

**PHASE I SUMMARY REPORT  
FOR  
DETROIT LEAD ASSESSMENT PROJECT  
FEDERATED METALS DIVISION – 11630 RUSSELL STREET  
DETROIT, WAYNE COUNTY, MICHIGAN**

Prepared for:

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
REMEDATION AND REDEVELOPMENT DIVISION**

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**March 2004**

W.O. No.: 20083.028.001



## **EXECUTIVE SUMMARY**

Weston Solutions of Michigan, Inc. (WESTON®) was contracted by the Michigan Department of Environmental Quality (MDEQ) Remediation and Redevelopment Division (RRD) to conduct off-site sampling for the Detroit Lead Assessment Project (the Project) in Detroit, Wayne County, Michigan. This Summary Report addresses sampling that was conducted in the vicinity of the former Federated Metals Division (the Facility), 11630 Russell Street, Detroit, Wayne County, Michigan.

The presence of lead identified on properties adjacent to or nearby the Facility, was evaluated against predominant atmospheric conditions, spatial distribution, and statistical analysis to determine if the lead at adjacent or nearby properties was indicative of aerial deposition from the Facility.

On 11 November and 3 through 4 December 2003, WESTON collected 12 soil samples for lead analysis at locations upwind of the Facility. Review of the data concluded that the lead detected was consistent with deposition resulting from aerial releases and suggested that such releases occurred during historic smelting operations at the Facility. To address these concerns, it is recommended that the following additional tasks be completed:

- Obtain access to the Facility for:
  - Review of existing information related to property transfer (Phase I, Phase II, and development planning);
  - Interview past employees regarding historical Facility operations;
  - Perform a Facility walk through to determine existing conditions;
  - Collect on-site soil samples to determine the presence, concentration, and extent of lead on the Facility (related to the location of former structures, if possible);and
- Collect soil samples from additional downwind properties to confirm and/or determine the extent of downwind contamination.

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## TABLE OF CONTENTS

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<b>Section</b>	<b>Page</b>
<b>ES EXECUTIVE SUMMARY .....</b>	<b>ES-1</b>
<b>1 INTRODUCTION.....</b>	<b>1-1</b>
<b>2 SITE INFORMATION.....</b>	<b>2-1</b>
2.1 Site Description.....	2-1
2.1.1 Site Location.....	2-1
2.1.2 Site History .....	2-1
2.2 Site Concerns .....	2-3
<b>3 FIELD ACTIVITIES AND PROCEDURES.....</b>	<b>3-1</b>
3.1 Overview of Sampling Activities.....	3-1
3.2 Field Activities.....	3-2
<b>4 PHASE I ANALYTICAL RESULTS .....</b>	<b>4-1</b>
4.1 Summary of Analysis.....	4-1
4.2 Atmospheric Conditions .....	4-1
4.3 Spatial Analysis .....	4-2
4.4 Statistical Analysis.....	4-2
4.5 Conclusions.....	4-3
<b>5 RECOMMENDATIONS.....</b>	<b>5-1</b>

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## **LIST OF APPENDICES**

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**Title**

<b>Attachment A</b>	Figures
<b>Attachment B</b>	Tables
<b>Attachment C</b>	Wind Rose Plot
<b>Attachment D</b>	Photographs of Sampling Locations
<b>Attachment E</b>	Concentration Graph
<b>Attachment F</b>	Statistical Distribution

## **SECTION 1**

### **INTRODUCTION**

Weston Solutions of Michigan, Inc. (WESTON®) was contracted by the Michigan Department of Environmental Quality (MDEQ) Remediation and Redevelopment Division (RRD) to perform off-site sampling activities for the Detroit Lead Assessment Project in Detroit, Wayne County, Michigan. This Summary Report addresses sampling that was conducted in the vicinity of the former Federated Metals Division (the Facility), 11630 Russell Street, Detroit, Wayne County, Michigan. The overall objectives, technical basis, and general sampling protocols for this work are described in the *Comprehensive Phase I Sampling Summary Report for the Detroit Lead Assessment Project* (Comprehensive Summary).

This Phase I Summary Report for Federated Metals Division has been organized in a format that is intended to facilitate and effectively meet the objectives of the Phase I investigation. The Summary Report is organized into the following sections:

- **Section 1** – Introduction,
- **Section 2** – Site Information,
- **Section 3** – Field Activities and Procedures,
- **Section 4** – Phase I Analytical Results, and
- **Section 5** – Recommendations.

Attachments to this Summary Report include the following:

- **Attachment A** – Figures,
- **Attachment B** – Tables,
- **Attachment C** – Wind Rose Plot,
- **Attachment D** – Photographs of Sampling Locations, and
- **Attachment E** – Concentration Graph
- **Attachment F** – Statistical Distribution

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## SECTION 2

### SITE INFORMATION

#### 2.1 SITE DESCRIPTION

The Facility, located at 11630 Russell Street in Detroit, Wayne County Michigan (Detroit Metropolitan Area), was suspected of historical smelting operations and was chosen for investigation by the MDEQ based on its presence on a nationwide list of potential lead smelters. WESTON performed a preliminary records review including review of Bresser's city directory information, Sanborn fire insurance maps, aerial photographs, Fire Marshall inspection/permit records, and Baseline Environmental Assessments (BEAs). This review, presented in the "Summary Report for Data Investigation, Detroit Lead Assessment Project" dated September 2003, concluded that the Facility required additional investigation. Facility location maps are included in **Attachment A**. The addresses of off-site properties sampled are presented in **Table 1** located in **Attachment B**.

