between E & E and yourself.

Introduction

The 4.03-acre Power City Warehouse Site is located at 3123 Highland Avenue in the City of Niagara Falls (see Figures 1 and 2). The former industrial location is situated in an area of various land uses, including former and current industrial; light commercial (consisting of small retail stores) and residential. The residences east and west of the site are primarily managed by the Niagara Falls Housing Authority, although some private homes also exist on separate lots. A

railroad right-of-way (ROW) is located south of the site beyond Center Avenue and west of the site beyond Highland Avenue. Homes and a few small businesses are located on the west side of Highland Avenue across from the site. Residential communities continue west toward the railroad ROW. The concentration of industry along Highland Avenue increases northward from the site whereas small businesses become more prevalent to the south.

A small community park is located directly south of Beech Avenue and a church, homes, and an electric power transformer building occupy the south side of Beech Avenue across from the site. Residential communities and a girls' club are located further south, leading to a wide railroad ROW. The rail yard separates this area from the areas further south. Individual homes and a church are located east of the site, and an elementary school is located approximately 0.25 mile northeast of the site. Residential communities continue to the east across Hyde Park Boulevard. Interspersed in the residential areas are a few community service buildings and small businesses such as convenience stores. A large expanse of industrial properties lies directly north of the site, continuing to the intersection of Highland and Hyde Park Boulevard.

Site History

The large, abandoned, brick Power City Warehouse building was formerly used for lead-acid battery manufacturing. Various battery types were produced at the facility, including automobile, truck, and tractor batteries. Battery manufacturing was started at the facility by U.S. Light and Heat Co., then continued under Autolite Co. In the 1960s, Prestolite Co. acquired the facility and changed operations to the manufacturing of hard rubber battery cases, filling of batteries with sulfuric acid, and charging of batteries. In the mid-1970s, all operations were relocated to 3001 Highland Avenue, and the building at 3123 Highland Avenue was vacated. The building has undergone various uses since Prestolite's departure, including use as an automotive body shop and as a warehouse by the Power City Distribution Company and the HDL Distribution Center, Inc. Currently, there is no activity at the site. Potential environmental concerns at the site include the presence of residuals from battery manufacturing processes, and possible building material hazards such as lead-based paint and asbestos.

Site Geology

Based on subsurface conditions observed and reported by E & E while conducting a SI at the Tract II property directly south of the Power City Warehouse Site, the geology in this area consists of glacio-lacustrine deposits and glacial till overlying fractured dolostone bedrock. The layer of glacio-lacustrine clay and silt ranges from approximately 12.5 feet to 23.5 feet in thickness and overlies a relatively thin layer of glacial till. This till is composed of unstratified reddish-brown clay and sand with varying amounts of silt, gravel, and cobbles, as well as fragments from the dolostone bedrock that directly underlies it. The bedrock beneath the overburden at the site is the Lockport Dolostone formation of the Middle Silurian-age Lockport group.

Field Investigation Activities

Introduction

A project work plan was prepared prior to the field activities and reviewed by the City of Niagara Falls and USEPA Region 2. This document included a field sampling plan (FSP), a quality assurance project plan (QAPjP), a health and safety plan (HASP), and a community participation plan (CPP).

Field investigation activities at the Power City Warehouse Site conducted on May 6 and 7, 1999 consisted of a building inspection and multimedia sampling. Sampling activities consisted of surface soil sampling, sludge sampling, collection of a paint chip sample, and collection of suspected asbestos-containing materials (ACM). All field activities were performed as specified in the FSP.

Building Inspection

A general inspection of the Power City Warehouse was performed to determine whether petroleum products such as oil and grease, or other hazardous substances are present in the building. It should be noted that this inspection was limited to the first floor due to the severely dilapidated and unsafe condition of the building's higher floors. During the inspection, three samples of suspected ACM and one sample of suspected lead-based paint chips were collected for analysis. Miscellaneous debris, including hundreds of boxes of greeting cards, boxes of automobile billing records, numerous automobile parts, tires, and an air hammer unit, were found in the various rooms and building additions. The site consists of a main building with a number of additions and rooms, a single-room building labeled by E & E as "Operational Area of Unknown Use" located in the northeast corner of the site, the foundations of an electrical substation building in the southeast corner of the site, and the open yard and loading dock.

Approximately 70% of the rooms and building additions have concrete floors. Based on exposed surfaces and attempts to break through the concrete, the concrete floors were estimated to be approximately 3 feet thick in some rooms and were intact in most cases. Brick floors were also present in some of the rooms (Central Factory Building, E Building Addition, and Storage Inspection room). Round drains/sumps were located in several rooms, including the E Building Addition, F Building, Oil House, Boosting Building, Moulding Room, and Lead Foundry. Water was observed in the drains/sumps in the Lead Foundry and the Boosting Building. A basement access containing several feet of water was discovered in the Central Factory Building directly south of the Lead Foundry. Some staining was discovered on the floor of some of the rooms (i.e., E Building Addition, Moulding Room). A second linear floor drain was found in the Central Factory Building. This floor drain is shorter in length, just as wide (approximately 8 inches), and parallel to the one shown in Figure 2. No standing water was found in these floor drains; however, the sediment in them was moist. Circular impressions on the floor were

observed in the Oil House, suggesting that in the past drums were stored there.

A ventilation system, fire extinguishing system, and an outside alarm were discovered during the inspection of the Operational Area of Unknown Use at the northeast corner of the Power City Warehouse Site. Based on the inspection, it is believed that this building may have been used as a chemical storage area. Miscellaneous debris, including a television set, insulators, and an oxygen tank, was found in the building.

A concrete pad, possibly used as a transformer mount, was found in the northeast corner of the electrical substation located in the southeast corner of the site. Some staining was observed on this concrete pad.

Surface Soil Sampling

Surface soil samples were collected from the 0-to 0.5-foot depth interval in 10 operational rooms within the building and the loading dock and open yard, and two operations areas on the property outside the warehouse (see Figure 2 and Table 1). Visual inspection of the Acid Storage Tank Area concluded that the concrete floor at the Tank Area is completely intact. Therefore, and according to the FSP, no sample was collected from this location.

Within each room, either a grab sample or a composite surface soil sample consisting of up to three aliquots was collected. Sample numbers, types (grab versus composite), locations, and analyses are summarized in Table 1. Table 2 lists descriptions of all the surface soil sample locations.

Various floor coverings in the operational rooms were encountered and sampling procedures varied accordingly. In rooms with brick or highly fractured concrete floors, the bricks were removed or the concrete was broken and samples were collected from the underlying soil. In rooms with floor drains and concrete floors that are completely intact, composite aliquots or individual grab samples were collected from the drains. Selection of aliquot locations was based on site features such as staining, fractured concrete, presence of drains or sumps, or proximity to doorways (see Table 2).

Composite surface soil samples were collected from two locations in the area surrounding the main building: the Operational Area of Unknown Use in the northeastern section of the property and the electrical substation in the southeastern section of the property. Up to three soil aliquots from the 0-to-0.5-foot depth interval were collected and composited at each of the two locations. Similarly, one five-way composite soil sample was collected from the yard surrounding the building and the loading dock area. All surface soil samples were collected as described in the FSP with the following exceptions:

- The dust bin was not found during the field investigation. Consequently, instead of collecting a three-way composite at the dust bin site, a single grab sample was collected from an area of visible soil discoloration at the general location where the dust bin was reported to exist.

- Due to the small size of the Air Room and the presence of one distinct oil-stained location, a single grab soil sample was collected instead of a three-way composite soil sample.

- The concrete floor in the Oil House was completely intact. A dry floor drain was found in the center of the room; a single grab soil sample was collected from this drain instead of a three-way composite soil sample from beneath the concrete floor.

- Due to the small size of the Plate Storage Area, a two-way composite soil sample was collected instead of a three-way sample.

- The concrete floor of the Operational Area of Unknown Use appeared completely intact, and the floor drain contained only air-blown debris and soil. Consequently, a two-way composite sample was collected instead of a four-way composite soil sample. However, the concrete ramp by the north door was fractured. One aliquot of the two-way composite sample was collected from underneath the fractured area of the concrete ramp; the other aliquot was collected adjacent to the outer northeast corner of the room at the end of the concrete, the suspected location to which any spills or leaks in this area would flow.

- The concrete foundation of the Electrical Substation location was mostly intact. Consequently, a three-way composite soil sample was collected at this area instead of a four-way sample. One aliquot was collected beneath the concrete at a seam between two rooms; the other two aliquots were collected adjacent to a concrete pad with visible staining.

- The FSP specified that for comparative purposes, existing data from chemical analyses of background samples collected for the Tract II site SI would be used. However, based on recommendations from EPA Region 2, three background surface soil samples were collected from the area adjacent to Power City Warehouse and were submitted for lead analysis.

- pH analysis was added to the analyses performed for the soil sample collected from the E Building Addition. This analysis was added because of the possibility that staining on a section of the concrete floor of this building was caused by acid spills.

Composite Sediment Sampling

A composite sediment sample was collected from the building's central floor drain. Three

sediment aliquots were collected from the 0- to 0.5-foot depth interval within the drain and then composited. The three aliquots were evenly spaced along the length of the drain. Sediment sample number, type (grab versus composite), location, and analyses are summarized in Table 1. Table 2 provides a description of the sediment sample location.

Materials Samples

During the asbestos inspection and sampling effort, three samples of suspected ACM were collected. These samples consisted of:

- One sample of magnesium TSI (a type of insulation) from a 3-inch pipe located in the Central Factory Building (sample AS-PCW-01);
- One sample of "Aircell" thermal system insulation (TSI) from a 2-inch pipe located in the Storage/Inspection area (sample AS-PCW-02); and
- One sample of roofing material from a portion of the roof that had fallen into the Storage/Inspection area (sample AS-PCW-03).

The ACM samples were submitted to E & E's subcontract laboratory (Chopra-Lee) for Polarized Light Microscopy (PLM) analysis (see Table 1). As required by New York State Law, Chopra-Lee analyzed organically bound potential ACM using Transmission Electron Microscopy (TEM) to accurately determine the asbestos content. Additionally, one lead paint sample was submitted for Toxicity Characteristic Leaching Procedure (TCLP) lead analysis (Table 1). This sample consisted of different colors paint chips found in the Moulding Room.

Field Investigation Results

Sample Analysis

Each soil, sediment, and paint chip sample collected at the Power City Warehouse Site was submitted to E & E's Analytical Services Center (ASC) for analysis. The ACM samples were submitted for analysis to Chopra-Lee. All sample analyses were performed according to the FSP and are summarized in Table 1. Two of the 13 soil samples were analyzed only for TAL total lead (SS-PCW-04 and SS-PCW-07); two were analyzed only for TCL PCBs (SS-PCW-08 and SS-PCW-13); and one of them (SS-PCW-10) was analyzed only for TCL BNAs and PCBs. The remaining eight of the 13 soil samples and the sediment sample were submitted for target compound list (TCL) base/neutral acid extractable organic compounds (BNA), TCL polychlorinated biphenyls (PCBs), and target analyte lists (TAL) total lead analysis. One of these eight soil samples (SS-PCW-01) was also analyzed for pH. As mentioned earlier, the three background samples were submitted for TAL total lead analysis only while the paint chip sample was submitted for toxicity characteristic leaching procedure (TCLP) lead.

Sample analysis was performed according to the procedures established in New York State Analytical Services Protocol (ASP), October 1995 revision. All resulting data were reviewed by quality assurance specialists. The laboratory Form I reports include USEPA data qualifiers.

Compounds and analytes that were not detected are listed as "ND" in the positive analytical data summary tables (Tables 3 through 7). Concentrations listed with no qualifiers are accepted as such values; however, some of the reported concentrations are qualified due to conditions associated with analysis of the sample. Qualifiers are listed along with reported values in the summary tables.

Several samples contained compounds and analytes at concentrations greater than what could be accurately quantified without diluting the sample. In order to properly analyze such samples, they were diluted and the values were qualified as "D". While this procedure allows for the proper analysis of analytes present at high concentration, it also raises the detection limit.

BNA analyses of samples SS-PCW-03 and SS-PCW-10 were performed on medium level extractions due to the poor quality of the extractions from these samples (see Attachment B). Consequently, the quantitation limits were raised, and very few compounds were detected in these two samples above the raised quantitation limits.

In those cases in which an analyte concentration value can only be estimated, it is qualified with a "J". Similarly, when an elevated detection limit results from a dilution, and the detection limit itself is estimated, the value is qualified as "UJ."

Quality control samples including laboratory blanks were included in the analysis of the field samples. Blanks were used to determine whether other sources of an analyte besides the sample matrix exist. No organic compounds were detected in the laboratory blanks with the exception of acetophenone, a tentatively identified semivolatile organic compound, in laboratory blank SBLKS1.

Tentatively identified compounds (TICs) are chromatograph peaks in gas chromatography/mass spectrometry analyses for volatile and semivolatile organics that are not target compounds, system monitoring compounds, or internal standards. TICs were qualitatively identified through a mass spectral library search, and the identifications were estimated by a qualified data reviewer. No standard response factor is used in the quantitation of TIC compounds; therefore, all TIC concentrations are estimated values. This process is used to identify and estimate concentrations of any potential unknown contaminants in each sample.

Surface Soil Investigation Results

As discussed earlier, three grab and 10 composite surface soil samples were collected at the site.

The results of the organic and inorganic analyses of these samples are presented in Table 3. Additionally, three grab background surface soil samples were collected for lead analysis from the areas adjacent to the site. Background surface soil sample analytical data are presented in Table 4.

