Immediate Response Action Status Report

Willis Avenue Apartments
Congress and Exchange Aves.
Medford, Massachusetts

RTN 3-31839

Prepared For:

Medford Housing Authority
121 Riverside Ave
Medford, Massachusetts 02155

GREEN
ENVIRONMENTAL

IMMEDIATE RESPONSE ACTION STATUS REPORT

Willis Avenue Apartments
Medford, MA
RTN 3-31839

February 2014

Prepared for:

Medford Housing Authority
121 Riverside Avenue
Medford, MA 02155

Prepared by

Green Environmental, Inc.
120 Longwater Drive
Norwell, MA 02061
(617) 479-0550

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1.0 INTRODUCTION

On behalf of Medford Housing Authority (MHA), Green Environmental, Inc. (GREEN) has prepared this Immediate Response Action (IRA) Status Report for the identification of elevated concentrations of lead in surficial soil at the Willis Avenue Apartment complex located in Medford, Massachusetts (hereinafter, the Site).

On October 24, an IRA condition was identified, following the completion of a limited assessment of shallow soil conditions conducted in October 2013. Laboratory analytical data, received on October 24, 2013 was evaluated and a preliminary Imminent Hazard Evaluation was performed. Based on the outcome of the IH Evaluation, the Medford Housing Authority was informed of a condition that could pose and Imminent Hazard. MHA subsequently requested that GREEN provide notification to the Massachusetts Department of Environmental Protection (MassDEP). The oral notification was followed up by a site visit on October 25, 2013, attended by MHA, GREEN, and Mass DEP.

Approved Immediate Response Action (IRA) activities include the following:

- Tenant notification of the elevated concentrations of lead in soil;
- The installation of a six foot high chain link fence and appropriate signage surrounding the known contaminated areas;
- The application of polyethylene sheeting on surface soil to prevent direct access with soil and airborne dust.

The objective of this document is to describe the IRA activities conducted to date at the Site under oral approval from the MassDEP and the proposed IRA activities to continue remediation of the release in accordance with 310 CMR 40.0000 (the MCP) and work toward a permanent solution. The the IRA Transmittal Form, BWSC-105, electronically accompanies this document.

1.1 Site Contacts

The Potentially Responsible Party (PRP) and environmental consultant for the response actions at the Site are:

PRP:	Mr. John Coddington, Executive Director Medford Housing Authority 121 Riverside Avenue Medford, MA 02155 (781) 396-7200
Licensed Site Professional:	Robert J. Leventry, P.G., LSP No. 7231 Green Environmental, Inc. 120 Longwater Drive Norwell, MA 02061 (617) 479-0550

2.0 BACKGROUND

2.1 Site Location

The subject property consists of an approximately 10 acre parcel bound by Bonner Avenue to the north and Willis Avenue to the west. Access to the property is via Exchange or Congress Avenues. According to the USGS 25,000 Topographic Map the approximate Latitude and Longitude are 42° 24' 13.44" North and 71° 6' 11.74" West, respectively. The approximate Universal Transverse Mercator (UTM) coordinates for the Site are 4,696,747 mN and 326,915 mE. A Site locus map is provided as **Figure 1.**

2.2 Site Description and Natural Resource Areas

The subject property is a residential apartment complex owned by the Medford Housing Authority. The property consists of 10 acres of land improved by 30 buildings, 28 of which are residential; a maintenance building and a community center.

GREEN reviewed a MassDEP MCP Numerical Ranking System Map of environmental resources, obtained from the Massachusetts Geographic Information Systems (MassGIS) and is provided as **Figure 2**. This map includes the following resources:

- Potentially Productive Aquifers (PPA)
- Potential and Non-Potential Drinking Water Source Areas
- EPA Sole Source Aquifers/100-year Floodplain Regions
- DEP Approved Zone IIs
- Interim Wellhead Protection Areas
- Public Surface Water Supplies
- Wetlands
- Surface Water Bodies
- State, Federal, Municipal, Non-Profit, and Private Open Space and Recreational Facilities
- DEP Permitted Solid Waste Facilities

According to the MassGIS Priority Resource Map, the Site is not located within a drinking water source area. Areas of Protected Open Space are located within a 0.5 mile radius to the north, south and west of the Site. The Mystic River is located approximately 1,000 feet to the northeast.

3.0 SUMMARY OF ASSESSMENT ACTIVITIES

GREEN was initially retained by MacRitchie Engineering who was contracted to complete an electrical transformer upgrade program on the property. Soil samples were collected by GREEN in April 2013, for Massachusetts Landfill disposal parameters in the event soil needed to be managed as part of the project. A composite sample was collected from soil adjacent to several of the transformers that revealed a total lead concentration of 664 milligrams per kilogram (mg/kg). The exceedance constituted a 120 day reporting condition to the MassDEP. This information and the reporting obligation were communicated by GREEN to the Medford Housing Authority in July 2013.

GREEN observed the presence of urban fill in the soil on the property and therefore surmised that the source of the lead may be attributable to the presence of coal or coal ash and/or possibly lead based paint. To further establish the disposition of the initial test, GREEN visited the Site on August 26, 2013 to collect five discrete soil samples. The presence of coal and paint was observed in these samples. Specifically, three grab samples were submitted for total lead laboratory analysis, and two composite samples were submitted for a combination of coal/ash identification analysis and lead analysis by a combination of Polarized Light Microscopy (PLM) and Scanning Electron Microscopy with Energy Dispersive X-Ray Spectroscopy (SEM/EDS).

The data set from the above program revealed total lead concentrations ranging from 77 to 1,050 mg/kg and numerous coal and coal ash particles. However, the presence of lead based paint or lead bearing particles was not identified. To further assess whether the lead was based on anthropogenic activity subject to the MCP notification exemptions, sample ID 8-26-13 which revealed a total lead concentration of 1,050 mg/kg was submitted for laboratory examination via PLM and SEM/EDS. This data set was received on October 3, 2013 and, similarly, did not link the presence of elevated lead to the coal/coal ash in the urban fill or to lead-based paint. Therefore, the data did not support an MCP exemption and a 120-day notification was required.

On October 10, 2013, GREEN met with MHA to discuss the MCP requirements and the need for additional assessment. Subsequent to the meeting, GREEN was retained to collect additional soil samples and to perform a Limited Removal Action or Imminent Hazard Evaluation, as appropriate. On October 16, 2013, GREEN advanced 12 soil borings across unpaved portions of the Willis Avenue Apartment complex, using a hand auger. Soil samples were collected to a maximum depth of three feet below ground surface. The presence of coal, ash, glass, brick and/or pottery was noted in each soil boring location.

A total of 15 soil samples were submitted under chain of custody to ESS Laboratory in Cranston, Rhode Island for total lead analysis from the October 2013 sampling event. The resultant data revealed lead concentrations ranging from 205 mg/kg to 2,460 mg/kg. Samples collected within zero to six inches of the ground surface revealed concentrations ranging from 205 to 1,700 mg/Kg. These analytical results were input into the MassDEP Residential Imminent Hazard shortform and used to calculate a Hazard Index. The results suggested a distribution of lead contaminated soil in the upper one foot of soil that could pose an Imminent Hazard Condition. On October 24, 2013, following receipt of the laboratory analytical data, GREEN contacted MHA regarding the data set. Following MHA approval, notification was made to the Massachusetts Department of Environmental Protection as a *Potential Imminent Hazard Condition*, which constituted a two hour notification.