##### 2.1.1 Site Location

The Facility was located at 11630 Russell Street in Detroit, Wayne County, Michigan (Detroit Metropolitan Area). The Facility appears to be in use and owned by Brimar. The areas five blocks to the north, south, and west of the Facility are industrial. The area east of the Facility is industrial for two blocks and residential for at least the next three blocks.

##### 2.1.2 Site History

Review of the Bresser's city directory indicated that Federated Metals Division owned the property from 1946 to 1951. Co-owners were Amer Smelting & Refng in 1946 to 1951. The address was not listed in 1961. Sullivan Eqpt Co from 1971 to 1981, Sullivan Investment in 1991, and Brimar Corporation from 1996 to the present owned the property.

Review of the Sanborn maps for this address showed the following chronology: 1968 Sullivan Equip Co present with stock stge, shipping and wash rm, processing rm, metal warehouse, smelting rm, and chlorine stage; 1970-1990 Sullivan Equip Co still present with stock stge,

shipping and wash rm, processing rm, metal warehouse, smelting rm, and chlorine stage; 1993-1997 Brimar M present with stock stge, shipping and wash rm, processing rm, metal warehouse, smelting rm, and chlorine stage.

The aerial photograph review indicated this area was industrialized from 1957 to the present with residential use areas within 1,000 ft. east and three blocks south of the Facility. Structures identified from the most recent aerial photograph (2003 GlobeXplorer™) include a large building, which occupies most of the property with small undeveloped areas to the east and west. Review of the drive by information indicates that land use is consistent with the aerial photograph and Sanborn maps.

During the investigation of the fire records, no records were found for the Facility.

Review of the BEA for “Several Parcels near Russell and Holbrook Street”, dated August 1995, prepared by Vision Environmental Inc. for American Axle and Manufacturing Inc., indicates that lead was detected on the Sites at levels up to 2,600 milligrams/kilogram (mg/kg) and exceeded the MDEQ Part 201 Residential Direct Contact Criteria (RDCC) (400 mg/kg).

Wayne County, through their contractor, AKT Peerless, has performed investigation and remediation at numerous residential properties east of the Facility located from Grand Haven Avenue to Dequindre Avenue and from Caniff Avenue to Commor Avenue (**Attachment A**). Access was not gained to every property within the study area, leaving approximately 25% of the homes in the area uncharacterized. Multiple discrete samples were collected and analyzed within each of the 38 exposure units, then the values were reported based on the 95% upper confidence limit. The lead levels detected ranged from 170 mg/kg to 76,005 mg/kg. Approximately 29 exposure units have been or will be remediated due to lead levels that exceeded the MDEQ Part 201 RDCC (400 mg/kg). The residential area is bounded to the east by Interstate 75 (I-75) with continued residential use east of the expressway (approximately 500 ft. from the remediated properties on Dequindre Avenue). The extent of the lead contamination has not been defined by the work completed to date.

## **2.2 SITE CONCERNS**

The primary concern associated with the Facility is the off-site release of smelter-related metals, specifically lead, to soils in the surrounding neighborhood through aerial deposition.

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## **SECTION 3**

### **FIELD ACTIVITIES AND PROCEDURES**

#### **3.1 OVERVIEW OF SAMPLING ACTIVITIES**

The goal of the Phase I sampling was to determine if lead consistent with smelter-related releases were present off-site and could be attributed to the Facility. The general sampling protocol presented in **Section 2** of the Comprehensive Summary was followed during the Phase I evaluation of the Facility. Due to the development around the Facility, samples could not be collected within the 1,000 foot radius stated in the Quality Assurance Sampling Plan (QASP), so the radius was increased for this Facility.

Prior to sample collection, upwind and downwind sampling areas were established, 2,250 and 1,500 ft. from the Facility, respectively. These areas were established based on mean wind direction from 1984 to 1991 for the Detroit Metropolitan Area. A copy of the wind rose plot is provided in **Attachment C**. Soil samples were collected from City and/or State owned properties located within these established areas.

The City and/or State owned parcels identified for sampling were those closest to the average wind direction and at varying distances from the Facility. Where individual City and/or State owned parcels were not available, rights-of-way, utility corridors, and alleyways ('greenways') were used and have been identified on the figures included in **Attachment A**. Photographs of the sampling locations have been included in **Attachment D**. Exposure units and appropriate sample grids were established in accordance with the QASP to guide the sampling activities.

Sampling activities (sample collection, record keeping, photo documentation) were conducted as described in the Comprehensive Summary. City and/or State owned parcels were available in the upwind sample radius for the Facility. WESTON collected samples from six City and/or State owned parcels near the Facility in the upwind direction. Two composite samples were collected from each of the six upwind parcels. A total of 12 composite samples were collected from the area upwind of the Facility and are shown on the sample sketches included in

**Attachment A.** AKT Peerless previously collected multiple discrete soil samples, for Wayne County, within 38 residential exposure units in the downwind direction.

### **3.2 FIELD ACTIVITIES**

WESTON personnel conducted field sampling on 11 November, 3 December and 4 December 2003. Six upwind City and/or State owned parcels were sampled. When the mailing address of a parcel was unable to be identified, the number of the nearest house was used. For example, a sampled parcel located next to the house at 532 Harmon Street, would be identified as HAM – 00532. These changes were noted in the logbook and can be viewed on the “Summary of Sampled Properties” (located in **Attachment B**) and the sample sketches (located in **Attachment A**).