A total of 24 semivolatile organic compounds (SVOCs), including 19 polynuclear aromatic hydrocarbons (PAHs) and five phthalates, were found in the nine soil samples analyzed for TCL BNAs (E Building Addition, F Building/F Building Extension, Boosting Building, Moulding Room, Lead foundry, Central Factory Building, Oil House, Operational Area of Unknown Use, and open yard and loading dock). No PAHs were detected in the samples collected from the Boosting Building (SS-PCW-03) and the Oil House (SS-PCW-10); however, the quantitation limits for the analyses of these samples were high due to medium extraction levels (see Attachment B). Consequently, the absence of PAHs in these samples may be an artifact of the raised quantitation limits.

One PCB, Aroclor 1254, was detected in seven of the 11 soil samples analyzed for PCBs. PCB concentrations ranged from 930 μg/kg (in the Moulding Room sample) to 21,000 μg/kg (in the E Building Addition sample). PCBs were not detected in the samples collected from the Air Room (SS-PCW-08), the Electrical Substation (SS-PCW-13), or the open yard and loading dock (SS-PCW-12). Pesticide analysis results were also reported for all the samples submitted for TCL PCB analyses as part of the contract laboratory program reporting. A total of 16 pesticides was detected in the 11 samples: methoxychlor was detected in nine of the samples; heptachlor epoxide was detected in seven samples; endrin ketone and DDT were detected in five samples; and dieldrin was detected in four samples (see Table 3). The sample collected at the open yard and loading dock contained the lowest concentrations of pesticides.

Lead was detected in the three background surface soil samples at concentrations ranging from 201 mg/kg to 1,400 mg/kg (see Table 4). Lead was detected at elevated concentrations in all 10 soil samples analyzed for total lead. Concentrations of lead ranged from 2,350 mg/kg (in the E Building Addition sample) to 178,000 mg/kg (in the Storage Plate Area sample) and exceeded the background lead concentrations.

One of the sample SS-PCW-01 (E Building Addition sample) aliquots was collected beneath the concrete at an area with yellow staining suspected to be the result of acid leaks or spills. pH was measured for all the samples submitted for BNA and PCB analyses as part of these analyses. The 4.9 pH measured for sample SS-PCW-01 was much lower than the pH measured in the other soil samples.

Several TICs including unknown PAHs, other unknown aromatics, unknown oxygenated hydrocarbons, other unknown hydrocarbons, unknown alkyl amine, hexadecanoic acid,

octadecanoic acid, unknown carboxylic esters, methoxychlor isomers, nonylphenol isomers, unknown alkyl phenols, anthracenedione, a benxonaphthothiophene isomer, straight-chain alkanes, an unknown terpene, and a benzocarbazole isomer were detected in the surface soil samples. The highest estimated concentration of total TICs was 467.38 µg/kg and was detected in sample SS-PCW-10 (Oil House sample).

Sediment/Sludge Results

One sludge sample and a duplicate were also collected from the linear central floor drain located in the Central Factory Building. The results for this sludge sample and the field duplicate are presented in Table 5. Seven PAHs were detected in sample SD-PCW-01 and nine PAHs were detected in duplicate sample SD-PCW-01/D. One PCB, Aroclor 1254, was detected at an estimated concentration of 1,800 µg/kg in sludge sample SD-PCW-01 and 1,200 µg/kg in the duplicate sample (SD-PCW-01/D). Elevated concentrations of lead were detected in both samples. Lead was detected in sample SD-PCW-01 at a concentration of 225,000 mg/kg and in sample SD-PCW-01/D at a concentration of 270,000 mg/kg.

Several TICs including unknown PAHs, unknown oxygenated hydrocarbons, unknown hydrocarbons, and unknown aromatics were detected in the sludge samples at total estimated concentrations of 243.41 µg/kg in SD-PCW-01 and 372.66 µg/kg in SD-PCW-01/D.

Paint Chip Sample

One paint chip sample was collected from the wooden beams in the Moulding Room and was submitted for TCLP lead analysis. The TCLP analysis result was 42.3 mg/L (see Table 6).

Comparison to Regulatory Criteria

Several SVOCs, PCB Aroclor 1254, and lead concentrations exceeded New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) 4046 criteria and EPA Region 3 Risk-based Concentrations (RBCs) in several samples. Table 7 presents a comparison of the sample analytical data to the above regulatory criteria.

Analysis of the 13 surface soil samples indicates the presence of 24 SVOCs, including 19 PAHs and five phthalates. PAH concentrations exceeding NYSDEC criteria and EPA RBCs were detected in seven of the soil samples. Ten of these PAHs, including phenanthrene, fluoranthene, pyrene, chrysesne, benzo(a)anthracene benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, and ideno(1,2,3-cd)pyrene, were detected at concentrations exceeding NYSDEC criteria. The concentrations of five of these PAHs also exceed EPA Region 3 RBCs.

Elevated PAH concentrations were detected in the samples collected from the E Building

Addition, F Building/F Building Extension, Moulding Room, Lead Foundry, Central Factory Building, Operational Area of Unknown Use, and the open yard and loading dock. Four PAHs were detected at concentrations exceeding EPA RBCs in the samples collected from the Central Factory Building, E Building Addition, and F Building/F Building Extension; two PAHs were detected at concentrations exceeding EPA RBCs in the samples collected from the Moulding Room, Lead Foundry, and open yard and loading dock; one PAH was detected at a concentration above the RBC in the sample collected from the Operational Area of Unknown Use.

Although PAHs were not detected in samples SS-PCW-03 (Oil House) or SS-PCW-10 (Boosting Building), PAHs may be present at concentrations below the quantitation limits but above screening levels. The quantitation limits of 14,000 μg/kg for sample SS-PCW-03 and 20,000 μg/kg for sample SS-PCW-10 exceed NYSDEC criteria for naphthalene, dibenzofuran, and chrysene and exceed EPA RBCs and NYSDEC criteria for benzo(a) anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-,cd)pyrene.

PCB concentrations exceeded the NYSDEC criterion in eight samples. Moreover, in two (E Building Addition and F Building/F Building Extension samples) of these eight samples, concentrations also exceeded the EPA RBCs. One pesticide, heptachlor epoxide, was detected in seven samples at concentrations exceeding the NYSDEC criterion. The concentration of heptachlor epoxide in the sample from Central Factory Building also exceeded the EPA RBC. Dieldrin was detected at concentrations above NYSDEC criteria in four samples; aldrin was detected at concentrations above NYSDEC criteria in three samples; endrin was detected at concentrations above NYSDEC criteria in two samples; and gamma-BHC (lindane) and methoxychlor were detected at concentrations above NYSDEC criteria in one sample. The samples collected from the Central Factory Building, E Building Addition, and F Building/F Building Extension contained at least three pesticides each at concentrations exceeding the NYSDEC criteria.

Lead concentrations exceeded the NYSDEC criterion and EPA RBC in all 10 samples analyzed.

Concentrations of five PAHs and Aroclor 1254 in the sediment samples exceeded NYSDEC criteria. Benzo(a)pyrene and lead concentrations in both sludge samples exceeded both NYSDEC criteria and the EPA RBCs.

Finally, the TCLP analysis of the paint chip sample result of 42.3 mg/L exceeds USEPA's threshold of value of 5 mg/L.

Asbestos Sampling Results

Two samples of pipe insulation and one sample of roofing material suspected of containing asbestos were collected inside the main building at the site. Analytical results indicate that all

three samples contained more than 10% asbestos, and should be considered as ACM. The specific type of asbestos and respective concentration in each sample is summarized in Table 8.

A general quantification of these materials was performed during the sampling effort. This quantification indicated that more than 1,000 linear feet of both types of pipe insulation were present in the building. Moreover, the total area of roofing which is constructed of the same materials as those found collapsed in the Storage/Inspection area (tar and felt roofing materials) should be considered as ACM and handled appropriately. Also, during the building inspection, floor tiles that typically contain asbestos were observed in the west side of the Central Factory Building. Such materials are classified as "Presumed ACM" and are not sampled during initial asbestos surveys.

Draft Remedial Cost Analysis

In October 1999, a draft remedial analysis was prepared based on the above-presented data in accordance with the scope of work presented to the City of Niagara Falls in E & E's letter dated August 11, 1999. This cost analysis does not include costs for the actual demolition of buildings at the site, the asbestos survey, or additional sampling that may be required for disposal of site materials. A copy of this analysis is presented in Attachment C.

Conclusions and Recommendations

Data Limitations and Recommendations for Future Work

Site sampling locations were selected to represent the overall site conditions. Most of the soil samples collected were composite samples consisting of two to five aliquots collected from the same room or operational area. To better identify the source of contamination detected within each sampled area, multiple single-source grab samples will be required. A number of drains and sumps were found in the building and according to the FSP were not sampled. Therefore, E & E also recommends sampling of these drains and sumps. A human health risk evaluation should be performed prior to building demolition to determine risk to workers.

A total of three asbestos samples was collected from the main building; however, additional asbestos sampling will be needed if this material is removed. Before the building is demolished, a complete asbestos survey will be necessary to determine the quantity of ACM to be removed.

As previously noted, the investigation was performed only at the ground level of the building due to the severely dilapidated and unsafe condition of the building. As a result, the basement and upper floors were not inspected. Sampling was limited only to surface soils and precursory materials sampling (asbestos and paint).

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Indications of Contaminant Sources

Lead was detected at concentrations exceeding NYSDEC regulatory criteria at all the locations sampled, including the open yard. In addition, elevated PCB and PAHs concentrations were detected in most of the rooms and operational areas sampled. The source of these compounds is most likely associated with the activities conducted in the warehouse at the time of operation. The source of pesticides in the samples collected inside the buildings is unknown. The source of elevated PCB, PAH, and lead concentrations in the central drain is also unknown.

If you have any questions regarding this submittal, please contact Jon Nickerson or me at 716/684-8060.

Sincerely,
Ecology and Environment Engineering, P.C.