On December 18, 2013, an additional subsurface assessment was conducted in order to measure lead in soil concentrations within the shallow subsurface. For the purposes of this assessment, soil from the upper foot of soil was collected from 24 sample locations between the October 2013 data set and impervious layers on the site. A total of 24 soil samples were submitted under chain of custody to ESS Laboratory in Cranston, Rhode Island for total lead analysis. The resultant data revealed lead concentrations ranging from 11.9 mg/kg to 1,750 mg/kg.

The soil sample locations are depicted on **Figure 3**. The laboratory analytical data certificates are included in **Appendix A**.

4.0 CEP, IH AND SRM EVALUATION

4.1 Critical Exposure Pathways

Critical Exposure Pathways (CEPs) are defined as those routes by which oil and/or hazardous material(s) (OHM) released at a disposal site are transported, or are likely to be transported, to human receptors via:

(a) vapor-phase emissions of measurable concentrations of OHM in to living or working space of a pre-school, daycare, school or residential dwelling;
(b) ingestion, dermal absorption or inhalation of measurable concentrations of OHM from drinking water supply wells for a daycare, school, or residential dwelling.

Ingestion of lead dust is the primary route of entry for human receptors. Vapor phase emissions associated with lead is considered unlikely and the site is on municipal water. Based on this information a CEP has not been identified. The Site is residential however, and IRA activities which include fence installation and physical barriers over soil at portions of the site, have been conducted, as described in **Section 5** to minimize or eliminate exposure.

4.2 Imminent Hazard Evaluation

GREEN performed a limited soil sampling program on the property on October 16, 2013 to assess whether significant lead contamination is distributed in the shallow soil and, if so, to evaluate whether it could pose and Imminent Hazard Condition. Upon receipt of the data set on October 24, a preliminary evaluation of an IH condition was made by employing the MassDEP Residential Soil Imminent Hazard shortform RSIH-1, version 10-12. A calculated lead value of 983 milligrams per kilogram was used. This represents the average concentration of lead values in the samples collected across the property in soil from less than one foot deep to 2.5 feet deep that ranged from a low of 205 mg/Kg to a high of 2,430 mg/kg. The shortform returns a Hazard Index of 4.7. Based on this information, GREEN notified MHA of a condition that could pose an Imminent Hazard. Upon obtaining knowledge, MHA requested that GREEN contacted MassDEP on their behalf. Notification of the IH condition to MassDEP was made on October 24, 2013, at approximately 1:38 pm.

The December 2013 data has been incorporated into the site-wide data set. The resultant data revealed lead concentrations ranging from 11.9 mg/kg to 1,750 mg/kg. Following receipt of the data, GREEN contacted the MassDEP to discuss the proposed IRA activities, including additional IH mitigation in this area which included the relocation of fencing from areas of lower lead contamination to expand and encompass the areas were higher concentrations of lead were observed.

Collaborative Risk Solutions LLC has been retained to provide risk assessment services for the Willis Avenue apartment complex site. A preliminary risk-based review of the the lead data set collected to date, with regard to residential exposure, indicates that surface soil remediation goals should target the background concentrations for lead in fill material containing coal, coal ash or wood ash of 600 mg/kg. In addition, the remediation approach will consider the HUD requirements for bare soil in playground areas of 400 mg/kg. The remediation strategy assumes the application of an Activity and Use Limitation (AUL) to prohibit exposure to subsurface soil. Site specific plans will be developed using the existing data set, and site modeling will be

conducted to develop a site-specific remediation strategy. It is anticipated that the soil remediation activities will occur during the summer of 2014.

5.0 IRA ACTIVITIES

On October 25, 2013 during an onsite meeting, Immediate Response Actions were approved by the MassDEP including, tenant notification; the installation of a six foot high chain link fence, covering the Site with poly sheeting within the fenced in perimeters and appropriate signage. MHA elected to perform tenant notification and held two informational meetings on November 4th and 5th, 2013. These meetings were followed-up with the distribution of BWSC form 124.

On November 21 and 22, 2013, fence installation was completed by OSHA 40 hour "HAZWOPER" certified personnel with modified Level D Protection operating under a site specific health and safety plan. Approximately 1,100 linear feet of six foot high construction fence was installed in pre-designated areas as established during the October 25, 2013 site inspection. Polyethylene sheeting was installed and anchored within the installed fence lines. These areas are depicted on **Figure 3** and include larger fenced in areas by the playground on the northern edge of the Property, and garden on the northwestern section of the Property. Smaller fenced in areas include the transformer to the north of units 98-104, the area surrounding a transformer on the southeastern edge of the Property, the transformer that abuts the garden area on the southern edge of the Property, the transformer between units 19-29, and 9-15, and a small area to the west of units 86-96.

Following receipt of the December 2013 data, GREEN contacted the Mass DEP to propose modifications to the fenced areas, as soil sample S12/18-4 revealed a lead concentration of 1,750 mg/kg. GREEN proposed to extend the fence line along the eastern portion of the site to incorporate this soil sample location, and Mass DEP concurred. The presence of a heavy snow and ice cover has precluded this effort, however the frozen ground has also limited exposure of residents to this area. This area will be secured with polyethylene sheeting and additional sections of chain link fence as soon as site conditions allow for the fencing to be installed in a manner that is safe for and secure to the residential population in the area.

As previously stated a preliminary risk-based review of the the lead data set, with regard to residential exposure, indicates that surface soil remediation should target the background concentrations for lead in fill material containing coal, coal ash and/or wood ash of 600 mg/kg. In addition, the remediation approach will consider the HUD requirements for bare soil in playground areas of 400 mg/kg. It is anticipated that the upper foot of soil will be excavated in areas in which lead has been detected above 600 mg/kg. In areas including playgrounds and gardens, where potential exposure could be higher to site residents, the depths of excavation will be evaluated based upon risk characterization and the use of institutional controls (i.e. physical barriers).

This remediation strategy assumes the application of an Activity and Use Limitation to prohibit exposure to subsurface soil. Based upon this information, it is anticipated that approximately 3,000-4,000 cubic yards of soil may be excavated from the unpaved portions of the site and transported off-site under a Bill of Lading. Final excavation volumes will be dependent upon the site-specific risk characterization. Based upon the data set, the bulk of the soil excavation will be on the northeastern portion of the site, as depicted on **Figure 4**.

GREEN will assist the Medford Housing Authority with specification preparation as the soil excavation activities will be completed via the public bidding process. Excavation will be performed by OSHA 40 hour "HAZWOPER" certified personnel with modified Level D Protection operating under a site specific health and safety plan.

6.0 SCHEDULE

Adjustment of the fence will occur as soon site conditions allow for a safe and stable installation of fencing and placement of polyethylene sheeting immediately above the ground surface (i.e. , snow melt), as part of IH mitigation.

A remediation strategy is currently being developed using the existing data set and site modeling. GREEN will prepare remediation specifications and will provide the Medford Housing Authority with bid support over the next 60-90 days. It is anticipated that soil remediation activities will occur during the spring or early summer of 2014. It is the intention of the Medford Housing Authority to complete remediation activities prior to the summer school recess.