Two composite samples were collected from each of the six upwind City and/or State owned parcels for a total of 12 samples. Twelve soil samples were submitted for analysis. Two samples were designated matrix spike/matrix spike duplicates (MS/MSD) in accordance with the QASP. AKT Peerless during a previous sampling event submitted multiple discrete soil samples for analysis from 38 downwind residential exposure units.

## SECTION 4

### PHASE I ANALYTICAL RESULTS

#### 4.1 SUMMARY OF ANALYSIS

During Phase I soil sampling, the following samples were collected from the Facility project area:

- 12 composite soil samples in the upwind direction, and
- Multiple soil samples in the downwind direction resulting in average results for 38 Exposure Units (previously by AKT Peerless).

Sample locations from the upwind areas are listed in **Table 1** included in **Attachment B**. Sample locations from the downwind areas are shown in **Figure 2** included in **Attachment A**.

In accordance with the QASP, a total of 12 upwind samples were sent to the State Laboratory located in Lansing, Michigan for analysis by United States Environmental Protection Agency (U.S. EPA) Method 6010B for lead. Samples collected from properties upwind of the Facility did not contain concentrations of lead above the project screening level (400 mg/kg) established in the Phase I QASP. Twenty-nine samples collected from properties downwind of the Facility contained concentrations of lead above the project screening level (400 mg/kg) established in the Phase I QASP. A summary of the Phase I sample results is included in the table below.

**Phase I Summary of Results**

Location	Number of Samples	Number equal or greater than 400 mg/kg	Range of Values (mg/kg)
Upwind	12	0	53-380
Downwind	38	29	170-76,005
Total	53	29	53-76,005

#### 4.2 ATMOSPHERIC CONDITIONS

During Phase I soil sampling activities, upwind and downwind parcels were selected based on the mean wind direction from 1984 to 1991 for the Detroit Metropolitan Area. A copy of the wind rose plot is provided in **Attachment C**. The wind rose plot showed a prominent northeast

wind direction in the City of Detroit Metropolitan Area. If smelting operations occurred, lead in soils resulting from aerial deposition would be found downwind in the northeast direction from the Facility. Parcels ranging from 1,625 feet to 2,250 feet were chosen southwest in the upwind direction of the Facility. AKT Peerless previously sampled parcels ranging from 825 ft. to 1,500 ft. in the northeast direction. Elevated lead concentrations were detected in the downwind direction of the Facility and low-level lead concentrations were detected in the upwind direction. A detailed analysis of upwind and downwind concentrations is contained in **Section 4.3 Spatial Analysis**.

#### **4.3 SPATIAL ANALYSIS**

Where air-transport of materials occurs, it is expected that the largest impacts on the soil will occur closest to the source, and the magnitude of the impact will tend to decrease as a function of distance from the source. In addition, it is expected that the spatial pattern of soil impacts will tend to be elongated in the predominant downwind direction. Thus, the Phase I investigation was designed to determine if an off-site airborne release had occurred by examining the spatial pattern of soil contaminant concentrations as a function of distance from the Facility in a downwind direction. As seen in **Figure 2 (Attachment A)**, concentrations of lead greater than the screening level occurs within the primary downwind envelope.

To determine the distribution of the lead concentrations in soils as the distance from the Facility increases, WESTON evaluated the lead concentration of samples versus the distance from the Facility by graphing the data in relation to each other. Evaluation of this graph (see **Attachment E**) indicated consistently low concentrations of lead in the upwind direction and elevated levels of lead with decreasing concentration as distance increases in the downwind direction. This condition would be expected if an aerial release of lead had occurred due to smelting operations.

#### **4.4 STATISTICAL ANALYSIS**

Analytical data was entered into a spreadsheet and differentiated as downwind and upwind samples, then processed using the MDEQ online statistical interface for Part 201 evaluations. As shown on the distribution analysis figures included in **Attachment F** the downwind log mean is 5.6 mg/kg and the upwind log mean is 5.0 mg/kg indicating the concentrations downwind are



greater than the upwind concentrations. In addition, the relative frequency histogram (**Attachment F**) for the downwind data shows a larger variation across the sample set than the upwind which contains a more even distribution relative to the lognormal curve. Comparison of the upwind and downwind data sets indicates the lead concentrations are sufficiently different from each other both in mean concentration and distribution to conclude that the data represent separate conditions.

#### **4.5 CONCLUSIONS**

The pattern of analytical results for lead in soil samples collected for the Facility suggests that lead contamination detected in downwind locations may be attributable to historic releases from historic smelting operations at the Facility. The analytical data was compared to a screening level consisting of the MDEQ Residential and Commercial I Direct Contact Criteria for soils (400 mg/kg), as established under Part 201 Environmental Response of the Natural Resources and Environmental Protection Act 1994, as amended.

No samples collected from upwind of the Facility contained concentrations of lead above the 400 mg/kg screening level. However, lead concentrations in exceedance of the screening level were detected downwind of the Facility. The downwind samples show a trend of decreasing concentration with increasing distance with the highest levels of lead (over 1,700 mg/kg) closest to the Facility. The exceptions to this are five samples ranging from 3,158 mg/kg to 76,005 mg/kg located from 1,080 ft. to 1,350 ft. from the Facility. This pattern of low concentrations of lead upwind and higher concentrations of lead with decreasing concentrations downwind of the Facility is consistent with deposition patterns from aerial releases and suggests that such releases occurred from the Facility during historic smelting operations.