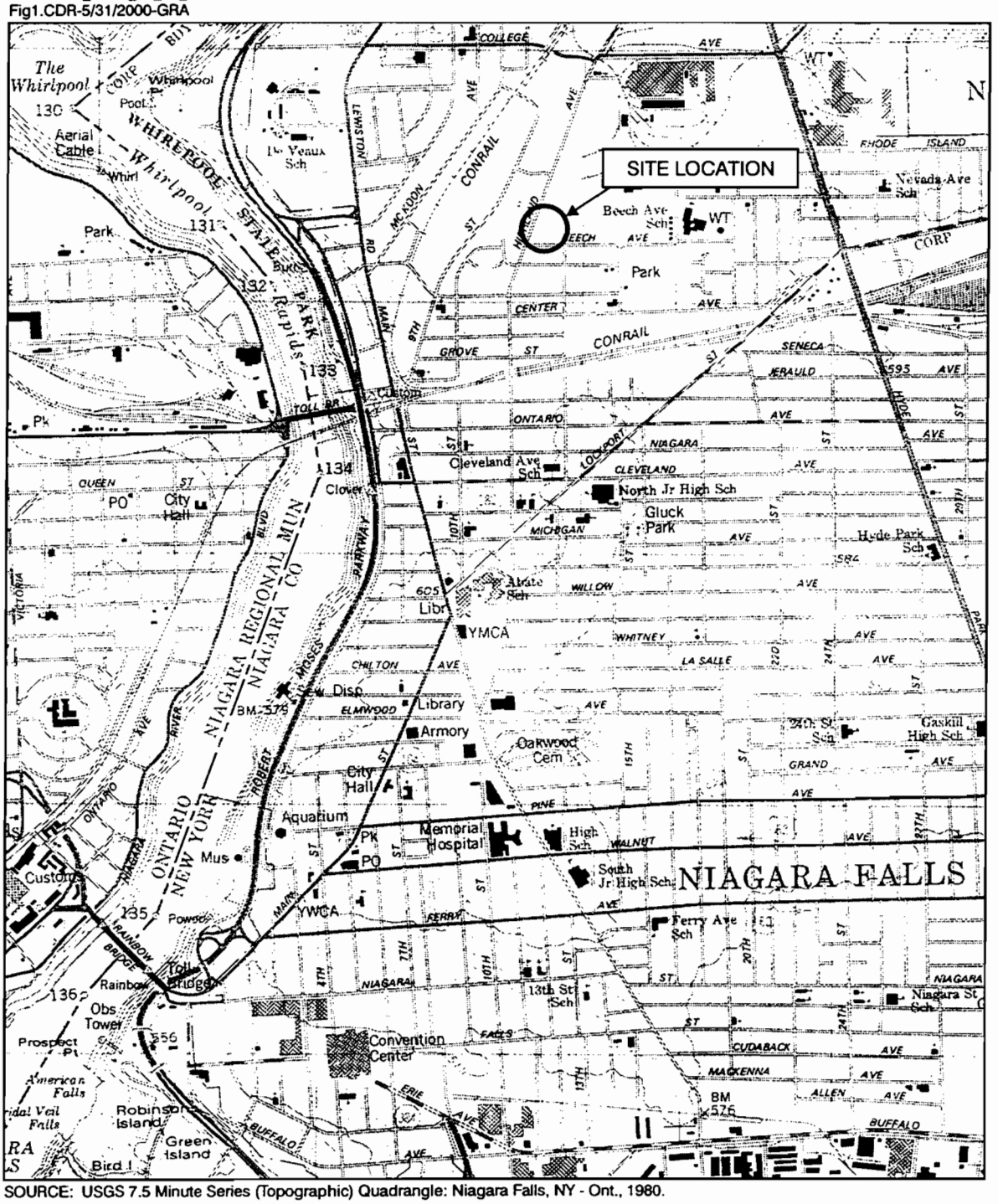
Lea Angelaki
Project Manager

attachments

cc: Jon Nickerson, CHMM (E & E)
CTF-NF01

FIGURES

02:000970_NF01_00_02_09-B0138
Fig1.CDR-5/31/2000-GRA

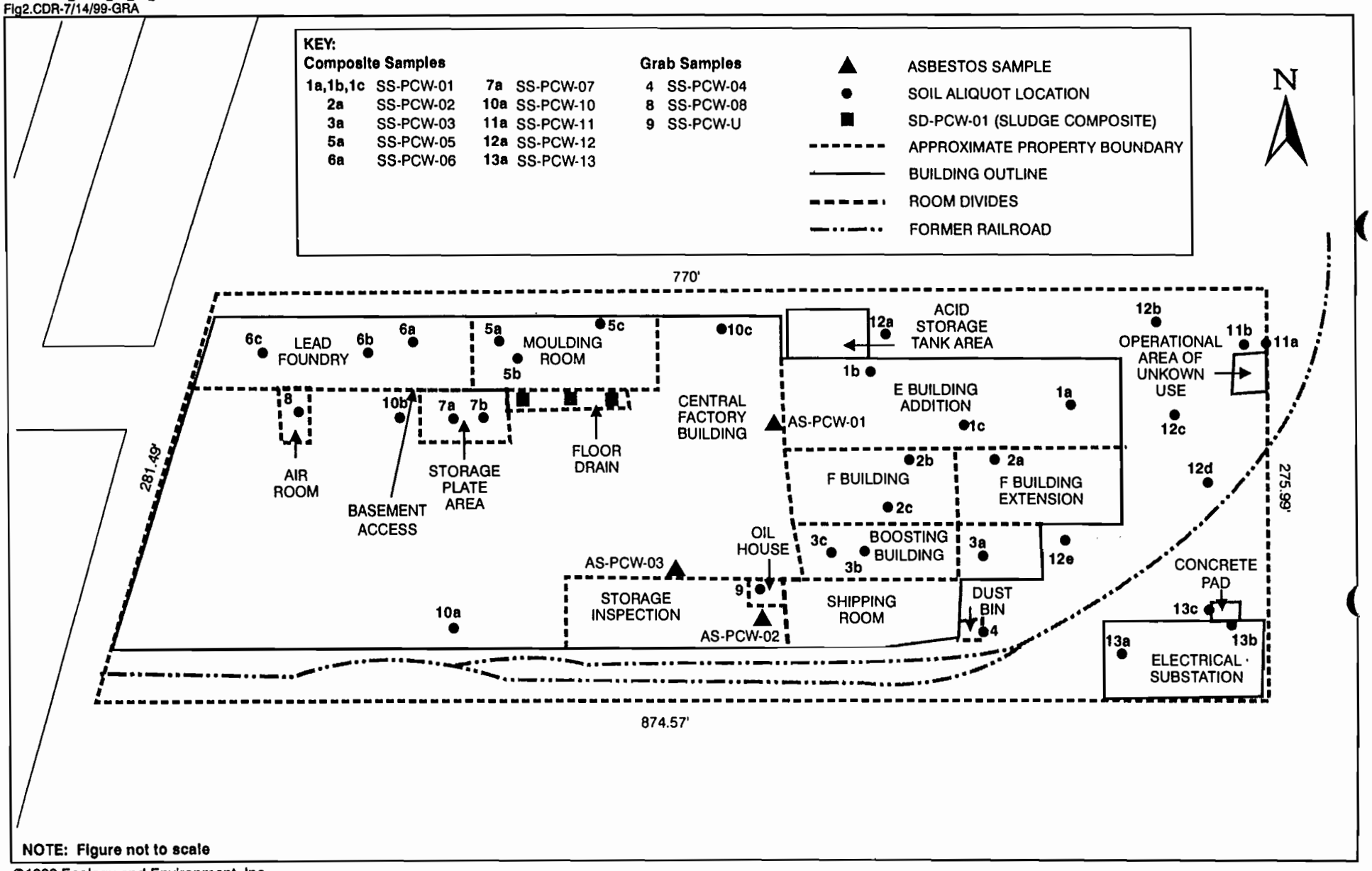


SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle: Niagara Falls, NY - Ont., 1980.

SCALE
0 ½ 1 Mile

Figure 1 POWER CITY WAREHOUSE SITE, NIAGARA FALLS, NY

02: 000970_NF01_00_02_90-B0138
Fig2.CDR-7/14/99-GRA



NOTE: Figure not to scale

Figure 2 SITE PLAN WITH APPROXIMATE SAMPLE LOCATIONS
POWER CITY WAREHOUSE SITE
NIAGARA FALLS, NEW YORK

TABLES

Table 1 Sample Summary, Power City Warehouse Site

Sample Number	Sample Location	Sample Type [a]	Sample Analyses
Surface Soil Samples from Operational Rooms			
SS-PCW-01	E Building Addition	three-way Composite	TCL BNAs, PCBs; TAL Total Lead, pH
SS-PCW-02	F Building/F Building Extension	three-way Composite	TCL BNAs, PCBs; TAL Total Lead
SS-PCW-03	Boosting Building	three-way Composite	TCL BNAs, PCBs; TAL Total Lead
SS-PCW-04	Dust Bin	Grab	TAL Total Lead
Surface Soil Samples from Operational Rooms			
SS-PCW-05	Moulding Room	three-way Composite	TCL BNAs, PCBs; TAL Total Lead
SS-PCW-06	Lead Foundry	three-way Composite	TCL BNAs, PCBs; TAL Total Lead
SS-PCW-07	Storage Plate Area	two-way Composite	TAL Total Lead
SS-PCW-08	Air Room	Grab	TCL PCBs
SS-PCW-09	Central Factory Building	three-way Composite	TCL BNAs, PCBs; TAL Total Lead
SS-PCW-10	Oil House	Grab	TCL BNAs, PCBs
Composite Operational Areas Surface Soil Samples			
SS-PCW-11	Operational Area of Unknown Use	two-way Composite	TCL BNAs, PCBs; TAL Total Lead
SS-PCW-13	Electrical Substation	three-way Composite	TCL PCBs
Composite Open Yard and Loading Dock Sample			
SS-PCW-12	Open Yard and Loading Dock	five-way Composite	TCL BNAs, PCBs; TAL Total Lead

Table 1 (continued)

Sample Number	Sample Location	Sample Type [a]	Sample Analyses
Composite Sediment Samples			
SD-PCW-01	Central Floor Drain	three-way Composite	TCL BNAs, PCBs; TAL Total Lead
SD-PCW-01/D	Central Floor Drain	three-way Composite	TCL BNAs, PCBs; TAL Total Lead
Materials Samples			
PT-PCW-01	Lead Paint	Composite	TCLP Lead
SS-PCW-01	Potential ACM	Grab	Polarized Light Microscopy
Background Samples			
SS-PCW-BK01	Southeast of corner of Profit Lane and 9th Street	Grab	TAL Total Lead
SS-PCW-BK02	Tulip Corporation yard on Highland Avenue north of Power City Warehouse	Grab	TAL Total Lead
SS-PCW-BK03	East of Doris Jones Tennis Courts (Highland Avenue)	Grab	TAL Total Lead

[a] Composite samples are identified by the number of aliquots which comprise the total sample. For example, a three-way composite is a composite sample consisting of three aliquots

Key:

ACM	=	asbestos-containing material
AS	=	asbestos sample
BK	=	background sample
BNA	=	base/neutral acid extractable organic compound
/D	=	duplicate sample
PCB	=	polychlorinated biphenyl
PCW	=	Power City Warehouse Site
PT	=	paint chips sample
SD	=	sediment/sludge sample
SS	=	surface soil sample
TAL	=	target analyte list
TCL	=	target compound list
TCLP	=	toxicity characteristic leaching procedure

Table 2 Descriptions of Surface Soil and Sediment Sampling Locations (Individual Aliquots and Grab Samples), Power City Warehouse Site

Sample Number	Building/Room	Aliquot Number	Aliquot / Grab Sample Location
Surface Soil Samples from Operational Rooms			
SS-PCW-01	E Building Addition	1a	Inside a covered round sump at the east side of the E Building Addition.
		1b	Yellow-stained brick floor at the north side of the E Building Addition.
		1c	Underneath brick floor with dark staining.
SS-PCW-02	F Building/F Building Extension	2a	Inside a 12-inch, round floor drain in the F Building Extension, east of the collapsed roof.
		2b	Underneath the red brick floor at the north section of F Building.
		2c	Adjacent to a big pile of miscellaneous debris at the south section of F Building.
SS-PCW-03	Boosting Building	3a	Inside a 14-inch drain at the east side of the Boosting Building.
		3b	Inside a sump located in the center section of the Boosting Building. Water was preset in the sump.
		3c	At a seam on the floor to which any spills or leaks in this area would flow (west side of the Boosting Building).
SS-PCW-04	Dust Bin	Grab	From an area of visible soil

Table 2 (continued)

Sample Number	Sample Location	Aliquot Number	Aliquot Location
Surface Soil Samples from Operational Rooms			
SS-PCW-05	Moulding Room	5a	Inside a 4-inch floor drain at the west side of the Moulding Room.
		5b	Approximately 25 feet south of the north wall of the room.
		5c	Adjacent to the north wall.
SS-PCW-06	Lead Foundry	6a	From a sump-like elbow access port covered with wooden blocks located approximately 6 feet from the north wall (6 inches of water in the sump).
		6b	In the center of the Lead Foundry from the only low point in the concrete floor from which soil was easily accessible.
		6c	Inside the floor drain on the west side of the Lead Foundry.
SS-PCW-07	Storage Plate Area	7a	Underneath the heavily broken up concrete floor.
		7b	Underneath the heavily broken-up concrete floor east of aliquot 1b.
SS-PCW-08	Air Room	Grab	From an area with visible oil staining on the floor.
SS-PCW-09	Central Factory Building	9a	Underneath the heavily broken-up concrete floor in the south section of the room.
		9b	From a 2-inch drain in the north section of the room southwest of the basement access.
SS-PCW-09		9c	Underneath the brick floor, approximately 8 feet south of the north wall in the east side of the room.
SS-PCW-10	Oil House	Grab	Inside a floor drain in the middle of the room.

Table 2 (continued)

Sample Number	Sample Location	Aliquot Number	Aliquot Location
Composite Operational Areas and Open Yard and Loading Dock Surface Soil Samples			
SS-PCW-11	Operational Area of Unknown Use	11a	Adjacent to the outer northeast corner of the building, at the end of the concrete, the suspected location to which any spills or leaks in this area would flow.
		11b	Underneath the fractured area of the concrete ramp in the north side of the building.
SS-PCW-12	Open Yard and Loading Dock	12a	Adjacent to the loading dock at the north side of the main warehouse building, approximately 5 feet east of the east wall and 20 feet north of the north wall.
		12b	At the open yard, approximately 10 feet south of the property line and 10 feet east of the northeast corner of the E Building Addition.
		12c	At the open yard, approximately 21 feet east of the east wall of the E Building Addition and 41 feet south of the northeast corner of the E Building Addition.
		12d	At the open yard, approximately 27 feet east of the east wall of the F Building Extension and 21 feet north of the southeast corner of the F Building Extension.
SS-PCW-12		12e	At the open yard, approximately 3 feet east of the east wall of the Boosting Building and 5 feet south of the south wall of the F Building Extension.

Table 2 (continued)

Sample Number	Sample Location	Aliquot Number	Aliquot Location
SS-PCW-13	Electrical Substation	13a	At a seam in the concrete floor between rooms in the northeast side of the substation foundation, approximately 5 feet east of the F Building Extension in southeast corner and 20 feet south of the transformer pad.
		13b	Adjacent to the transformer pad located in the northeast corner of the building, approximately 3 feet south of the southeast corner of the transformer pad.
		13c	Adjacent to the west side of the transformer pad.
Composite Sediment Samples			
SD-PCW-01 and SD-PCW-01/D	Central Floor Drain	1a, 1b, and 1c	The three aliquots were collected at equal distances along the length of the drain.