The next IRA Status or Completion report will be completed and submitted in accordance with MCP timelines.

Tables

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Table 1:
Total Lead Concentrations
Willis Ave Appartments
Medford, MA
RTN: 3-31839

Sample ID	**MCP**	**HUD Lead Safe**	**Mass DEPBackground Level in**	8-26-S2	8-26-S3	8-26-S4	1016S1	1016S2	1016S3	1016S4	1016S5	1016S6	1016S7	1016S8	1016S9	1016S10	1016S11
Sample Date	**Method 1 S1**	**Housing Rule (Bare Soil)**	**Soil Containg Coal Ash**	8/26/2013	8/26/2013	8/26/2013	10/16/2013	10/16/2013	10/16/2013	10/16/2013	10/16/2013	10/16/2013	10/16/2013	10/16/2013	10/16/2013	10/16/2013	10/16/2013
Sample Depth							0- 0.5 FT	0- 0.5 FT	0- 0.5 FT	0- 0.5 FT	2- 2.5 FT	0- 0.5 FT	1.5- 2 FT	2- 2.5 FT	1- 1.5 FT	0- 0.5 FT	1- 1.5 FT
Matrix				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals	mg/kg	mg/kg	mg/kg														
Total Lead	300	400	600	77.3	**1050**	**483**	**542**	**355**	**447**	**380**	**2420**	**781**	**1210**	**842**	**772**	**1580**	**2460**

Sample ID	**MCP**	**HUD Lead Safe**	**Mass DEPBackground Level in**	1016S12	1016S13	1016S14	1016S15	S12/18-1	S12/18-2	S12/18-3	S12/18-4	S12/18-5	S12/18-6	S12/18-7	S12/18-8	S12/18-9	S12/18-10
Sample Date	**Method 1 S1**	**Housing Rule (Bare Soil)**	**Soil Containg Coal Ash**	10/16/2013	10/16/2013	10/16/2013	10/16/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013
Sample Depth				0- 0.5 FT	0- 0.5 FT	0- 0.5 FT	0- 0.5 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT
Matrix				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals	mg/kg	mg/kg	mg/kg														
Total Lead	300	400	600	**1700**	**1030**	205	**365**	11.9	286	221	**1750**	155	227	**311**	196	**625**	**469**

Sample ID	**MCP**	**HUD Lead Safe**	**Mass DEPBackground Level in**	S12/18-11	S12/18-12	S12/18-13	S12/18-14	S12/18-15	S12/18-16	S12/18-17	S12/18-18	S12/18-19	S12/18-20	S12/18-21	S12/18-22	S12/18-23	S12/18-24
Sample Date	**Method 1 S1**	**Housing Rule (Bare Soil)**	**Soil Containg Coal Ash**	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013	12/18/2013
Sample Depth				0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT	0- 1 FT
Matrix				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals	mg/kg	mg/kg	mg/kg														
Total Lead	300	400	600	211	**424**	91.8	**515**	136	178	**534**	**613**	144	**538**	**451**	240	**419**	134

mg/kg = milligrams per kilogram
Reportable Concentrations are from the Massachusetts Contingency Plan, 310 CMR 40.0000, dated April 3, 2006, with February 20, 2008, updates.

Plans and Figures

GREEN
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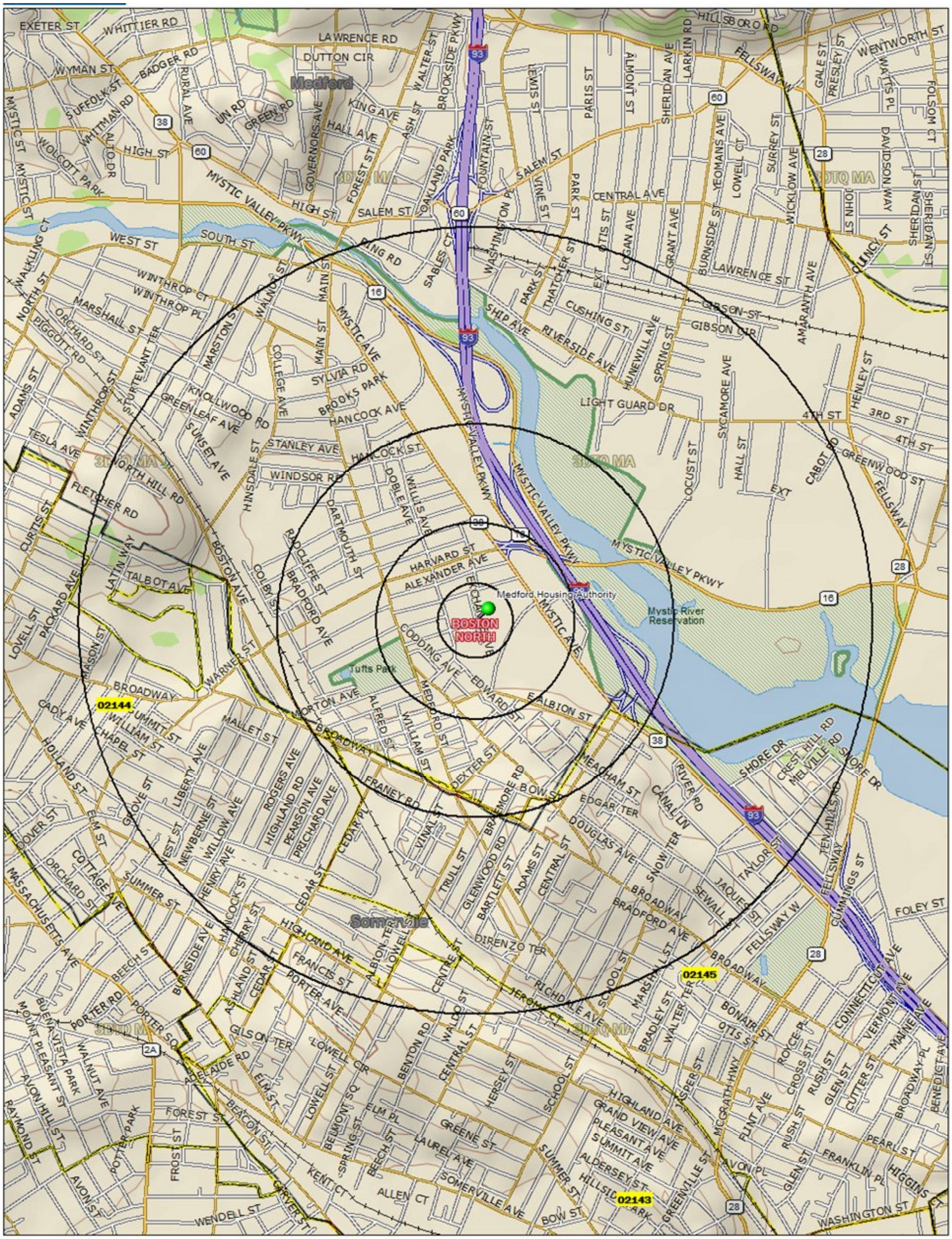


U.S.G.S. 7.5' X 15' (1991)
Topographic 1:24,000 Boston North (MA) Quadrangle
ID 42071-D1