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## **SECTION 5**

### **RECOMMENDATIONS**

Based on the evaluation of the Phase I analytical data, it is recommended that additional tasks be completed to further define the existing risk and the origin of the off-site contamination. The determination that additional work is necessary is based on three factors:

- The presence of residential receptors located within approximately 825 ft. downwind of the Facility,
- Concentrations of lead in excess of the screening level downwind of the Facility, and
- The pattern of lead concentrations within the study area suggests a strong potential that soils at downwind properties have been impacted by aerial deposition from releases of lead from historic smelting operations at the Facility.

To address these concerns, it is recommended that the following additional tasks be completed:

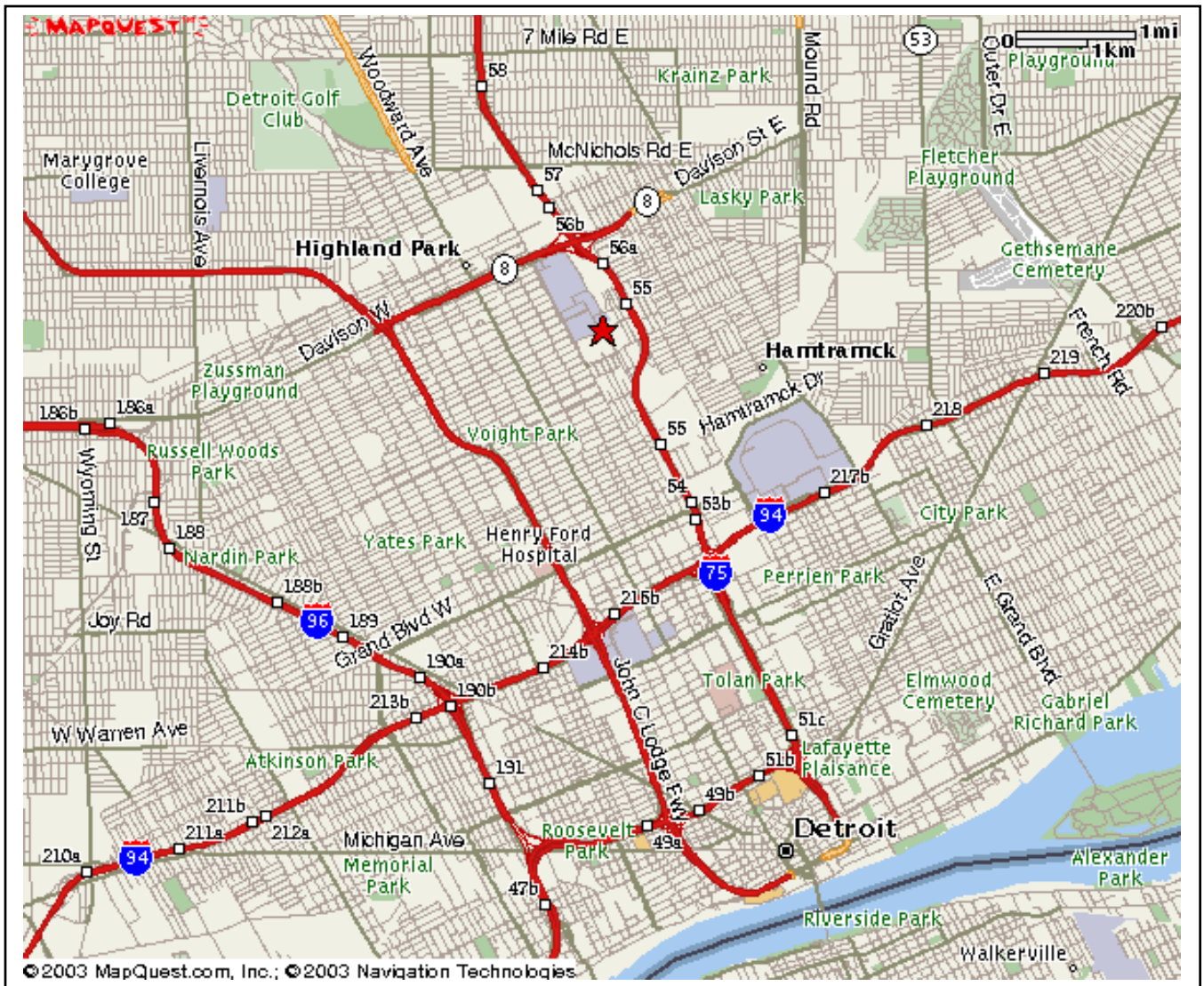
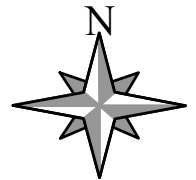
- Obtain access to the Facility for:
  - Review of existing information related to property transfer (Phase I, Phase II, and development planning);
  - Interview past employees regarding historical Facility operations;
  - Perform a Facility walk through to determine existing conditions;
  - Collect on-site soil samples to determine the presence, concentration, and extent of lead on the Facility (related to the location of former structures, if possible);and
- Collect soil samples from additional downwind properties to confirm and/or determine the extent of downwind contamination.