Key:
- /D = duplicate sample
- PCW = Power City Warehouse Site
- SD = sediment/sludge sample
- SS = surface soil sample

Table 3 Positive Analytical Results Summary, Surface Soil, Power City Warehouse, Niagara Falls, New York

Sample ID: Location:	SS-PCW-01 E Building Addition	SS-PCW-02 F Building/ F Extension	SS-PCW-03 Boosting Building	SS-PCW-04 Dust Bin	SS-PCW-05 Moulding Room
TCL BNA (µg/kg)					
Naphthalene	1,100 J	ND	ND	NA	ND
2-methylnaphthalene	510 J	ND	ND	NA	ND
Acenaphthylene	580 J	ND	ND	NA	ND
Acenaphthene	3,900 J	4,600 J	ND	NA	ND
Dibenzofuran	2,400 J	2,700 J	ND	NA	ND
Diethylphthalate	ND	ND	ND	NA	ND
Fluorene	3,500 J	3,100 J	ND	NA	ND
Phenanthrene	33,000 D	91,000	ND	NA	5,500 J
Anthracene	12,000	7,400 J	ND	NA	ND
Carbazole	4,600	7,600 J	ND	NA	ND
Di-n-Butylphthalate	ND	ND	ND	NA	ND
Fluoranthene	53,000 D	87,000 D	ND	NA	10,000 J
Pyrene	50,000 D	100,000 D	ND	NA	9,100 J
Butylbenzylphthlate	ND	1,700 J	13,000 J	NA	ND
Benzo(a)anthracene	2,800	22,000	ND	NA	3,900 J
Chrysene	22,000 D	35,000	ND	NA	6,400 J
bis(2-Ethylhexyl)phthalate	5,300	1,400 J	1,800 J	NA	3,100 J
Di-n-Octyl Phthalate	ND J	2,000 J	ND	NA	ND
Benzo(b)Fluoranthene	23,000 D	33,000 D	ND	NA	7,500 J
Benzo(k)Fluoranthene	24,000 D	38,000 D	ND	NA	6,400 J
Benzo(a)pyrene	30,000 J	28,000 D	ND	NA	4,900 J
Indeno(1,2,3-cd) pyrene	9,800 J	7,700 J	ND	NA	1,500 J
Dibenz(a,h) anthracene	3,600 J	2,500 J	ND	NA	ND
Benzo(g,h,i)perylene	8,900 J	6,300 J	ND	NA	1,600 J

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Table 3 (continued)

Sample ID: / Location:	SS-PCW-01 E Building Addition	SS-PCW-02 F Building/ F Extension	SS-PCW-03 Boosting Building	SS-PCW-04 Dust Bin	SS-PCW-05 Moulding Room
TCL Pesticide/PCB (µg/kg)					
Aldrin	120	92	ND	NA	ND
Heptachlor Epoxide	390	310	ND	NA	130
Dieldrin	260	110 J	ND	NA	ND
Endrin	290	ND	ND	NA	ND
Endosulfan Sulfate	120	ND	ND	NA	ND
4,4'-DDT	260	120 J	ND	NA	ND
Methoxychlor	950	ND	1,800	NA	300 J
Endrin Ketone	140	150	ND	NA	ND
gamma-Chlordane	150	ND	ND	NA	ND
Aroclor 1254	21,000	7,900	1,300 J	NA	930 J
TAL Metals (mg/kg)					
Lead	2,350	3,540	3,650	11,300	19,200
pH (s.u)					
pH	4.9	6.3	7.2	NA	7.8

Key:

BNA	=	base/neutral acid extractable organic compound
D	=	diluted sample analysis, no affect on data usability
J	=	estimated value
NA	=	sample not analyzed for this compound
ND	=	compound not detected
PCB	=	polychlorinated biphenyl
PCW	=	Power City Warehouse Site
SS	=	surface soil sample
s.u.	=	standard units
TAL	=	target analyte list
µg/kg	=	micrograms per kilogram
mg/kg	=	milligrams per kilogram

Table 3 (continued) Positive Analytical Results Summary, Surface Soil, Power City Warehouse, Niagara Falls, New York

Sample ID: Location:	SS-PCW-06 Lead Foundry	SS-PCW-07 Storage Plate Area	SS-PCW-08 Air Room	SS-PCW-09 Central Factory Bldg.
TCL BNA (µg/kg)				
Naphthalene	ND	NA	NA	2,800 J
2-methylnaphthalene	ND	NA	NA	1,200 J
Acenaphthylene	ND	NA	NA	640 J
Acenaphthene	ND	NA	NA	6,600
Dibenzofuran	ND	NA	NA	4,400 J
Diethylphthalate	ND	NA	NA	ND
Fluorene	ND	NA	NA	5,700
Phenanthrene	6,500 J	NA	NA	68,000 D
Anthracene	ND	NA	NA	19,000
Carbazole	ND	NA	NA	9,000
Di-n-Butylphthalate	ND	NA	NA	790 J
Fluoranthene	13,000 J	NA	NA	63,000 D
Pyrene	11,000 J	NA	NA	130,000 DJ
Butylbenzylphthlate	ND	NA	NA	ND
Benzo(a)anthracene	4,300 J	NA	NA	29,000
Chrysene	7,700 J	NA	NA	36,000
bis(2-Ethylhexyl)phthalate	ND	NA	NA	2,000 J
Di-n-Octyl Phthalate	ND	NA	NA	ND
Benzo(b)Fluoranthene	8,100 J	NA	NA	35,000 J
Benzo(k)Fluoranthene	7,800 J	NA	NA	39,000 J
Benzo(a)pyrene	4,800 J	NA	NA	31,000 J
Indeno(1,2,3-cd)pyrene	1,900 J	NA	NA	7,500 J
Dibenz(a,h)anthracene	ND	NA	NA	2,700 J
Benzo(g,h,i)perylene	ND	NA	NA	7,300 J
TCL Pesticide/PCB (µg/kg)				
beta-BHC	73 J	NA	ND	87
delta-BHC	280	NA	ND	240
gamma-BHC	79 J	NA	ND	54 J
Heptachlor	ND	NA	ND	55 J
Aldrin	ND	NA	ND	210
Heptachlor Epoxide	200	NA	ND	700

Table 3 (continued)

Sample ID: Location:	SS-PCW-06 Lead Foundry	SS-PCW-07 Storage Plate Area	SS-PCW-08 Air Room	SS-PCW-09 Central Factory Bldg.
Dieldrin	ND	NA	ND	240
Endrin	ND	NA	ND	330
Endosulfan II	ND	NA	ND	150
Endosulfan Sulfate	ND	NA	ND	210
4,4'-DDT	150 J	NA	ND	400
Methoxychlor	650 J	NA	ND	1,500
Endrin Ketone	120 J	NA	ND	340
Aroclor 1254	2,100 J	NA	ND	17,000
TAL Metals (mg/kg)				
Lead	137,000	178,000	NA	31,800
pH (s.u.)				
pH	7.3	NA	6.8	6.9

Key:

BNA	=	base/neutral acid extractable organic compound
D	=	diluted sample analysis, no affect on data usability
J	=	estimated value
NA	=	sample not analyzed for this compound.
ND	=	compound not detected
PCB	=	polychlorinated biphenyl
PCW	=	Power City Warehouse Site
SS	=	surface soil sample
s.u.	=	standard units
TAL	=	target analyte list
µg/kg	=	micrograms per kilogram
mg/kg	=	milligrams per kilogram

Table 3 (continued) Positive Analytical Results Summary, Surface Soil, Power City Warehouse, Niagara Falls, New York

Sample ID: Location:	SS-PCW-10 Oil House	SS-PCW-11 Area of Unknown Use	SS-PCW-12 Loading Dock & Open Yard	SS-PCW-13 Electrical Substation
TCL BNA (µg/kg)				
Naphthalene	ND	480	330 J	NA
2-methylnaphthalene	ND	300 J	230 J	NA
Acenaphthylene	ND	75 J	170 J	NA
Acenaphthene	ND	360 J	1,800	NA
Dibenzofuran	ND	310 J	830	NA
Diethylphthalate	ND	55 J	ND	NA
Fluorene	ND	360 J	1,300	NA
Phenanthrene	ND	4,200 D	17,000 D	NA
Anthracene	ND	710	4,100 DJ	NA
Carbazole	ND	450	1,300	NA
Di-n-Butylphthalate	ND	100 J	ND	NA
Fluoranthene	ND	4,800 D	21,000 D	NA
Pyrene	ND	6,900 D	20,000 D	NA
Butylbenzylphthlate	ND	150 J	220 J	NA
Benzo(a)anthracene	ND	1,800 D	6,500 D	NA
Chrysene	ND	2,300 D	7,100 D	NA
bis(2-Ethylhexyl)phthalate	3,300 J	570 J	160 J	NA
Di-n-Octyl Phthalate	ND	ND J	ND	NA
Benzo(b)Fluoranthene	ND	2,500 J	6,300 D	NA
Benzo(k)Fluoranthene	ND	2,400 J	6,500 D	NA
Benzo(a)pyrene	ND	2,000 J	6,500 D	NA
Indeno(1,2,3-cd)pyrene	ND	800 J	2,200 J	NA
Dibenz(a,h)anthracene	ND	300 J	820 J	NA
Benzo(g,h,i)perylene	ND	930 J	2,100 J	NA
TCL Pesticide/PCB (µg/kg)				
beta-BHC	ND	70	ND	ND
gamma-BHC	ND J	55	ND	ND
Heptachlor	ND	65	ND	ND
Heptachlor Epoxide	ND	ND	74	180
Dieldrin	ND J	110	ND	ND

Table 3 (continued)

Sample ID: / Location:	SS-PCW-10 Oil House	SS-PCW-11 Area of Unknown Use	SS-PCW-12 Loading Dock & Open Yard	SS-PCW-13 Electrical Substation
4,4'-DDT	ND	200	ND	ND
Methoxychlor	380 J	37,000	140	810
Endrin Ketone	200 J	ND	ND	ND
Endrin aldehyde	ND	220	ND	ND
gamma-Chlordane	ND	69	ND	ND
Aroclor-1260	3,700	3,800 J	ND	ND
TAL Metals (mg/kg)				
Lead	NA	8,240	2,790	NA
pH (s.u.)				
pH	8	9.6	8.5	8.8

Key:
BNA = base/neutral acid extractable organic compound
D = diluted sample analysis, no affect on data usability
J = estimated value
NA = sample not analyzed for this compound
ND = compound not detected
PCB = polychlorinated biphenyl
PCW = Power City Warehouse Site
SS = surface soil sample
s.u. = standard units
TAL = target analyte list
TCL = target compound list
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram.

Table 4 Positive Analytical Results Summary, Background Surface Soil, Power City Warehouse, Niagara Falls, New York

Sample ID: / Location:	SS-PCW-BK01 Background	SS-PCW-BK02 Background	SS-PCW-BK03 Background
TAL Metals (mg/kg)			
Lead	201	1400	281

Key:
BK = background sample
PCW = Power City Warehouse Site
SS = surface soil sample
TAL = target analyte list
mg/kg = milligrams per kilogram

TULIP CORP. YARD

Table 5 Positive Analytical Results Summary, Sediment/Sludge, Power City Warehouse, Niagara Falls, New York

Sample ID: / Location:	SD-PCW-01 Central Floor Drain	SD-PCW-01/D Central Floor Drain
TCL BNA (µg/kg)		
Phenanthrene	1,800 J	5,500 J
Fluoranthene	2,700 J	6,100 J
Pyrene	2,400 J	5,000 J
Benzo(a)anthracene	ND	2,400 J
Chrysene	1,800 J	3,400 J
Benzo(b)Fluoranthene	2,400 J	3,100 J
Benzo(k)Fluoranthene	2,100 J	3,900 J
Benzo(a)pyrene	2,100 J	2,900 J
Benzo(g,h,i)perylene	ND	1,600 J
TCL Pesticide/PCB (µg/kg)		
Aroclor 1254	1,800 J	1,200 J
TAL Total Lead (mg/kg)		
Lead	225,000	270,000
pH (s.u.)		
pH	8.3	8.3

Key:
BNA = base/neutral acid extractable organic compound
J = estimated value
ND = compound not detected
PCB = polychlorinated biphenyl
PCW = Power City Warehouse Site
SD = sediment sample
s.u. = standard units
TAL = target analyte list
TCL = target compound list
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram

Table 6 Analytical Results Summary, Paint Chips, Power City Warehouse, Niagara Falls, New York

Sample ID: / Location:	PT-PCW-01 Paint - Moulding Room
TCLP Lead (mg/L)	42.3

Key:
PCW = Power City Warehouse Site
TCLP = toxicity characteristic leaching procedure
mg/L = milligrams per liter

Table 7 Summary of Screening of Analytical Results for Surface Soil, Power City Warehouse, Niagara Falls, New York

Compound	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Local Background Concentration	EPA Region 3 Industrial Soil RBC	Frequency of Detections Exceeding RBC	NYSDEC TAGM 4046 Level	Frequency of Detections Exceeding TAGM 4046
Semi-Volatile Organics (mg/kg)								
Naphthalene	4/9	0.33 J	2.80 J	ND	41,000	0/9	13[d]	0/9
2-methylnaphthalene	3/9	0.23 J	1.2 J	ND	41,000[a]	0/9	36.4[d]	0/9
Acenaphthylene	4/9	0.075 J	0.64 J	ND	41,000[a]	0/9	41[d]	0/9
Acenaphthene	5/9	0.36 J	6.60	0.065 J	120,000	0/9	50[e]	0/9
Dibenzofuran	5/9	0.31 J	4.40 J	ND	8,200	0/9	6.2[d]	0/9
Diethylphthalate	1/9	0.055 J	0.055 J	ND	1,600,000	0/9	7.1	0/9
Fluorene	5/9	0.36 J	5.70	ND	82,000	0/9	50[e]	0/9
Phenanthrene	7/9	4.20 D	91.00	0.45	41,000[a]	0/9	50[e]	2/9
Anthracene	5/9	0.71	19.00	0.1 J	610,000	0/9	50[e]	0/9
Carbazole	5/9	0.45	9.00	0.071 J	290,000[b]	0/9	NA	NA
Di-n-butylphthalate	1/9	0.10 J	0.79 J	ND	200,000	0/9	8.1[d]	0/9
Fluoranthene	7/9	4.8 D	87.00 D	0.67	82,000	0/9	50[e]	3/9
Pyrene	7/9	6.9 D	130.00 DJ	0.63	61,000	0/9	50[e]	2/9
Butylbenzylphthalate	4/9	0.15 J	13.00 J	ND	410,000	0/9	50[e]	0/9
Benzo(a)anthracene	7/9	1.80 D	29.00	0.4 J	7.8[b]	2/9	0.224[f]	7/9
Chrysene	7/9	2.30	36.00	0.48	780[b]	0/9	0.4[d]	7/9
bis(2-ethylhexyl)phthalate	8/9	0.16 J	5.30	ND	410	0/9	50[e]	0/9
Di-n-octylphthalate	1/9	2.00 J	2.00 J	ND	410,000	0/9	50[e]	0/9
Benzo(b)Fluoranthene	7/9	2.50	39.00	0.35 J	7.8[b]	4/9	1.1[d]	7/9

Table 7 (continued)