Figure 1: Site Locus Map
Medford Housing Authority
Medford, MA 02155

GREEN Project No: 13127

Radii are 500 feet, 0.25 mile, 0.5 mile and 1.0 mile

MassDEP - Bureau of Waste Site Cleanup

Site Information: MCP Numerical Ranking System Map: 500 feet & 0.5 Mile Radii

WILLIS AVENUE APARTMENTS
BONNER AND WILLIS AVENUE MEDFORD, MA
3-000031839

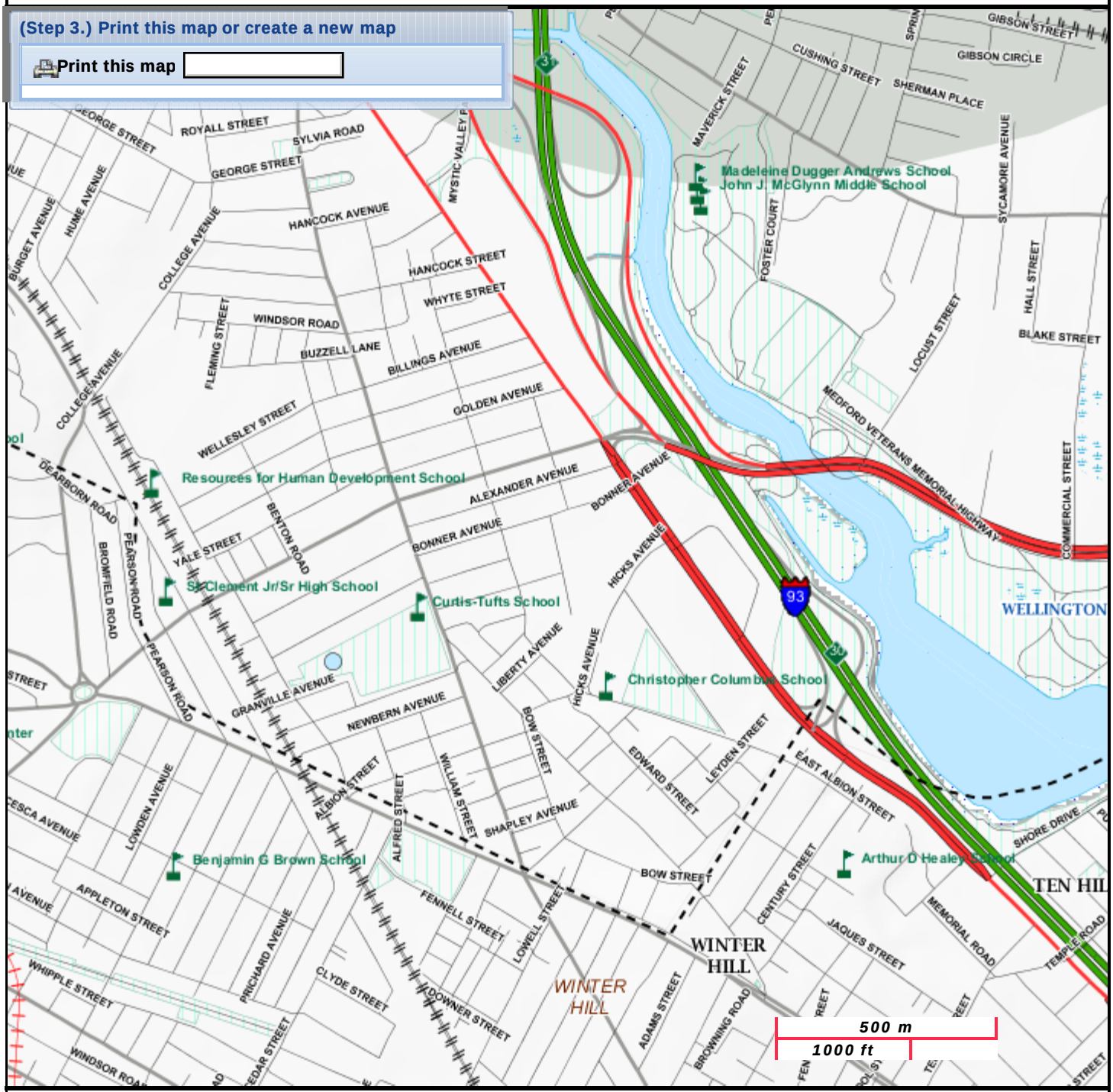
NAD83 UTM Meters:
4696794mN , 326901mE (Zone: 19)
December 9, 2013

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately repsponsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: http://www.mass.gov/mgis/.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection

(Step 3.) Print this map or create a new map

Print this map



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

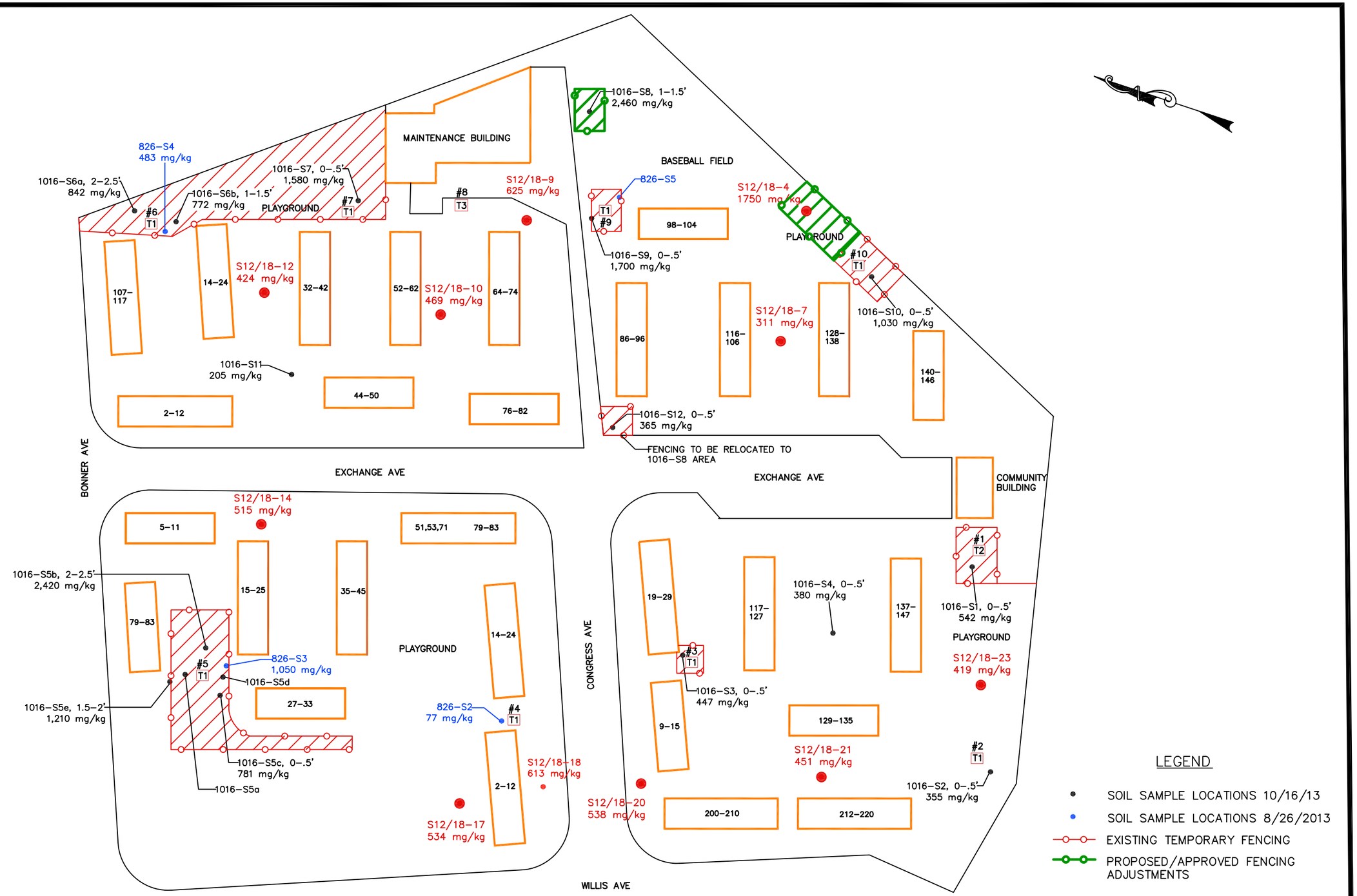
Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.