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**ATTACHMENT A**  
**FIGURES**



**FIGURE 1**  
**Site Location Map**  
**11630 Russell Street**



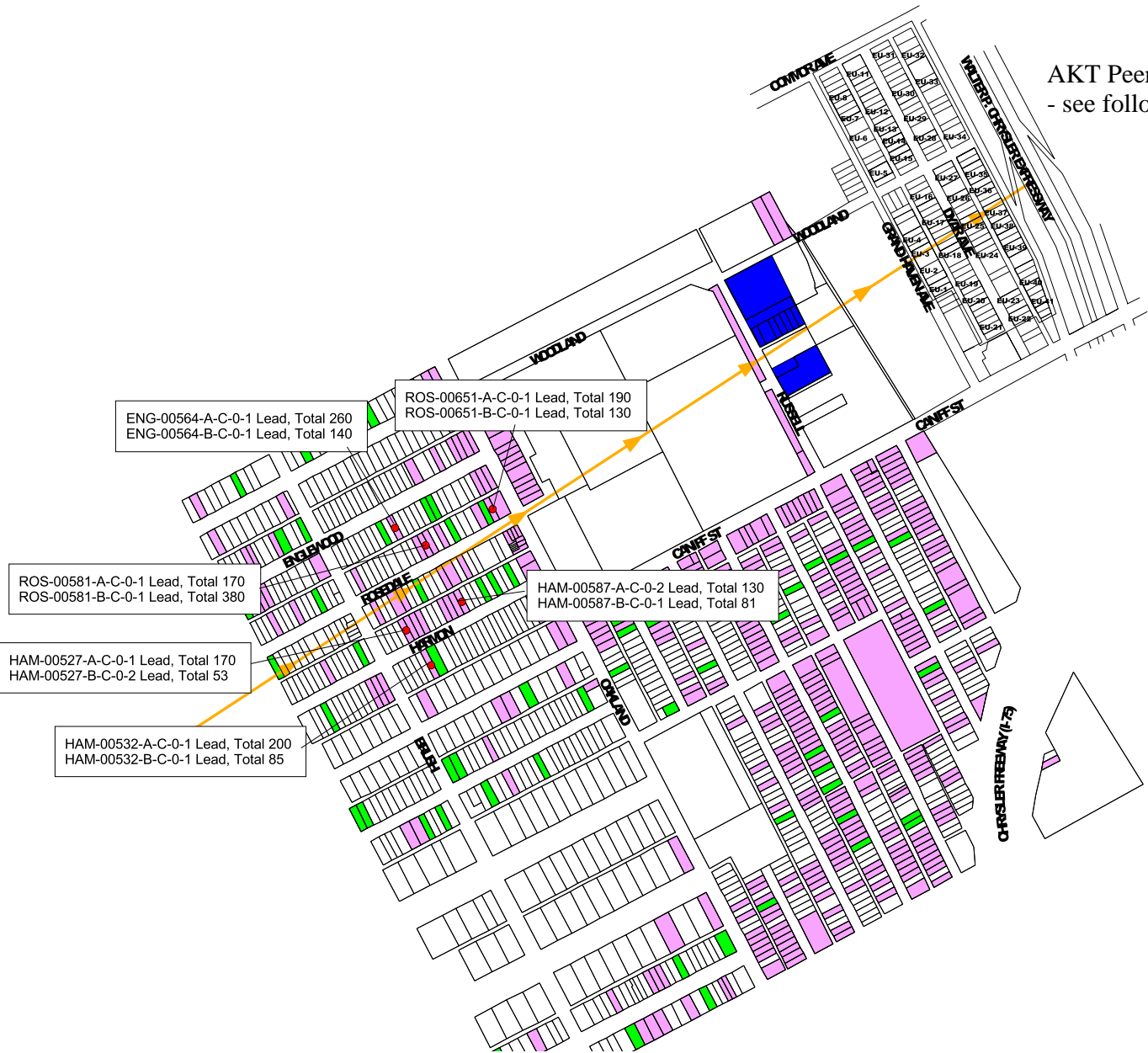
**WESTON SOLUTIONS, INC. OF MICHIGAN**



**300 River Place, Suite 2800**  
**Detroit, Michigan 48207**

**Detroit Lead Assessment Project**  
**Detroit, Wayne County, Michigan**  
**W.O. No. 20083.028.001**

AKT Peerless analytical data  
- see following page

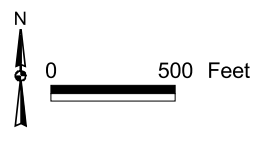


LEGEND:

EXAMPLE:  
MWK-02525-A-C-0-1 Lead, Total 170  
Sample ID    Constituent    Result

- Sampling Locations
- ↗ Wind Direction
- ▭ Parcel Boundaries and Roads (Approximate)
- Facility of Concern

Note: All Lead, Total analytical results are shown in mg/kg.