Compound	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Local Background Concentration	EPA Region 3 Industrial Soil RBC	Frequency of Detections Exceeding RBC	NYSDEC TAGM 4046 Level	Frequency of Detections Exceeding TAGM 4046
Semi-Volatile Organics (mg/kg)								
Benzo(k)Fluoranthene	7/9	2.40	39.00 J	0.36 J	78[b]	0/9	1.1[d]	7/9
Dibenz(a,h)anthracene	6/9	0.30 J	12.0 J	0.13 J	0.78[b]	5/9	0.014[f]	6/9
Benzo(a)pyrene	7/9	2.00	31.00 J	0.41 J	0.78[b]	7/9	0.061[f]	7/9
Indeno(1,2,3-cd)pyrene	7/9	0.80	9.80	0.29 J	7.8[b]	1/9	3.2[d]	3/9
Benzo(g,h,i)perylene	6/9	0.93	8.90	0.34 J	NA	NA	50[e]	0/9
Pesticides/PCBs (mg/kg)								
beta-BHC	3/11	0.070	0.087	ND	NA	NA	0.2	0/11
delta-BHC	2/11	0.24	0.28	ND	NA	NA	0.3	0/11
gamma-BHC	3/11	0.054 J	0.079 J	ND	4.4	0/11	0.06	1/11
Heptachlor	2/11	0.055	0.065	ND	1.3	0/11	0.10	0/11
Aldrin	3/11	0.092	0.21	ND	0.34	0/11	0.041	3/11
Heptachlor Epoxide	7/11	0.074	0.70	0.0025 J	0.63	1/11	0.02	7/11
Dieldrin	4/11	0.11	0.26	0.3 D	0.36	0/11	0.044	4/11
Endrin	2/11	0.29	0.33	ND	610	0/11	0.10	2/11
Endosulfan II	1/11	0.15	0.15	ND	NA	0/11	0.9	0/11
Endosulfan Sulfate	2/11	0.12	0.21	ND	NA	0/11	1.0	0/11
4,4'-DDT	5/11	0.12 J	0.40	ND	17	0/11	2.1	0/11
Methoxychlor	9/11	0.14	37	ND	10000	0/11	10	1/11
Endrin Ketone	5/11	0.12	0.34	ND	NA	NA	NA	NA
Endrin aldehyde	1/11	0.22	0.22	ND	NA	NA	NA	NA

Table 7 (continued)

Compound	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	Local Background Concentration	EPA Region 3 Industrial Soil RBC	Frequency of Detections Exceeding RBC	NYSDEC TAGM 4046 Level	Frequency of Detections Exceeding TAGM 4046
gamma-Chlordane	2/11	0.069	0.15	ND	16	0/11	0.54	0/11
Aroclor-1254	8/11	0.930 J	21,000	ND	2.9[b]	5/11	1[g]	7/11
Lead (mg/kg)	10/10	2,350	178,000	201-1,400	400[c]	10/10	201-1,400	10/10

[a] Corresponds to an upper-bound cancer risk of 1 x 10^{-6}.
[b] RBC for naphthalene.
[c] EPA screening level for lead in soil in residential setting.
[d] Soil cleanup objective to protect groundwater quality.
[e] Objective for individual SVOCs is <50 ppm.
[f] Objective based on potential cancer risk for soil.

270,000

Tulip Corporation

Key:

D	=	diluted sample analysis, no affect on data usability	EPA	=	Environmental Protection Agency
J	=	estimated value	mg/kg	=	milligrams per kilogram
ND	=	not detected	NYSDEC	=	New York State Department of Environmental Conservation
NA	=	no value or not applicable	PCB	=	polychlorinated biphenyl
ppm	=	parts per million	RBC	=	Risk-based Concentration
SVOC	=	semivolatile organic compound	TAGM	=	Technical and Administrative Guidance Memorandum

Table 8 Analytical Results Summary, Suspected Asbestos-containing Material, Power City Warehouse, Niagara Falls, New York

Sample Identification	Material Description	Asbestos Content	Other Content
AS-PCW-01	Magnesium TSI type 3" pipe insulation	30% Chrysotile	70% non-fibrous material
AS-PCW-02	"air-cell" type pipe insulation	68% Chrysotile	6% cellulose and 26% non-fibrous material
AS-PCW-03	roofing material	49% Chrysotile	3% synthetic and 48% non-fibrous material

ATTACHMENT A

Photolog

PHOTOGRAPHIC RECORD

SITE NAME: Power City Warehouse
SITE LOCATION: Niagara Falls, New York
JOB NUMBER: 000970.NF01.00.04.90

Photo Number:
1

Photographer:
L. Angelaki

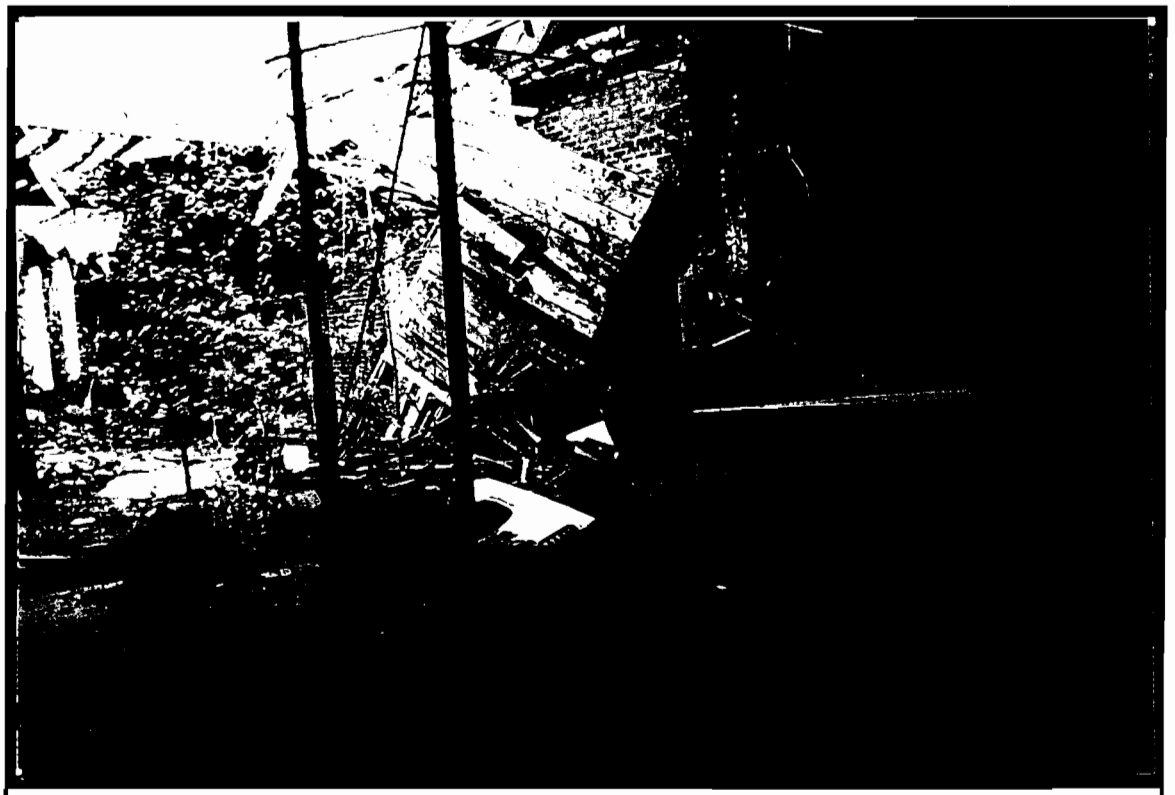
Date:
5-6-99

Subject: Power City Warehouse exterior (west side).

Photo Number: 2

Photographer:
L. Angelaki

Date:
5-6-99



Subject: F Building.

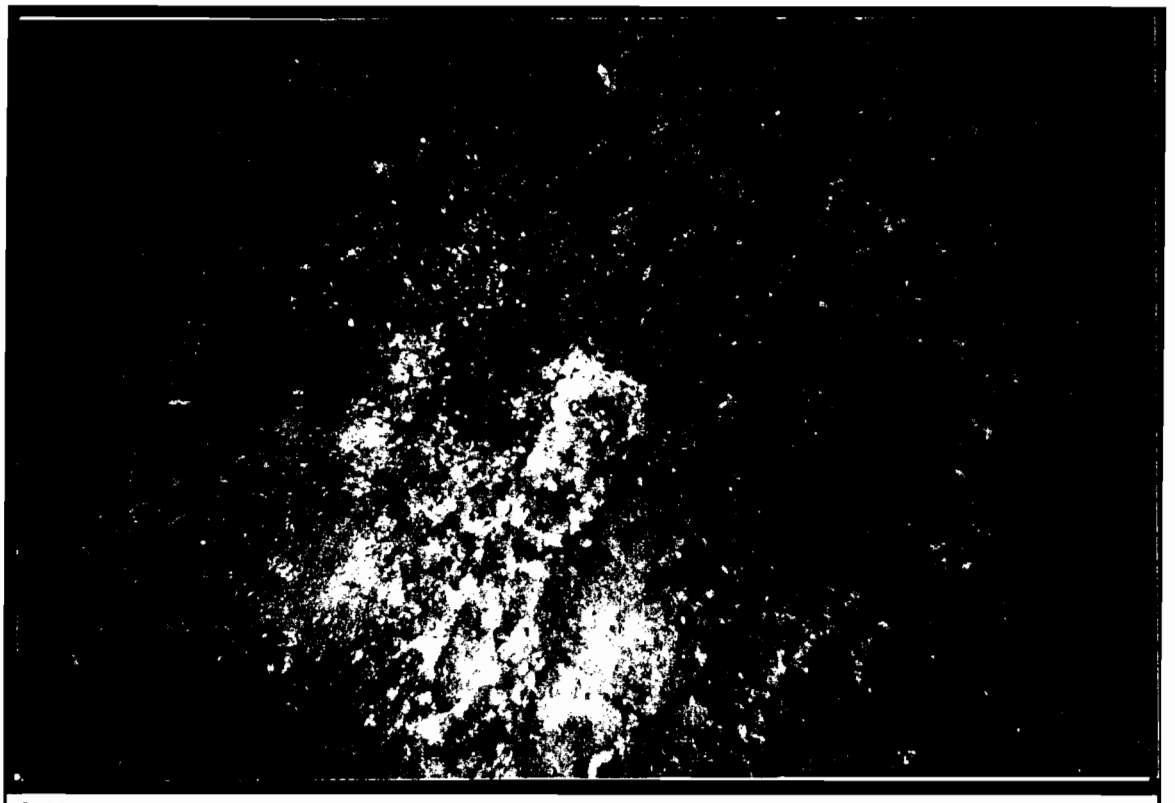
PHOTOGRAPHIC RECORD

SITE NAME: Power City Warehouse
SITE LOCATION: Niagara Falls, New York
JOB NUMBER: 000970.NF01.00.04.90

Photo Number:
3

Photographer:
L. Angelaki

Date:
5-6-99



Subject: E Building Addition, yellow-stained floor probably caused by acid spill/leak.

Photo Number:
4

Photographer:
L. Angelaki

Date:
5-6-99

Subject: Central Factory Building and drain.

PHOTOGRAPHIC RECORD

SITE NAME: Power City Warehouse
SITE LOCATION: Niagara Falls, New York
JOB NUMBER: 000970.NF01.00.04.90

Photo Number:
5

Photographer:
L. Angelaki

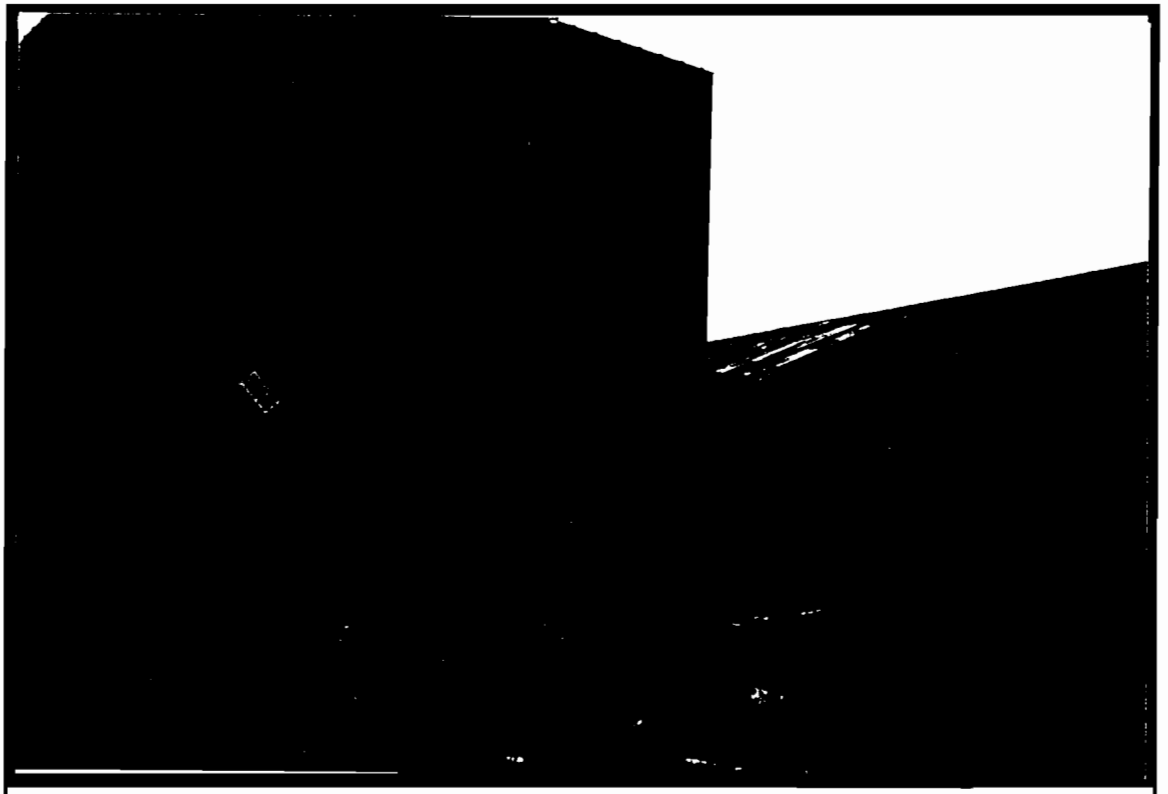
Date:
5-6-99

Subject: Central Factory Building (east side).