NOT DRAWN TO SCALE

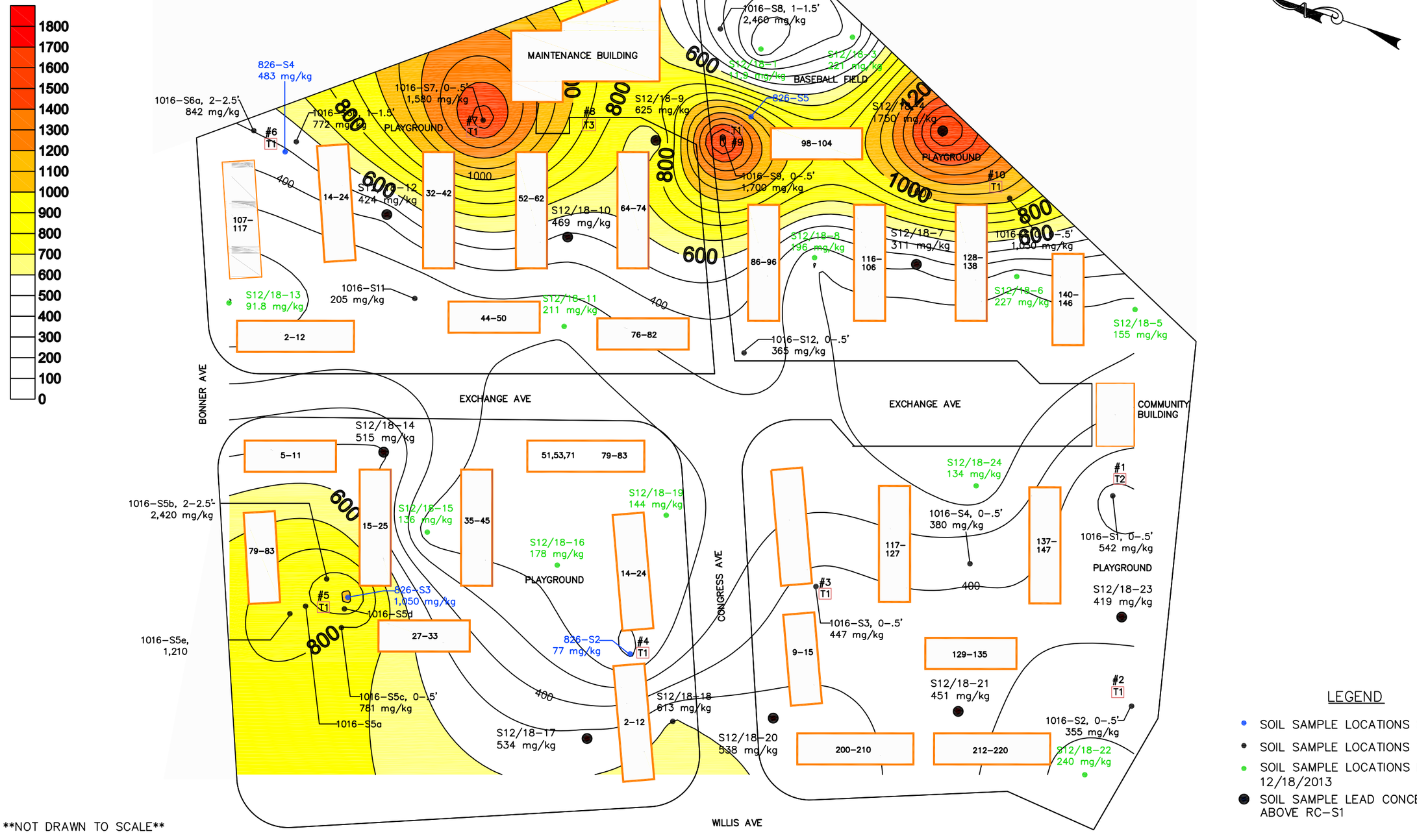
MEDFORD HOUSING AUTHORITY
WILLIS AVE. APARTMENTS

FIGURE 3
IMMEDIATE RESPONSE ACTION/IH CONDITION
FENCED AREAS

GREEN ENVIRONMENTAL

Green Environmental Inc., 120 Longwater Drive, Norwell, MA 02061
Telephone (617) 479–0550 Fax (617) 479–5150
www.GreenEnvironmental.com
Engineering and Environmental Services

DRAWINGINFO



MEDFORD HOUSING AUTHORITY
WILLIS AVE. APARTMENTS

FIGURE 4
LEAD CONCENTRATIONS IN SOIL ISOPLETHS

GREEN ENVIRONMENTAL

Green Environmental Inc., 120 Longwater Drive, Norwell, MA 02061
Telephone (617) 479-0550 Fax (617) 479-5150
www.GreenEnvironmental.com
Engineering and Environmental Services

DRAWINGINFO

Appendix A

GREEN
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New England ChromaChem
6 Nichols Street
Salem, MA 01970
978-744-6600

Massachusetts DEP Lab. MA-072

Sample Information

EPA Method 8082A Polychlorinated Biphenyls by Gas Chromatography	
Lab ID:	305063
Client:	Green Environmental
Client ID:	13-127 MacRitchie Eng - Medford Housing C234567910
State:	Solid
Date Sampled:	04/23/13
Date Received:	05/07/13
Date Analyzed:	05/09/13

PARAMETER	RESULTS (ug/Kg)
PCB 1016	ND
PCB 1221	ND
PCB 1232	ND
PCB 1242	ND
PCB 1248	ND
PCB 1254	ND
PCB 1260	ND

MA does not offer certification for this method.