PROJECT NAME:  
Detroit Lead Assessment Project  
Detroit, Wayne County, Michigan

Weston Solutions, Inc. of Michigan  
300 River Place  
Suite 2800  
Detroit, Michigan 48207

DRAWING TITLE:  
Continental Metal Company  
11500 Russell Street  
Federated Metals Division  
11630 Russell Street

WORK ORDER No.: 20083.028.001	PROJECT MANAGER	
DRAWN BY: NJK	CHECKED BY:	
DRAWING NAME:	DIRECTORY FOLDER: K:\1699\ELAP\proj09_09_03.dwg	
CONTRACT No.:	DELIVERY ORDER No.:	
SCALE:	REPORT DATE:	
DATE: September 2003	REVISION No.:	FIGURE No.:



**Federated Metals**  
**AKT Peerless Analytical Results**

<b>Sample ID</b>	<b>Average Lead (mg/kg)</b>
EU-1	380
EU-2	668
EU-3	469
EU-4	285
EU-5	306
EU-6	120
EU-7	239
EU-8	160
EU-11	226
EU-12	1332
EU-14	156
EU-15	216
EU-16	136
EU-17	255
EU-18	437
EU-19	243
EU-20	281
EU-21	401
EU-22	229
EU-23	207
EU-24	155
EU-25	526
EU-26	1451
EU-27	169
EU-28	394
EU-29	187
EU-30	320
EU-31	157
EU-32	163
EU-33	588
EU-34	175
EU-35	223
EU-36	250
EU-37	662
EU-38	312
EU-39	219
EU-40	285
EU-41	234



**ATTACHMENT B**

**TABLES**



**TABLE 1**  
**SUMMARY OF SAMPLED PROPERTIES**

<b><i>Upwind Properties</i></b>		
<b>Address</b>	<b>Description</b>	<b>Sample Identification</b>
527 Harmon	Vacant property located on the northwest side of Harmon St and directly northeast of a house at 519 Harmon.	HAM-00527-A-C-0-1
		HAM-00527-B-C-0-2
532 Harmon *	Vacant property located on the southeast side of Harmon St and directly southwest of a burned down abandoned house.	HAM-00532-A-C-0-1
		HAM-00532-B-C-0-1
564 Englewood	Vacant property on the south side of Englewood St. Front of property and Greenway were used due to fence.	ENG-00564-A-C-0-1
		ENG-00564-B-C-0-1
581 Rosedale	Vacant property on the north side of Rosedale St and directly west of a house at 587 Rosedale.	ROS-00581-A-C-0-1
		ROS-00581-B-C-0-1
587 Harmon	Vacant property located on the north side of Harmon St and directly west of a house at 593 Harmon. Lot is enclosed with stakes and string.	HAM-00587-A-C-0-2
		HAM-00587-B-C-0-1
651 Rosedale	Vacant property located on the corner or Oakland and Rosedale St. The Bing Group Facility is across the street to the east.	ROS-00651-A-C-0-1
		ROS-00651-B-C-0-1
<b><i>Downwind Properties</i></b>		

Downwind Properties sampled previously by AKT Peerless Environmental Services

\*Notes:

- 1) Property sampled was next to a burned down house at 532 Harmon.

**TABLE 2**  
**ANALYTICAL RESULTS**

<b>Sample Address</b>	<b>Sample ID</b>	<b>Concentration of Lead (mg/Kg)</b>
<b>Upwind</b>		
527 Harmon	HAM-00527-A-C-0-1	170
527 Harmon	HAM-00527-B-C-0-2	53
532 Harmon*	HAM-00532-A-C-0-1	200
532 Harmon*	HAM-00532-B-C-0-1	85
564 Englewood	ENG-00564-A-C-0-1	260
564 Englewood	ENG-00564-B-C-0-1	140
581 Rosedale	ROS-00581-A-C-0-1	170
581 Rosedale	ROS-00581-B-C-0-1	380
587 Harmon	HAM-00587-A-C-0-2	130
587 Harmon	HAM-00587-B-C-0-1	81
651 Rosedale	ROS-00651-A-C-0-1	190
651 Rosedale	ROS-00651-B-C-0-1	130
<b>Downwind</b>		
	EU-1	380
	EU-2	<b>668</b>
	EU-3	<b>469</b>
	EU-4	285
	EU-5	306
	EU-6	120
	EU-7	239
	EU-8	160
	EU-11	226
	EU-12	<b>1332</b>
	EU-14	156
	EU-15	216
	EU-16	136
	EU-17	255
	EU-18	<b>437</b>
	EU-19	243
	EU-20	281
	EU-21	<b>401</b>
	EU-22	229
	EU-23	207
	EU-24	155
	EU-25	<b>526</b>
	EU-26	<b>1451</b>
	EU-27	169
	EU-28	394
	EU-29	187
	EU-30	320
	EU-31	157

Sample Address	Sample ID	Concentration of Lead (mg/Kg)
<b>Downwind cont'd</b>		
	EU-32	163
	EU-33	<b>588</b>
	EU-34	175
	EU-35	223
	EU-36	250
	EU-37	<b>662</b>
	EU-38	312
	EU-39	219
	EU-40	285
	EU-41	234

\*Notes:

- 1) Bold indicates results equal to or greater than to 400 mg/kg.
- 2) All downwind property information was taken from AKTPEERLESS Environmental Services.
- 3) Sample collected at 532 Harmon was actually collected on the vacant lot next to that address.