Photo Number:
6

Photographer:
L. Angelaki

Date:
5-6-99



Subject: Shipping Room exterior (east side).

ATTACHMENT B

Data Usability Summary Report

Ecology and Environment, Inc., (E & E)
Data Usability Summary Report (DUSR)

Prepared by: Marcia Meredith Galloway **Project Name:** Power City Warehouse **Project #:**000970-NF01-00-04-00	**Date Prepared:** July 12, 1999 **Lab Name:** E & E Analytical Services Center
Lab Report No.: 9901.360, 370 **Report Date:** June 3, 1999 **Date Sample(s) Taken:** May 6 and 7, 1999	**Sample Matrices:** 19 Soils 0 Water **Field QC Samples:** Field Dup SD-PCW-01/D

Project Sample ID: = SS-PCW-01 to SS-PCW-13, SD-PCW-01, PT-PCW-01, and SS-PCW-BK01 to SS-PCW-BK03

Specific analyses conducted on each sample are documented on the chain-of-custody (COC) forms and include the following: Target Compound List (TCL) Base Neutral Acid Extractables (BNAs), TCL Polychlorinated Biphenyls (PCBS), and Total Lead. All methods follow Contract Laboratory Procedures (CLP) found in New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) 10/95.

The analytical data provided by the laboratory were reviewed for precision, accuracy, and completeness per NYSDEC Division of Environmental Remediation Guidance for the Development of DUSRs. Specific criteria for QC limits were obtained from the NYSDEC ASP 10/95. Qualifiers were assigned based on guidance in United States Environmental Protection Agency (USEPA) Functional Guidelines for Reviewing Organic and Inorganic Analyses. Compliance with the project QA program is indicated on the attached checklist and concerns are listed below. The checklist also indicates whether data qualification is required and/or the type of qualifier assigned. Qualifiers for specific samples were marked on copies of laboratory Form 1's and are attached to this DUSR.

Major Concerns: None

Minor Concerns:

TCL BNAs -

Samples SD-PCW-01, SD-PCW-01D, SS-PCW-01DL, SS-PCW-02, SS-PCW-03, SS-PCW-05, SS-PCW-06, and SS-PCW-10 were extracted using the medium level protocol due to matrix and the viscous nature of the extracts. The detection limits of these samples are elevated. For sample SS-PCW-01DL, the comparability of the results are not affected because the a low concentration run also was reported. For sample SS-PCW-02, the comparability of the results are not affected because the concentrations of contaminants are so high. For the remaining the samples, the medium level extraction resulted in no contaminants reported above the detection limit. Samples SD-PCW-01, SD-PCW-01D,, SS-PCW-05, and SS-PCW-06 had several polynuclear aromatic hydrocarbons reported below the detection limit and qualified "J" as estimated. For samples SS-PCW-03 and SS-PCW-10, the comparability of the data are affected by the high detection limits because only phthalates were detected in the samples which are typical of field or laboratory contamination. Since the samples could not be extracted by the laboratory at low level due to the viscous nature of the extracts, there is no corrective action necessary. These samples did contain high levels of PCBs and lead that exceed

NYSDEC criteria, there the overall usability of the data are not affected. For sample SS-PCW-10, the tentatively identified compound (TICs) evaluation of the sample also confirmed the presence of the pesticide methoxychlor. No other significant TICs were reported in the samples analyzed at medium level.

Internal standard recoveries for the later eluting compounds were low for several samples due to hydrocarbon interferences from the sample matrix. In most cases, the diluted analysis of these samples gave acceptable internal standard recoveries confirming the matrix effects. Positive values and detection limits associated with the low internal standard recoveries are flagged "J" as estimated (see attached Form 1's). For sample SS-PCW-09, surrogate recoveries were diluted out and no data qualification are necessary. Recovery of the surrogate terphenyl-d14 was high for samples SS-PCW-11 and SS-PCW-12. Surrogate recoveries were acceptable for the secondary dilutions of these samples. No data qualification are necessary because only one surrogate was outside limits.

The level of several PAH compounds exceeded the calibrated range for samples SS-PCW-01, SS-PCW-02, SS-PCW-09, SS-PCW-11, and SS-PCW-12. The samples were reanalyzed at secondary dilutions. Results from both analyses are included in the laboratory. Results from the diluted analysis are reported as flagged "D". The results are acceptable with no affect on data usability.

Recovery of pyrene was erratic for the low level matrix spike/spike duplicate (MS/MSD) analysis of samples SS-PCW-01 due to the high concentration of pyrene native to this sample. RPD values for acenaphthene and pyrene were high for the low level MS/MSD due to the presence of compounds in the sample. Spiked blank recoveries were all within acceptable limits, and no data qualification are necessary.

TCL PCBs

Because the samples were analyzed by CLP methods, both pesticides and PCBs were reported. The pesticide results did not exceed any EPA risk-based criteria for industrial soils. The only high concentration pesticide was methoxychlor in samples collected outside the buildings. All samples were extracted using 1.0 gram of sample due to the high concentration of PCBs expected. Quantititation limits of were elevated, but there is no effect on data usability because PCBs were detected in the samples.

Samples were analyzed at secondary dilutions based on matrix or the level of target compounds present. As per the Statement of Work, all diluted samples were also analyzed 10 more concentrated. Results from both analyses are included in this report. In general, the lower dilution result was reported. All PCB results were confirmed on a second column in addition to the pattern recognition. If the percent difference of the concentrations of the PCBs in the original and confirmation exceeded 25, then the results were flagged "P" by the laboratory. The "P" flags were converted to "J" flags on

the final report indicating the concentrations are estimated.

Recovery of the surrogate decachlorobiphenyl exceeded advisory limits on the RTX-5 column for sample SS-PCW-08DL and on the RTX-35 column for SS-PCW-08DL, SS-PCW-09, SS-PCW-09DL, and SS-PCW-13. No corrective action was required and no data qualification are required because the reported result were already qualified for the concern due to the "P" flag.

TOTAL LEAD

Recovery limits were not applied to the matrix spike analysis of sample SS-PCW-01 since the sample concentration exceeded the spike amount added by more than four times.

DUSR CHECKLIST FOR LABORATORY REPORT #: 9901.360, 370 LABORATORY: E&E ANALYTICAL SERVICES CENTER		CIRCLE ONE	QUALI-FIERS
1)	Statements made in the Analytical Data Case Narrative supported by the analytical data ~~or indicated severe concerns~~? MMG 7/12/99	(Yes) No NA	
2)	Coolers received properly with no discrepancies?	(Yes) No NA	
3)	Chain of custody records present and completed correctly?	(Yes) No NA	
4)	Samples correctly preserved and documented at lab?	(Yes) No NA	
5)	Analysis run as per the method in the work plan? BACKGROUND SAMPLES ADDED	Yes (No) NA	NONE
6)	Holding times met for all matrices and analytical parameters?	(Yes) No NA	
7)	Instrument performance checks within acceptance criteria?	(Yes) No NA	
8)	Initial calibrations run correctly and within acceptance criteria?	(Yes) No NA	
9)	Daily calibrations run correctly and within acceptance criteria?	(Yes) No NA	
10)	Method blanks ≤ reporting limit and at rate of 1/20 samples? ONE BNA TIC, Acetophenone	(Yes) No NA	
11)	Field blanks ≤ reporting limit and run per work plan?	Yes No (NA)	
12)	Compounds found in blanks common lab and field contaminants?	Yes (No) NA	
13)	Surrogates within the acceptance limits?	Yes (No) NA	
14)	MS/MSD or MS/D analyzed at rate of 1/20 samples?	(Yes) No NA	
15)	MS/MSD or MS/D meet the %R and RPD acceptance criteria? Spike compounds present in sample at high concentration.	Yes (No) NA	None
16)	LCS ~~or LCSD~~ analyzed at rate of 1/20 samples? MMG 7/12/99	(Yes) No NA	
17)	LCS~~/LCSD~~'s meet the %R and RPD acceptance criteria? MMG 7/12/99	(Yes) No NA	
18)	Internal standards meet the acceptance criteria for GC/MS?	Yes (No) NA	Yes "J" See attached
19)	Field duplicate results ≤ 40 RPD waters and ≤ 70 RPD soils? - trace level results are not considered in evaluation.	(Yes) No NA	
20)	Dilutions made as required and were reporting levels elevated?	(Yes) No NA	
21)	Discrepancies noted when review of raw data (instrument printouts and chromatograms) was performed?	Yes (No) NA	
22)	Did discrepancies noted above significantly impact the usability of the data based on data needs and objectives of the project?	Yes (No) NA	

Comments: _____

Completed by: Margaret M. Galloway **Date:** 7/12/99

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DEC SAMPLE NO.

SS-PCW-01

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9901.360 SAS No.: SDG No.: SSPCW01

Matrix: (soil/water) SOIL Lab Sample ID: 33106

Sample wt/vol: 30.6 (g/mL) G Lab File ID: I7057

Level: (low/med) LOW Date Received: 05/06/99

% Moisture: 21 decanted: (Y/N) N Date Extracted: 05/10/99

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/24/99

Injection Volume: 2.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 4.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
132-64-9	Dibenzofuran	2400	J
121-14-2	2,4-Dinitrotoluene	4100	U
84-66-2	Diethylphthalate	4100	U
7005-72-3	4-Chlorophenyl-phenylether	4100	U
86-73-7	Fluorene	3500	J
100-01-6	4-Nitroaniline	10000	U
534-52-1	4,6-Dinitro-2-methylphenol	10000	U
86-30-6	N-Nitrosodiphenylamine (1)	4100	U
101-55-3	4-Bromophenyl-phenylether	4100	U
118-74-1	Hexachlorobenzene	4100	U
87-86-5	Pentachlorophenol	10000	U
85-01-8	Phenanthrene	73000	E
120-12-7	Anthracene	12000	
86-74-8	Carbazole	4600	
84-74-2	Di-n-Butylphthalate	4100	U
206-44-0	Fluoranthene	92000	E
129-00-0	Pyrene	130000	E
85-68-7	Butylbenzylphthalate	4100	U
91-94-1	3,3'-Dichlorobenzidine	4100	U
56-55-3	Benzo(a)Anthracene	28000	
218-01-9	Chrysene	37000	E
117-81-7	bis(2-Ethylhexyl)Phthalate	5300	
117-84-0	Di-n-Octyl Phthalate	4100	U
205-99-2	Benzo(b)Fluoranthene	38000	E
207-08-9	Benzo(k)Fluoranthene	35000	E
50-32-8	Benzo(a)Pyrene	30000	
193-39-5	Indeno(1,2,3-cd)Pyrene	9800	
53-70-3	Dibenz(a,h)Anthracene	3600	J
191-24-2	Benzo(g,h,i)Perylene	8900	

(1) - Cannot be separated from Diphenylamine

J 4444J

mmg 7/12/99

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DEC SAMPLE NO.

SS-PCW-02

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9901.360 SAS No.: SDG No.: SSPCW01

Matrix: (soil/water) SOIL Lab Sample ID: 33107

Sample wt/vol: 1.0 (g/mL) G Lab File ID: I7000

Level: (low/med) MED Date Received: 05/06/99

% Moisture: 18 decanted: (Y/N) N Date Extracted: 05/11/99

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/18/99

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
132-64-9	Dibenzofuran	2700	J
121-14-2	2,4-Dinitrotoluene	12000	U
84-66-2	Diethylphthalate	12000	U
7005-72-3	4-Chlorophenyl-phenylether	12000	U
86-73-7	Fluorene	3100	J
100-01-6	4-Nitroaniline	30000	U
534-52-1	4,6-Dinitro-2-methylphenol	30000	U
86-30-6	N-Nitrosodiphenylamine (1)	12000	U
101-55-3	4-Bromophenyl-phenylether	12000	U
118-74-1	Hexachlorobenzene	12000	U
87-86-5	Pentachlorophenol	30000	U
85-01-8	Phenanthrene	91000	
120-12-7	Anthracene	7400	J
86-74-8	Carbazole	7600	J
84-74-2	Di-n-Butylphthalate	12000	U
206-44-0	Fluoranthene	110000	E
129-00-0	Pyrene	110000	E
85-68-7	Butylbenzylphthalate	1700	J
91-94-1	3,3'-Dichlorobenzidine	12000	U
56-55-3	Benzo(a)Anthracene	22000	
218-01-9	Chrysene	35000	
117-81-7	bis(2-Ethylhexyl)Phthalate	1400	J
117-84-0	Di-n-Octyl Phthalate	2000	J
205-99-2	Benzo(b)Fluoranthene	34000	
207-08-9	Benzo(k)Fluoranthene	33000	
50-32-8	Benzo(a)Pyrene	27000	
193-39-5	Indeno(1,2,3-cd)Pyrene	7700	J
53-70-3	Dibenz(a,h)Anthracene	2500	J
191-24-2	Benzo(g,h,i)Perylene	6300	J

JJJ

(1) - Cannot be separated from Diphenylamine

mmg 7/2/99

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DEC SAMPLE NO.