Method Detection Limit = 20 ug/Kg

Electronically signed and approved by: Mr. Bruce A. Bornstein, Lab Director 05/15/13 Date

New England ChromaChem
6 Nichols Street
Salem, MA 01970
978-744-6600

Massachusetts DEP Lab. MA-072

Sample Information

EPA Method 8260B Volatile Organic Compounds	
Lab ID:	305063
Client:	Green Environmental
Client ID:	13-127 MacRitchie Eng - Medford Housing C234567910
State:	Solid
Date Sampled:	04/23/13
Date Received:	05/07/13
Date Analyzed:	05/07/13

Analytical Results

Parameter	Results ug/Kg	Parameter	Results ug/Kg
Acetone	ND	Chloroprene	ND
Acetonitrile	ND	3-Chloropropene	ND
Acrolein	ND	3-Chloropropionitrile	ND
Acrlonitrile	ND	1,2-Dibromo-3-Chloropropane	ND
Allyl Alcohol	ND	Dibromochlormethane	ND
Allyl Chloride	ND	1,2-Dibromoethane	ND
Benzene	ND	Dibromomethane	ND
Benzyl Chloride	ND	1,2-Dichlorobenzene	ND
Bromoacetone	ND	1,3-Dichlorobenzene	ND
Bromodichloromethane	ND	1,4-Dichlorobenzene	ND
Bromoform	ND	Cis-1,4-Dichloro-2-Butene	ND
Bromochloromethane	ND	Trans-1,4-dichloro-2-butene	ND
N-Butanol	ND	Dichlorodifluoromethane	ND
2-Butanone	ND	1,1-Dichloroethane	ND
N-Butylbenzene	ND	1,2-Dichloroethane	ND
Sec-Butylbenzene	ND	1,1-Dichloroethene	ND
Tert-Butylbenzene	ND	cis-1,2-dichloroethene	ND
Carbon Disulfide	ND	trans-1,2-dichloroethene	ND
Carbon Tetrachloride	ND	1,2-Dichloropropane	ND
Chloral Hydrate	ND	1,3-Dichloro-2-propanol	ND
Chlorobenzene	ND	Cis-1,3-dichloropropene	ND
2-Chloro-1,3-butadiene	ND	Trans-1,3-dichloropropene	ND
Chlorobromomethane	ND	1,2,3,4-Diepoxybutane	ND
Chloroethane	ND	Diethyl Ether	ND
2-Chloroethanol	ND	1,4-Dioxane	ND
Bis-(2-Chloroethyl) Sulfide	ND	Epiclhorohydrin	ND
2-Chloroethyl Vinyl Ether	ND	Ethanol	ND
Chloroform	ND	Ethyl Acetate	ND
Chloromethane	ND	Ethylbenzene	ND

CONTINUED ON FOLLOWING PAGE

EPA Method 8260 Volatile Organic Compounds

Lab ID:	305063
Client ID:	Green Environmental

Analytical Results

Parameter	Results ug/Kg	Parameter	Results ug/Kg
Ethylene Oxide	ND	Propargyl Alcohol	ND
Ethyl Methacrylate	ND	B-Propiolactone	ND
Hexachlorobutadiene	ND	Propionitrile	ND
Hexachloroethane	ND	N-Propylamine	ND
2-Hexanone	ND	N-Propylbenzene	ND
2-Hydroxypropionitrile	ND	Pyridine	ND
Iodomethane	ND	Styrene	ND
Isobutyl Alcohol	ND	1,1,1,2-Tetrachloroethane	ND
Isopropylbenzene	ND	1,1,2,2-Tetrachloroethane	ND
P-Isopropyltoluene	ND	Tetrachloroethene	ND
Malononitrile	ND	Toluene	ND
Methacrylonitrile	ND	1,2,4-Trichlorobenzene	ND
Methanol	ND	1,1,1-Trichloroethane	ND
Methylene Chloride	ND	1,1,2-Trichloroethane	ND
Methyl Iodide	ND	Trichloroethene	ND
Methyl Methacrylate	ND	Trichlorofluoromethane	ND
4-Methyl-2-pentanone	ND	1,2,3-Trichloropropane	ND
Methyl-tert-butyl Ether	ND	1,3,5-Trimethylbenzene	ND
Naphthalene	ND	1,2,4-Trimethylbenzene	ND
Nitrobenzene	ND	Vinyl Acetate	ND
2-Nitropropane	ND	Vinyl Chloride	ND
Pentachloroethane	ND	m&p-Xylene	ND
2-Picoline	ND	o-Xylene	ND

Internal Standard Recoveries	**(%)**
Benzene-d6	97
4-Bromofluorobenzene	106
1,2-Dichlorobenzene-d4	107

Method Detection Limit: 50 ug/Kg

MA does not offer certification for this method.

Electronically signed and approved by: Mr. Bruce A. Bornstein, Lab Director — 05/08/13 Date

New England ChromaChem
6 Nichols Street
Salem, MA 01970
978-744-6600

Massachusetts DEP Lab. MA-072

Sample Information

EPA Method 8270C Semivolatile Organic Compounds	
Lab ID:	305063
Client:	Green Environmental
Client ID:	13-127 MacRitchie Eng - Medford Housing C234567910
State:	Solid
Date Sampled:	04/23/13
Date Received:	05/07/13
Date Analyzed:	05/09/13

Analytical Results

Parameter	Results(ug/Kg)	Parameter	Results(ug/Kg)
Acenaphthene	ND	Diethyl Phthalate	ND
Acenaphthylene	ND	Dimethyl Phthalate	ND
Anthracene	ND	2,4-Dinitrotoluene	ND
Aldrin	ND	2,6-Dinitrotoluene	ND
Benzo(A)Anthracene	ND	Di-N-Octylphthalate	ND
Benzo(B)Fluoranthene	ND	Endosulfansulfate	ND
Benzo(K)Fluoranthene	ND	Endrin Aldehyde	ND
Benzo(A)Pyrene	ND	Fluoranthene	ND
Benzo(Ghi)Perylene	ND	Fluorene	ND
Benzyl Butyl Phthalate	ND	Heptachlor	ND
β-BHC	ND	Heptachlor Epoxide	ND
δ-BHC	ND	Hexachlorobenzene	ND
Bis(2-Chloroethyl)Ether	ND	Hexachlorobutadiene	ND
Bis(2-Chloroethoxy)Methane	ND	Hexachloroethane	ND
Bis(2-Ethylhexyl)Phthalate	ND	Indeno(1,2,3-Cd)Pyrene	ND
Bis(2-Chloroisopropyl)Ether	ND	Isophorone	ND
4-Bromophenyl Phenyl Ether	ND	2-Methylnaphthalene	ND
Chlordane	ND	Naphthalene	ND
2-Chloronaphthalene	ND	Nitrobenzene	ND
4-Chlorophenyl Phenyl Ether	ND	N-Nitrosodi-N-Propylamine	ND
Chrysene	ND	n-Nitrosomethylamine	ND
4,4'-DDD	ND	n-Nitrosodi-n-propylamine	ND
4,4'-DDE	ND	n-nitrosophenylamine	ND
4,4'-DDT	ND	Phenanthrene	ND
Dibenzo(A,H)Anthracene	ND	Pyrene	ND
Di-N-Butylphthalate	ND	Toxaphene	ND
1,2-Dichlorobenzene	ND	1,2,4-Trichlorobenzene	ND
1,3-Dichlorobenzene	ND		
1,4-Dichlorobenzene	ND		
3,3-Dichlorobenzidine	ND		
Dieldrin	ND		