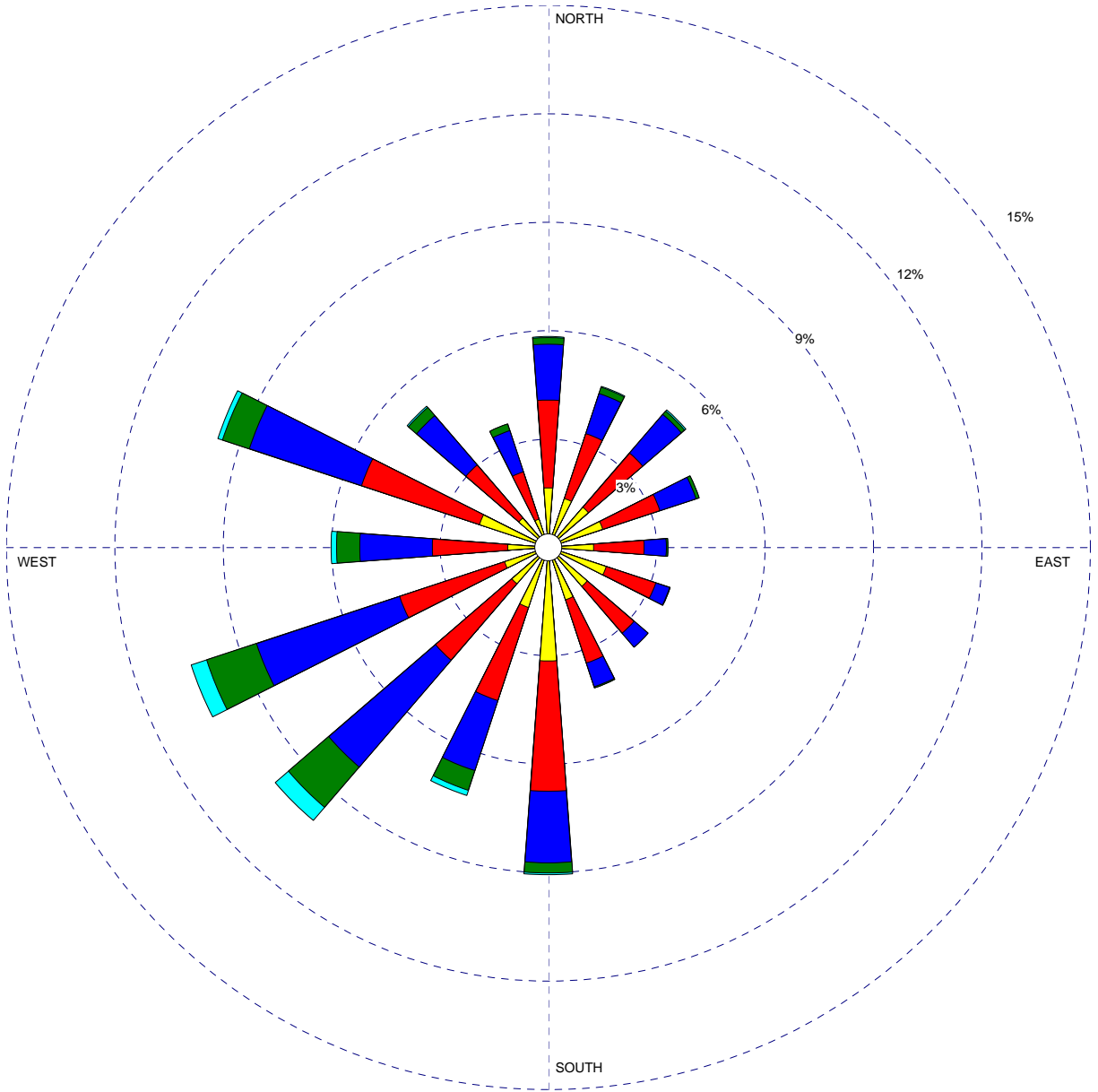


**ATTACHMENT C**  
**WIND ROSE PLOT**



WIND ROSE PLOT

STATION #94847 - DETROIT/METROPOLITAN ARPT, MI



<p>Wind Speed (m/s)</p>		DATE	2/3/2003	Weston Solutions, Inc.	
	DISPLAY	Wind Speed	UNIT		m/s
	AVG. WIND SPEED	5.06 m/s	CALM WINDS	3.67%	
	ORIENTATION	Direction (blowing from)	PLOT YEAR-DATE-TIME	84 85 86 87 88 89 90 91 January 1 - December 31 Midnight - 11 PM	ATTACHMENT C



**ATTACHMENT D**  
**PHOTOGRAPHS OF SAMPLING LOCATIONS**



**Former Federated Metals Division – 11630 Russell**

**527 Harmon** – Vacant property located on the northwest side of Harmon St and directly northeast of a house at 519 Harmon.

Looking southeast along the vacant property at 5 discrete sample A locations.



Looking northwest along the vacant property at 5 discrete sample B locations.



Looking northwest along the property at the total sampling area.



**Russell (cont'd)**

**532 Harmon** – Vacant property located on the southeast side of Harmon St and directly southwest of a burned down abandoned house.

Looking southeast along the vacant property at 5 discrete sample A locations.



Looking northwest along the vacant property at 5 discrete sample B locations.



Looking northwest along the property at the total sampling area.



**Russell (cont'd)**



**564 Englewood** – Vacant property located on the south side of Englewood St. The front of the property and greenway were used due to a fence.

Looking southwest along the property at 5 discrete sample A locations.



Looking northwest along the greenway at 5 discrete sample B locations.



Looking south along the property at the total sampling area.



**Russell (cont'd)**

**581 Rosedale** – Vacant property located on the north side of Rosedale St and directly west of a house at 587 Rosedale.