SS-PCW-09

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9901.360 SAS No.: SDG No.: SSPCW01

Matrix: (soil/water) SOIL Lab Sample ID: 33116

Sample wt/vol: 30.4 (g/mL) G Lab File ID: I7060

Level: (low/med) LOW Date Received: 05/06/99

% Moisture: 34 decanted: (Y/N) N Date Extracted: 05/10/99

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/24/99

Injection Volume: 2.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
132-64-9	Dibenzofuran	4400	J
121-14-2	2,4-Dinitrotoluene	4900	U
84-66-2	Diethylphthalate	4900	U
7005-72-3	4-Chlorophenyl-phenylether	4900	U
86-73-7	Fluorene	5700	
100-01-6	4-Nitroaniline	12000	U
534-52-1	4,6-Dinitro-2-methylphenol	12000	U
86-30-6	N-Nitrosodiphenylamine (1)	4900	U
101-55-3	4-Bromophenyl-phenylether	4900	U
118-74-1	Hexachlorobenzene	4900	U
87-86-5	Pentachlorophenol	12000	U
85-01-8	Phenanthrene	110000	E
120-12-7	Anthracene	19000	
86-74-8	Carbazole	9000	
84-74-2	Di-n-Butylphthalate	790	J
206-44-0	Fluoranthene	120000	E
129-00-0	Pyrene	140000	E
85-68-7	Butylbenzylphthalate	4900	U
91-94-1	3,3'-Dichlorobenzidine	4900	U
56-55-3	Benzo(a)Anthracene	29000	
218-01-9	Chrysene	36000	
117-81-7	bis(2-Ethylhexyl)Phthalate	2000	J
117-84-0	Di-n-Octyl Phthalate	4900	U
205-99-2	Benzo(b)Fluoranthene	35000	
207-08-9	Benzo(k)Fluoranthene	39000	
50-32-8	Benzo(a)Pyrene	31000	
193-39-5	Indeno(1,2,3-cd)Pyrene	7500	
53-70-3	Dibenz(a,h)Anthracene	2700	J
191-24-2	Benzo(g,h,i)Perylene	7300	

(1) - Cannot be separated from Diphenylamine

J

MMG 7/12/99

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DEC SAMPLE NO.

SS-PCW-09DL

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9901.360 SAS No.: SDG No.: SSPCW01

Matrix: (soil/water) SOIL Lab Sample ID: 33116DL

Sample wt/vol: 30.4 (g/mL) G Lab File ID: I7067

Level: (low/med) LOW Date Received: 05/06/99

% Moisture: 34 decanted: (Y/N) N Date Extracted: 05/10/99

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/25/99

Injection Volume: 2.0(uL) Dilution Factor: 50.0

GPC Cleanup: (Y/N) Y pH: 6.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
132-64-9	Dibenzofuran	4100	DJ
121-14-2	2,4-Dinitrotoluene	25000	U
84-66-2	Diethylphthalate	25000	U
7005-72-3	4-Chlorophenyl-phenylether	25000	U
86-73-7	Fluorene	5000	DJ
100-01-6	4-Nitroaniline	62000	U
534-52-1	4,6-Dinitro-2-methylphenol	62000	U
86-30-6	N-Nitrosodiphenylamine (1)	25000	U
101-55-3	4-Bromophenyl-phenylether	25000	U
118-74-1	Hexachlorobenzene	25000	U
87-86-5	Pentachlorophenol	62000	U
85-01-8	Phenanthrene	68000	D
120-12-7	Anthracene	14000	DJ
86-74-8	Carbazole	7600	DJ
84-74-2	Di-n-Butylphthalate	25000	U
206-44-0	Fluoranthene	63000	D
129-00-0	Pyrene	130000	D
85-68-7	Butylbenzylphthalate	25000	U
91-94-1	3,3'-Dichlorobenzidine	25000	U
56-55-3	Benzo(a)Anthracene	24000	DJ
218-01-9	Chrysene	30000	D
117-81-7	bis(2-Ethylhexyl)Phthalate	25000	U
117-84-0	Di-n-Octyl Phthalate	25000	U
205-99-2	Benzo(b)Fluoranthene	38000	D
207-08-9	Benzo(k)Fluoranthene	35000	D
50-32-8	Benzo(a)Pyrene	27000	D
193-39-5	Indeno(1,2,3-cd)Pyrene	9700	DJ
53-70-3	Dibenz(a,h)Anthracene	2600	DJ
191-24-2	Benzo(g,h,i)Perylene	10000	DJ

(1) - Cannot be separated from Diphenylamine

J

MMG 7/12/99

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DEC SAMPLE NO.

SS-PCW-11

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9901.360 SAS No.: SDG No.: SSPCW01

Matrix: (soil/water) SOIL Lab Sample ID: 33217

Sample wt/vol: 31.8 (g/mL) G Lab File ID: I7061

Level: (low/med) LOW Date Received: 05/07/99

% Moisture: 16 decanted: (Y/N) N Date Extracted: 05/10/99

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
132-64-9	Dibenzofuran	310	J
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	55	J
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	360	J
100-01-6	4-Nitroaniline	930	U
534-52-1	4,6-Dinitro-2-methylphenol	930	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	930	U
85-01-8	Phenanthrene	4100	E
120-12-7	Anthracene	710	
86-74-8	Carbazole	450	
84-74-2	Di-n-Butylphthalate	100	J
206-44-0	Fluoranthene	3000	E
129-00-0	Pyrene	12000	E
85-68-7	Butylbenzylphthalate	150	J
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	1600	
218-01-9	Chrysene	2300	
117-81-7	bis(2-Ethylhexyl)Phthalate	570	
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	2500	
207-08-9	Benzo(k)Fluoranthene	2400	
50-32-8	Benzo(a)Pyrene	2000	
193-39-5	Indeno(1,2,3-cd)Pyrene	800	
53-70-3	Dibenz(a,h)Anthracene	300	J
191-24-2	Benzo(g,h,i)Perylene	930	

(1) - Cannot be separated from Diphenylamine

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mms 7/12/99

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DEC SAMPLE NO.

SS-PCW-11DL

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9901.360 SAS No.: SDG No.: SSPCW01

Matrix: (soil/water) SOIL Lab Sample ID: 33217DL

Sample wt/vol: 31.8 (g/mL) G Lab File ID: I7086

Level: (low/med) LOW Date Received: 05/07/99

% Moisture: 16 decanted: (Y/N) N Date Extracted: 05/10/99

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/26/99

Injection Volume: 2.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) Y pH: 9.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
132-64-9	Dibenzofuran	310	DJ
121-14-2	2,4-Dinitrotoluene	1100	U
84-66-2	Diethylphthalate	1100	U
7005-72-3	4-Chlorophenyl-phenylether	1100	U
86-73-7	Fluorene	320	DJ
100-01-6	4-Nitroaniline	2800	U
534-52-1	4,6-Dinitro-2-methylphenol	2800	U
86-30-6	N-Nitrosodiphenylamine (1)	1100	U
101-55-3	4-Bromophenyl-phenylether	1100	U
118-74-1	Hexachlorobenzene	1100	U
87-86-5	Pentachlorophenol	2800	U
85-01-8	Phenanthrene	4200	D
120-12-7	Anthracene	710	DJ
86-74-8	Carbazole	500	DJ
84-74-2	Di-n-Butylphthalate	120	DJ
206-44-0	Fluoranthene	4800	D
129-00-0	Pyrene	6900	D
85-68-7	Butylbenzylphthalate	210	DJ
91-94-1	3,3'-Dichlorobenzidine	1100	U
56-55-3	Benzo(a)Anthracene	1800	D
218-01-9	Chrysene	2300	D
117-81-7	bis(2-Ethylhexyl)Phthalate	540	DJ
117-84-0	Di-n-Octyl Phthalate	1100	U
205-99-2	Benzo(b)Fluoranthene	2500	D
207-08-9	Benzo(k)Fluoranthene	2900	D
50-32-8	Benzo(a)Pyrene	2200	D
193-39-5	Indeno(1,2,3-cd)Pyrene	690	DJ
53-70-3	Dibenz(a,h)Anthracene	250	DJ
191-24-2	Benzo(g,h,i)Perylene	710	DJ

(1) - Cannot be separated from Diphenylamine

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mmg 7/12/99

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DEC SAMPLE NO.

SS-PCW-12

Lab Name: E & E INC. Contract:

Lab Code: EANDE Case No.: 9901.360 SAS No.: SDG No.: SSPCW01

Matrix: (soil/water) SOIL Lab Sample ID: 33218

Sample wt/vol: 31.5 (g/mL) G Lab File ID: I7062

Level: (low/med) LOW Date Received: 05/07/99

% Moisture: 9 decanted: (Y/N) N Date Extracted: 05/10/99

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
132-64-9	Dibenzofuran	830	
121-14-2	2,4-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	1300	
100-01-6	4-Nitroaniline	870	U
534-52-1	4,6-Dinitro-2-methylphenol	870	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	870	U
85-01-8	Phenanthrene	24000	E
120-12-7	Anthracene	5200	E
86-74-8	Carbazole	1300	
84-74-2	Di-n-Butylphthalate	350	U
206-44-0	Fluoranthene	17000	E
129-00-0	Pyrene	51000	E
85-68-7	Butylbenzylphthalate	220	J
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)Anthracene	6600	E
218-01-9	Chrysene	7400	E
117-81-7	bis(2-Ethylhexyl)Phthalate	160	J
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	6300	E
207-08-9	Benzo(k)Fluoranthene	6200	E
50-32-8	Benzo(a)Pyrene	5800	E
193-39-5	Indeno(1,2,3-cd)Pyrene	2200	
53-70-3	Dibenz(a,h)Anthracene	820	
191-24-2	Benzo(g,h,i)Perylene	2100	

(1) - Cannot be separated from Diphenylamine

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MMA 7/12/99

ATTACHMENT C

Remedial Cost Analysis

Draft Remedial Cost Analysis

This cost analysis was prepared based on the results of the site investigation, site sketches, and site visits as per the scope of work presented to the City of Niagara Falls in E & E's August 11, 1999 letter. As such, it does not include costs for the actual demolition of the buildings at the site, asbestos survey costs, or additional sampling that may be required for disposal of site materials.

In addition to other costs associated with the remediation of the Power City Warehouse, a risk-based screening analysis will be needed to evaluate potential risks to workers from exposures to contaminants present in soils during future excavation and construction activities at the site. It is estimated that preparation of the risk evaluation would cost less than $5,000.

Remedial Alternative Cost Analysis for the Power City Warehouse Site
Niagara Falls, New York

General Cost Estimate Assumptions
Cost is for removal and disposal only, actual building demolition is not included.
25% of the roofing, wood and soil is hazardous;
75% of the concrete, brick, and steel is recyclable; 25% of the remaining volume (or 6.25% of the total volume) is hazardous. Site will be backfilled to existing grade with clean soils.

Cost Scenarios

Building Slab Remains
Scenario 1: Buildings will be demolished to grade, leaving the ground floor intact.
Building basement(s) will be filled with crushed debris. Site soils will be excavated one foot deep.
Site excavations will be backfilled with one foot of clean soil.

Estimated Cost: $ 462,000

Scenario 2: Buildings will be demolished to grade, leaving the ground floor intact.
Building basement(s) will be filled with crushed debris. Site soils will be excavated two feet deep.
Site excavations will be backfilled with two feet of clean soil.

Estimated Cost: $ 713,000

Building Slab Removed
Scenario 3: Buildings will be demolished and the ground floor removed.
Building basement(s) will be filled with crushed debris. Site soils will be excavated one foot deep.
Site excavations will be backfilled with one foot of clean soil.

Estimated Cost: $ 784,000

Scenario 4: Buildings will be demolished and the ground floor removed.
Building basement(s) will be filled with crushed debris. Site soils will be excavated two feet deep.
Site excavations will be backfilled with two feet of clean soil.

Estimated Cost: $ 1,890,000

Scenario 1 Assumptions

The building will be removed to grade. The concrete slab will remain. Basement will be filled.
Volume of basement is approx. 75,000 cubic feet, 2,800 cubic yards.
Soil will be removed outside the building limits to a depth of 1' below grade.

Percentage of material that can be recycled is shown in the table below. Also shown are the estimated percentages of materials to be disposed off site as C&D/non-hazardous waste and and hazardous waste.

Item	Total Quantity	Units	Recycle Quantity	Disposal Quantity C&D/Non Haz	Disposal Quantity Hazardous
CONCRETE			75%	18.75%	6.25%
Volume of Concrete	770	CY	580	140	50
Specific Weight	2600	LB/CY			
Weight of Concrete	1000	Ton	750	190	60
STEEL			75%	18.75%	6.25%
Volume of Steel	40	CY	30	10	0
Weight of Steel	310	Ton	230	60	20
ROOFING			0%	75%	25%
Volume of Roofing	120	CY	0	90	30
Specific Weight	700	LB/CY			
Weight of Roofing	40	Ton	0	30	10
WOOD			0%	75%	25%
Volume of Wood	370	CY	0	280	90
Specific Weight	500	LB/CY			
Weight of Wood	90	Ton	0	70	20
BRICK			75%	18.75%	6.25%
Volume of Brick	2,500	CY	1,880	470	160
Specific Weight	1,700	LB/CY			
Weight of Brick	2,100	Ton	1,580	390	130
SOIL			0%	75%	25%
Volume Excavated Soil	2,000	CY	0	1,500	500
Specific Weight	1.6	Tons/CY			
Weight of Soil	3,200	Tons	0	2,400	800
	5,800	CY	2,490	2,490	830
TOTALS	6,740	Tons	2,560	3,140	1,040

Recyclable Transport	311 CY	(Assumes 10 CY w/25% air space per load)
C&D Transport (no soils)	99 Loads	(Assumes 10 CY per load)
Haz Waste Transport	83 Loads	(Assumes 10 CY per load)

Power City Warehouse
Cost Estimate
Scenario 1: Slab remains and one foot of site soils are removed and replaced with clean soils.