Recoveries of Internal Stds & Surrogates (%)

4.4-Dibromobiphenyl	88
2-Fluorobiphenyl	74
4-Bromobiphenyl	68

Method Detection Limit = 20 ug/Kg

Electronically signed and approved by: Mr. Bruce A. Bornstein, Lab Director — 05/15/13 Date

New England ChromaChem
6 Nichols Street
Salem, MA 01970
978-744-6600

Sample Information

EPA Method 8270C Semivolatile Organic Compounds	
Lab ID:	305063
Client:	Green Environmental
Client ID:	13-127 MacRitchie Eng - Medford Housing C234567910
State:	Solid
Date Sampled:	04/23/13
Date Received:	05/07/13
Date Analyzed:	05/09/13

Analytical Results	Results(ug/Kg)
Parameter	
4-Chloro-3-Methylphenol	ND
2-Chlorophenol	ND
2,4-Dichlorophenol	ND
2,4-Dimethylphenol	ND
2,4-Dintrophenol	ND
2-Methyl-4,6-dinitrophenol	ND
2-Methyl Phenol (O-Cresol)	ND
3-Methyl Phenol (M-Cresol)	ND
4-Methyl Phenol (P-Cresol)	ND
2-Nitrophenol	ND
4-Nitrophenol	ND
Pentachlorophenol	ND
Phenol	ND
2,4,5-Trichlorophenol	ND
2,4,6-Trichlorophenol	ND

Recoveries of Internal Stds & Surrogates (%)

2-Fluorophenol	76
Pentafluorophenol	95
2,4,6-Tribromophenol	80

Method Detection Limit = 20 ug/Kg

MA does not offer certification for this method.

Electronically signed and approved by: Mr. Bruce A. Bornstein, Lab Director — 05/15/13 Date

New England ChromaChem
6 Nichols Street
Salem, MA 01970
978-744-6600

Massachusetts DEP Lab. MA-072

Sample Information

Lab ID:	305063
Client:	Green Environmental
Client ID:	13-127 MacRitchie Eng - Medford Housing C234567910
State:	Solid
Date Sampled:	04/23/13
Date Received:	05/07/13

Analyte	Method	Date Prepared	Date Analyzed	Results	DL	Units	Analyst
Ag	EPA Method 200.7	05/14/13	05/14/13	ND	0.500	mg/Kg	NG
As	EPA Method 200.7	05/14/13	05/14/13	7.36	1.00	mg/Kg	NG
Ba	EPA Method 200.7	05/14/13	05/14/13	195	0.200	mg/Kg	NG
Cd	EPA Method 200.7	05/14/13	05/14/13	4.50	0.200	mg/Kg	NG
Cr	EPA Method 200.7	05/14/13	05/14/13	27.5	0.700	mg/Kg	NG
Hg	EPA Method 245.1	05/15/13	05/15/13	0.499	0.010	mg/Kg	NG
Pb	EPA Method 200.7	05/14/13	05/14/13	664	0.800	mg/Kg	NG
Se	EPA Method 200.7	05/14/13	05/14/13	ND	1.50	mg/Kg	NG

Electronically signed and approved by Mr. Bruce A. Bornstein, Lab Director Date: 05/15/13

New England ChromaChem
6 Nichols Street
Salem, MA 01970
978-744-6600

Massachusetts DEP Lab. MA-072

Sample Information

Lab ID:	305063
Client:	Green Environmental
Client ID:	13-127 MacRitchie Eng - Medford Housing C234567910
State:	Solid
Date Sampled:	04/23/13
Date Received:	05/07/13

Analyte	Method	Date Prepared	Date Analyzed	Results	DL	Units	Analyst
CON	Conductivity - Method 9050A	05/09/13	05/09/13	35.9	0.1	MegOhm	BB
TPH	EPA 8100 MODIFIED	05/09/13	05/09/13	ND	20.000	mg/Kg	NG

Electronically signed and approved by Mr. Bruce A. Bornstein, Lab Director Date: 05/15/13

Chain of Custody Record 305063

Client & Contact Name: Green Env. K. Awed / B. Betters

Project Name & Number: PO#6044 MacRitchie Eng - Medford Housing
Pj # 13-127

Collected by: B. Betters

Sample Information | **Analyses Required**

Sample ID	No. of Containers	Type of Container	Preservations	Sample Matrix (L/S)	Grab or Composite	Date & Time Sampled	VOC's by Method: 8260	TPH by Method 8100	PCB's by Method: 8080	Pesticides by 8081	Metals: RCRA 8	~~EPH~~ SVOC 8270	Conductivity ~~VPH~~	Other: ~~H~~ ~~[illegible]~~	NEC ID #
C2346791O	4	G,V	1,7	S	Comp	4/23/13	X	X	X		X	X	X		305063

~~A~~ Additional TCLP Pb requested by Kristen Awed 5/16/13

Relinquished by:	Date	Time	Received by:
[signature]	5/7/13	12:30PM	[signature]
Relinquished by:	Date	Time	Received by:

Preservations: 1 = Chilled at 4 degrees C 2 = Preserved at pH <2 with HCl (VOC's) 3 = Preserved at pH<2 with HNO_3 (Metals)
4 = Preserved at pH between 5 & 9 (PCB's Method 608) 5 = Preserved at pH <2 with HCl or H_2SO_4 (FOG Method 1664)
6 = Lab to preserve 7= CH_3OH (solid VOC's)

New England ChromaChem, Inc
6 Nichols Street
Salem, MA 01970
(978) 744-6600

New England ChromaChem
6 Nichols Street
Salem, MA 01970
978-744-6600

Massachusetts DEP Lab. MA-072

Sample Information

Lab ID:	305063	TCLP EXTRACT
Client:	Green Environmental	
Client ID:	13-127 MacRitchie Eng - Medford Housing C234567910	
State:	Solid	
Date Sampled:	04/23/13	
Date Received:	05/07/13	

Analyte	Method	Date Prepared	Date Analyzed	Results	DL	Units	Analyst
Pb	EPA Method 200.7	05/21/13	05/21/13	0.259	0.008	mg/L	NG

Electronically signed and approved by Mr. Bruce A. Bornstein, Lab Director Date: 05/21/13

CERTIFICATE OF ANALYSIS

Kristen Awed Ladas
Green Environmental, Inc.
120 Longwater Drive
Norwell, MA 02061

RE: Willis Avenue Apartments (13127)
ESS Laboratory Work Order Number: 1308523

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 1:18 pm, Aug 30, 2013

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibratins, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1308523

SAMPLE RECEIPT

The following samples were received on August 26, 2013 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has performed and reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

For EPH soil samples, the aromatic range results have been corrected for identified cartridge contaminant in accordance with the CAM protocol.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Lab Number	SampleName	Matrix	Analysis
1308523-01	8-26-S2	Soil	6010B
1308523-02	8-26-S3	Soil	6010B
1308523-03	8-26-S4	Soil	6010B

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1308523

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1308523

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5035 - Solid Purge and Trap

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1308523

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1308523-01 through 1308523-03**

Matrices: ( ) Ground Water/Surface Water ( ) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