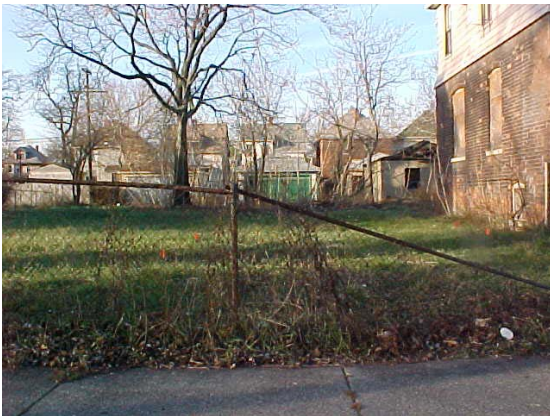
Looking east along the property at 5 discrete sample A locations.



Looking northeast along the property at 5 discrete sample B locations.



Looking north along the property at the total sampling area.



**Russell (cont'd)**

**587 Harmon** – Vacant property located on the north side of Harmon St and directly west of a house at 593 Harmon. Lot is enclosed with stakes and string.

Looking south along the vacant property at 5 discrete sample A locations.



Looking north along the vacant property at 5 discrete sample B locations.



Looking north along the property at the total sampling area.



**Russell (cont'd)**

**651 Rosedale** – Vacant property located on the corner of Oakland and Rosedale St. The Bing Group Facility is across the street to the east.

Looking southwest and west, respectively, along the vacant property at 5 total discrete sample A locations.



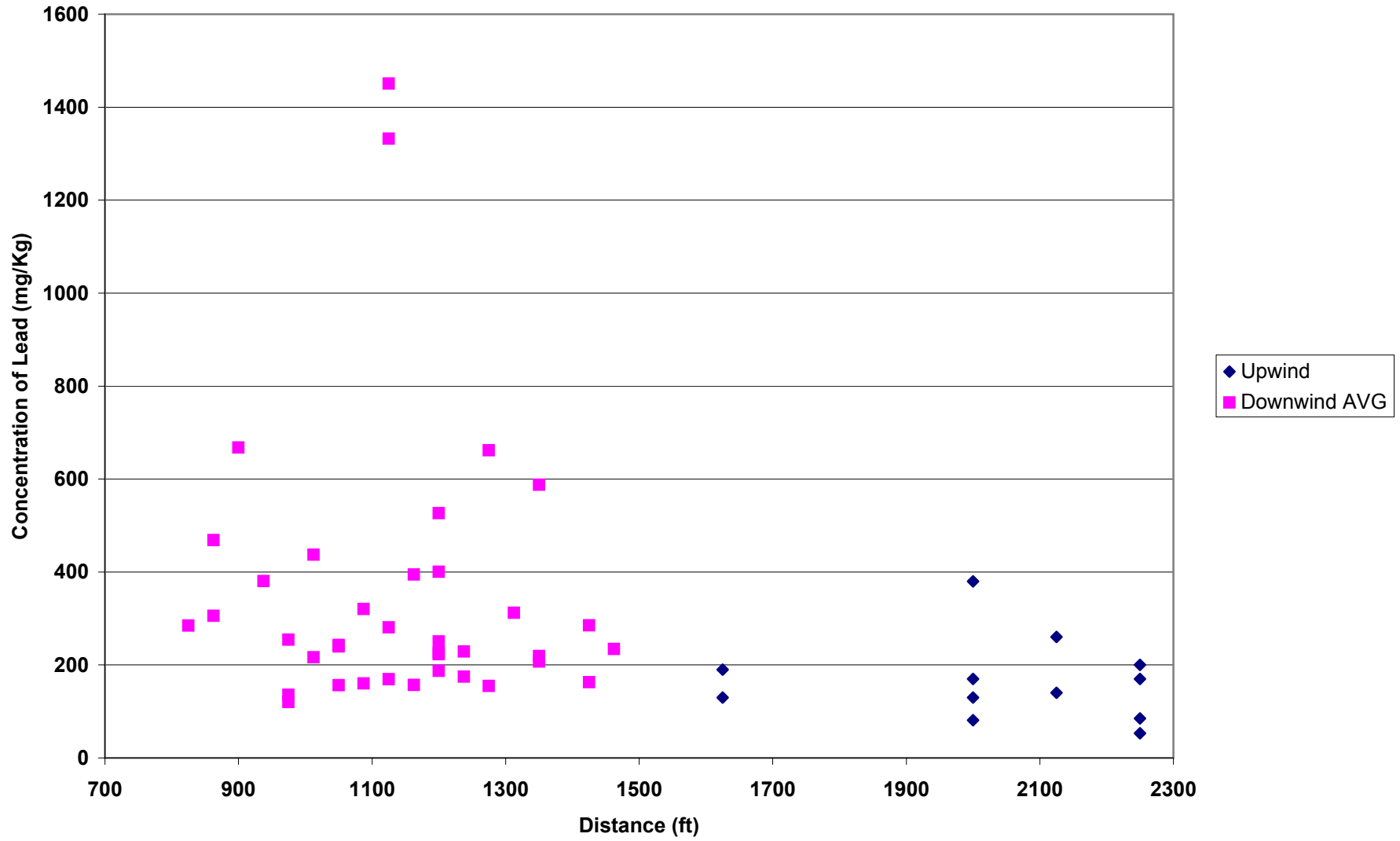
Looking north along the vacant property at 5 discrete sample B locations.



**Attachment E**  
**CONCENTRATION GRAPH**



# 11630 Russell







**ATTACHMENT F**  
**STATISTICAL DISTRIBUTION**



# FEDERATED METALS STATISTICAL DISTRIBUTION