Remedial Alternative Item	Units	Quantity	Unit Cost ($)	Total Cost ($)
Site Work				
Mobilization/Demobilization	LS	1	2,000	2,000
Site prep/clearing/grubbing	LS	1	15,000	15,000
Soil Excavation (Backhoe)	CY	2,000	1.79	3,580
Dust Control	LS	1	5,000	5,000
Backfill Site (including basement)	CY	4,800	6.15	29,520
Filling/Compaction (basement)	CY	2,800	2.78	7,784
Subtotal				**62,884**
Transportation/Off-Site Disposal of Recyclables				
Load Recyclables	CY	2,490	1.59	3,959
Transport Recyclable Material	CY	2,490	11.35	28,262
Concrete Disposal by Recycling	Ton	750	0	0
Brick Disposal by Recycling	Ton	1,580	0	0
Steel Disposal by Recycling	Ton	230	(40)	(9,200)
Subtotal				**23,021**
Transportation/Off-Site Disposal of C&D (no soil)				
Load C&D	CY	990	1.59	1,574
C&D Transportation (no soil)	Load	99	140	13,860
C&D Disposal	Ton	740	40	29,600
Subtotal				**45,034**
Transportation/Off-Site Disposal of Non-hazardous Soil				
Soil Loading	CY	1,500	1.59	2,385
Soil Transport and Disposal	Ton	2,400	30	72,000
Subtotal				**74,385**
Transportation/Off-Site Disposal of Hazardous Waste				
Load Hazardous Waste	CY	830	2.26	1,876
Haz Waste Transportation	Load	83	650	53,950
Haz Waste Disposal	Ton	1,040	135	140,400
Subtotal				**196,226**
Subtotal				**401,550**
Contingency (15%)				**60,000**
Total Disposal Cost (rounded)				**462,000**

Scenario 2 Assumptions

The building will be removed to grade. The concrete slab will remain. Basement will be filled.
Volume of basement is approx. 75,000 cubic feet, 2,800 cubic yards.
Soil will be removed outside the building limits to a depth of two feet below grade.

Percentage of material that can be recycled is shown in the table below. Also shown are the estimated percentages of materials to be disposed off site as C&D/non-hazardous waste and and hazardous waste.

Item	Total Quantity	Units	Recycle Quantity	Disposal Quantity C&D/Non Haz	Hazardous
CONCRETE			75%	18.75%	6.25%
Volume of Concrete	770	CY	580	140	50
Specific Weight	2600	LB/CY			
Weight of Concrete	1000	Ton	750	190	60
STEEL			75%	18.75%	6.25%
Volume of Steel	40	CY	30	10	0
Weight of Steel	310	Ton	230	60	20
ROOFING			0%	75%	25%
Volume of Roofing	120	CY	0	90	30
Specific Weight	700	LB/CY			
Weight of Roofing	40	Ton	0	30	10
WOOD			0%	75%	25%
Volume of Wood	370	CY	0	280	90
Specific Weight	500	LB/CY			
Weight of Wood	90	Ton	0	70	20
BRICK			75%	18.75%	6.25%
Volume of Brick	2,500	CY	1,880	470	160
Specific Weight	1,700	LB/CY			
Weight of Brick	2,100	Ton	1,580	390	130
SOIL			0%	75%	25%
Volume Excavated Soil	3,900	CY	0	2,930	980
Specific Weight	1.6	Tons/CY			
Weight of Soil	6,200	Tons	0	4,650	1550
	7,700	CY	2,490	3,920	1,310
TOTALS	9,740	Tons	2,560	5,390	1,790

Recyclable Transport	311 CY	(Assumes 10 CY w/25% air space per load)
C&D Transport (no soils)	99 Loads	(Assumes 10 CY per load)
Haz Waste Transport	131 Loads	(Assumes 10 CY per load)

Power City Warehouse
Cost Estimate
Scenario 2: Slab remains and two feet of site soils are removed and replaced with clean soils.

Remedial Alternative Item	Units	Quantity	Unit Cost ($)	Total Cost ($)
Site Work				
Mobilization/Demobilization	LS	1	2,000	2,000
Site prep/clearing/grubbing	LS	1	15,000	15,000
Soil Excavation (Backhoe)	CY	3,900	1.79	6,981
Dust Control	LS	1	5,000	5,000
Backfill Site (including basement)	CY	6,700	6.15	41,205
Filling/Compaction (basement)	CY	2,800	2.78	7,784
Subtotal				**77,970**
Transportation/Off-Site Disposal of Recyclables				
Load Recyclables	CY	2,490	1.59	3,959
Transport Recyclable Material	CY	2,490	11.35	28,262
Concrete Disposal by Recycling	Ton	750	0	0
Brick Disposal by Recycling	Ton	1,580	0	0
Steel Disposal by Recycling	Ton	230	(40)	(9,200)
Subtotal				**23,021**
Transportation/Off-Site Disposal of C&D (no soil)				
Load C&D	CY	990	1.59	1,574
C&D Transportation (no soil)	Load	99	140	13,860
C&D Disposal	Ton	740	40	29,600
Subtotal				**45,034**
Transportation/Off-Site Disposal of Non-hazardous Soil				
Soil Loading	CY	2,930	1.59	4,659
Soil Transport and Disposal	Ton	4,650	30	139,500
Subtotal				**144,159**
Transportation/Off-Site Disposal of Hazardous Waste				
Load Hazardous Waste	CY	1,310	2.26	2,961
Haz Waste Transportation	Load	131	650	85,150
Haz Waste Disposal	Ton	1,790	135	241,650
Subtotal				**329,761**
Subtotal				**619,944**
Contingency (15%)				**93,000**
Total Disposal Cost (rounded)				**713,000**

Scenario 3 Assumptions

The building will be removed to grade. The concrete slab will be removed, approximately 6,400 cubic yards. Basement will be filled.

Volume of basement is approx. 75,000 cubic feet, 2,800 cubic yards.

Soil will be removed outside the building limits to a depth of one foot below grade.

Percentage of material that can be recycled is shown in the table below. Also shown are the estimated percentages of materials to be disposed off site as C&D/non-hazardous waste and and hazardous waste.

Item	Total Quantity	Units	Recycle Quantity	Disposal Quantity C&D/Non Haz	Disposal Quantity Hazardous
CONCRETE			75%	18.75%	6.25%
Volume of Concrete	7,190	CY	5,390	1,350	450
Specific Weight	2,600	LB/CY			
Weight of Concrete	9,350	Ton	7,010	1,750	580
STEEL			75%	18.75%	6.25%
Volume of Steel	40	CY	30	10	0
Weight of Steel	310	Ton	230	60	20
ROOFING			0%	75%	25%
Volume of Roofing	120	CY	0	90	30
Specific Weight	700	LB/CY			
Weight of Roofing	40	Ton	0	30	10
WOOD			0%	75%	25%
Volume of Wood	370	CY	0	280	90
Specific Weight	500	LB/CY			
Weight of Wood	90	Ton	0	70	20
BRICK			75%	18.75%	6.25%
Volume of Brick	2,500	CY	1,880	470	160
Specific Weight	1,700	LB/CY			
Weight of Brick	2,100	Ton	1,580	390	130
SOIL			0%	75%	25%
Volume Excavated Soil	2,000	CY	0	1,500	500
Specific Weight	1.6	Tons/CY			
Weight of Soil	3,200	Tons	0	2,400	800
	12,220	CY	7,300	3,700	1,230
TOTALS	15,090	Tons	8,820	4,700	1,560

Recyclable Transport	913 CY	(Assumes 10 CY w/25% air space per load)
C&D Transport (no soils)	220 Loads	(Assumes 10 CY per load)
Haz Waste Transport	123 Loads	(Assumes 10 CY per load)

Power City Warehouse
Cost Estimate
Scenario 3: Building slab is removed, and one foot of site soils are removed. The entire site then is covered with one foot of clean soils.

Remedial Alternative Item	Units	Quantity	Unit Cost ($)	Total Cost ($)
Site Work				
Mobilization/Demobilization	LS	1	2,000	2,000
Site prep/clearing/grubbing	LS	1	15,000	15,000
Soil Excavation (Backhoe)	CY	2,000	1.79	3,580
Dust Control	LS	1	5,000	5,000
Backfill Site (including basement)	CY	11,200	6.15	68,880
Filling/Compaction (basement)	CY	2,800	2.78	7,784
Subtotal				**102,244**
Transportation/Off-Site Disposal of Recyclables				
Load Recyclables	CY	7,300	1.59	11,607
Transport Recyclable Material	CY	7,300	11.35	82,855
Concrete Disposal by Recycling	Ton	7,010	0	0
Brick Disposal by Recycling	Ton	1,580	0	0
Steel Disposal by Recycling	Ton	230	(40)	(9,200)
Subtotal				**85,262**
Transportation/Off-Site Disposal of C&D (no soil)				
Load C&D	CY	2,200	1.59	3,498
C&D Transportation (no soil)	Load	220	140	30,800
C&D Disposal	Ton	2,300	40	92,000
Subtotal				**126,298**
Transportation/Off-Site Disposal of Non-hazardous Soil				
Soil Loading	CY	1,500	1.59	2,385
Soil Transport and Disposal	Ton	2,400	30	72,000
Subtotal				**74,385**
Transportation/Off-Site Disposal of Hazardous Waste				
Load Hazardous Waste	CY	1,230	2.26	2,780
Haz Waste Transportation	Load	123	650	79,950
Haz Waste Disposal	Ton	1,560	135	210,600
Subtotal				**293,330**
Subtotal				**681,519**
Contingency (15%)				**102,000**
Total Disposal Cost (rounded)				**784,000**

Scenario 4 Assumptions

The building will be removed to grade. The concrete slab will be removed to two feet below grade.
Concrete floor is approximately 1-foot thick, 6,400 cubic yards. Soil is assumed for the next foot.
Basement will be filled.
Volume of basement is approx. 75,000 cubic feet, 2,800 cubic yards.
Soil will be removed outside the building limits to a depth of two feet below grade.

Percentage of material that can be recycled is shown in the table below. Also shown are the estimated percentages of materials to be disposed off site as C&D/non-hazardous waste and and hazardous waste.

Item	Total Quantity	Units	Recycle Quantity	Disposal Quantity C&D/Non Haz	Disposal Quantity Hazardous
CONCRETE			75%	18.75%	6.25%
Volume of Concrete	7,190	CY	5,390	1,350	450
Specific Weight	2,600	LB/CY			
Weight of Concrete	9,350	Ton	7,010	1,750	580
STEEL			75%	18.75%	6.25%
Volume of Steel	40	CY	30	10	0
Weight of Steel	310	Ton	230	60	20
ROOFING			0%	75%	25%
Volume of Roofing	120	CY	0	90	30
Specific Weight	700	LB/CY			
Weight of Roofing	40	Ton	0	30	10
WOOD			0%	75%	25%
Volume of Wood	370	CY	0	280	90
Specific Weight	500	LB/CY			
Weight of Wood	90	Ton	0	70	20
BRICK			75%	18.75%	6.25%
Volume of Brick	2,500	CY	1,880	470	160
Specific Weight	1,700	LB/CY			
Weight of Brick	2,100	Ton	1,580	390	130
SOIL			0%	75%	25%
Volume Excavated Soil	10,300	CY	0	7,730	2580
Specific Weight	1.6	Tons/CY			
Weight of Soil	16,500	Tons	0	12,380	4130
	20,520	CY	7,300	9,930	3,310
TOTALS	28,390	Tons	8,820	14,680	4,890

Recyclable Transport	913 CY	(Assumes 10 CY w/25% air space per load)
C&D Transport (no soils)	220 Loads	(Assumes 10 CY per load)
Haz Waste Transport	331 Loads	(Assumes 10 CY per load)

Power City Warehouse
Cost Estimate
Scenario 4: Building slab is removed to two feet below top of slab and two feet of site soils are removed. Site is restored to grade with clean soils.

Remedial Alternative Item	Units	Quantity	Unit Cost ($)	Total Cost ($)
Site Work				
Mobilization/Demobilization	LS	1	2,000	2,000
Site prep/clearing/grubbing	LS	1	15,000	15,000
Soil Excavation (Backhoe)	CY	10,300	1.79	18,437
Dust Control	LS	1	5,000	5,000
Backfill Site (including basement)	CY	19,500	6.15	119,925
Filling/Compaction (basement)	CY	2,800	2.78	7,784
Subtotal				**168,146**
Transportation/Off-Site Disposal of Recyclables				
Load Recyclables	CY	7,300	1.59	11,607
Transport Recyclable Material	CY	7,300	11.35	82,855
Concrete Disposal by Recycling	Ton	7,010	0	0
Brick Disposal by Recycling	Ton	1,580	0	0
Steel Disposal by Recycling	Ton	230	(40)	(9,200)
Subtotal				**85,262**
Transportation/Off-Site Disposal of C&D (no soil)				
Load C&D	CY	2,200	1.59	3,498
C&D Transportation (no soil)	Load	220	140	30,800
C&D Disposal	Ton	2,300	40	92,000
Subtotal				**126,298**
Transportation/Off-Site Disposal of Non-hazardous Soil				
Soil Loading	CY	7,730	1.59	12,291
Soil Transport and Disposal	Ton	12,380	30	371,400
Subtotal				**383,691**
Transportation/Off-Site Disposal of Hazardous Waste				
Load Hazardous Waste	CY	3,310	2.26	7,481
Haz Waste Transportation	Load	331	650	215,150
Haz Waste Disposal	Ton	4,890	135	660,150
Subtotal				**882,781**
Subtotal				**1,646,177**
Contingency (15%)				**247,000**
Total Disposal Cost (rounded)				**1,890,000**

APPENDIX B

EA SITE INVESTIGATION REPORT

Appendix B deleted due to file size limitations

APPENDIX C

USEPA POLLUTION REPORTS

Appendix C deleted due to file size limitations

APPENDIX D

HEALTH AND SAFETY PLAN

Appendix D deleted due to file size limitations