( ) 8260 VOC CAM II A	( ) 7470/7471 Hg CAM III B	( ) MassDEP VPH CAM IV A	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
( ) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) 8330 Explosives CAM VIII A	( ) TO-15 VOC CAM IX B
(X) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	( ) 8082 PCB CAM V A	( ) 6860 Perchlorate CAM VIII B	( ) 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ( )
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes ( ) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ( )

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes (X) No ( )*
	***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (X) No ( )*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ( ) No (X)*

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard Date: August 30, 2013

Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 8-26-S2
Date Sampled: 08/26/13 07:30
Percent Solids: 93

ESS Laboratory Work Order: 1308523
ESS Laboratory Sample ID: 1308523-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**77.3** (4.7)		6010B		1	SVD	08/28/13 1:05	2.3	100	CH32605

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 8-26-S3
Date Sampled: 08/26/13 07:45
Percent Solids: 96

ESS Laboratory Work Order: 1308523
ESS Laboratory Sample ID: 1308523-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**1050** (4.6)		6010B		1	SVD	08/28/13 1:11	2.25	100	CH32605

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 8-26-S4
Date Sampled: 08/26/13 08:00
Percent Solids: 97

ESS Laboratory Work Order: 1308523
ESS Laboratory Sample ID: 1308523-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**483** (4.4)		6010B		1	SVD	08/28/13 1:17	2.32	100	CH32605

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1308523

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals Solid										
Batch CH32605 - 3050B										
Blank										
Lead	ND	5.0	mg/kg wet							
LCS										
Lead	125	23.8	mg/kg wet	136.0		92	80-120			
LCS Dup										
Lead	131	21.3	mg/kg wet	136.0		96	80-120	5	20	

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments ESS Laboratory Work Order: 1308523

Notes and Definitions

U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1308523

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)
A2LA Accredited: Testing Cert# 2864.01
http://www.a2la.org/scopepdf/2864-01.pdf

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited) Potable and Non PotableWater, Solid and Hazardous Waste: 2424
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/dep/DEP_OPRA/

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301
http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
http://www.A2LA.org/dirsearchnew/newsearch.cfm

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
http://www.cpsc.gov/cgi-bin/labapplist.aspx

Sample and Cooler Receipt Checklist

Client: Green Enviromental-GREN-EL
Client Project ID: _____
Shipped/Delivered Via: ESS Courier

ESS Project ID: 13080523
Date Project Due: 9/2/13
Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present?	* No	10. Are the samples properly preserved?	Yes
Air No.:		11. Proper sample containers used?	Yes
2. Were Custody Seals Present?	No	12. Any air bubbles in the VOA vials?	N/A
3. Were Custody Seals Intact?	N/A	13. Holding times exceeded?	No
4. Is Radiation count < 100 CPM?	Yes	14. Sufficient sample volumes?	Yes
5. Is a cooler present?	Yes	15. Any Subcontracting needed?	No
Cooler Temp: **1.3**		16. Are ESS labels on correct containers?	(Yes) | No
Iced With: **Ice**		17. Were samples received intact?	(Yes) | No
6. Was COC included with samples?	Yes	ESS Sample IDs:	_____
7. Was COC signed and dated by client?	Yes	Sub Lab:	_____
8. Does the COC match the sample	Yes	Analysis:	_____
9. Is COC complete and correct?	Yes	TAT:	_____

18. Was there need to call project manager to discuss status? If yes, please explain.

_____

_____

_____

Who was called?:_____ By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	2 oz Soil Jar	1	NP
2	Yes	2 oz Soil Jar	1	NP
3	Yes	2 oz Soil Jar	1	NP

Completed By: _____ Date/Time: 8/26/13 1650

Reviewed By: _____ Date/Time: 8/26/13 12:00

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time: X Standard Other 5 day
If faster than 5 days, prior approval by laboratory is required #
State where samples were collected from: MA RI CT NH NJ NY ME Other
Is this project for any of the following: MA-MCP Navy USACE Other

Reporting Limits: MCP RCS-1
ESS LAB PROJECT ID: 1308523
Electronic Deliverable: X Yes ___ No
Format: Excel X Access ___ PDF X Other

Co. Name	Project #	Project Name (20 Char. or less)
Green Environmental, Inc.	13127	Willis Ave. Apts

Contact Person	Address
Kristen Awed Ladas	120 Lognater Dr.

City	State	Zip	PO#
Norwell	MA	02061	6329

Telephone #	Fax #	Email Address
617-479-0550	617-479-5150	kawed@greenenvironmental.com

ESS LAB Sample#	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Circle and/or Write Required Analysis
1	8-26-13	7:30		X	S	8-26-S2		1	G	Total Lead
2	8-26-13	7:45		X	S	8-26-S3		1	G	Total Lead
3	8-26-13	8:00		X	S	8-26-S4		1	G	Total Lead

Circle and/or Write Required Analysis: 8260 VOA; 524.2; 624; 8021 MTBE/BTEX; VPH w/targets; 8015 GRO; 8100 TPH; 8015 DRO; EPH 4 Diesel; EPH w/PAHs; EPH w/o PAHs; 608 Pesticides; 608 PCB; 8082 PCB; 8081 Pesticides; PAH 8270; 625; 8270 SVOA; PP13 TAL23; RCRA8 RCRA5; NBC7; TCLP-RCRA8; MCP-METALS (13) w/Hg; MCP-METALS (13)

Container Type: P-Poly G-Glass S-Sterile V-VOA | Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present: ✓ Yes ___ No — Internal Use Only
Seals Intact: ___ Yes ___ No NA: ✓ — [✓] Pickup
Cooler Temp: 1.3 ICE+ICE PACKS [ ] Technicians Kit

Preservation Code: 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9-

Sampled by: W. Betters

Comments: Medford Housing Authority

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Kristen Awed Ladas				FRIDGE	8/26/13 13:45		8/26/13 13:45
	8/26/13 16:00		8/26/13 16:54				

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 B

9/5/2013

Green Environmental
120 Longwater Drive
Norwell, MA 02061

Attn: Kristen Awed

Project Name: Willis Ave Apts.
Project#: 13127

MVL Job #: 6997

Dear Kristen:

This report covers the methods and findings of the Coal/Coal Ash and Lead analysis that MicroVision Laboratories, Inc. conducted on two (2) soil samples submitted for testing from the project Willis Ave Apts. The purpose of this analysis was to detect and document any coal, coal ash, wood ash or lead that may be present in the submitted soil samples, by use of a combination of microscopy techniques including SEM/EDS, PLM, and macroscopic inspection.

Methods:

The samples were dried and examined by eye and under the stereomicroscope for any suspect dark components to the soil. Dark suspect particles were separated from each soil sample and prepared for examination by Polarized Light Microscopy (PLM) and Scanning Electron Microscopy with Energy Dispersive X-Ray Spectroscopy (SEM/EDS).

For the PLM examination, the suspect particle types detected in each sample were ground in a mortar and pestle, mounted on glass slides in immersion oil (n=1.515) and covered with glass cover slips. These sample particles were then examined at various magnifications and digital images were taken.

For the SEM examination, the suspect particle types were mounted on an aluminum analysis stub with double sided adhesive tape, coated with evaporated graphite and examined under the SEM by EDS to obtain elemental data in the form of EDS spectra. Digital images were taken of the sample particles at various magnifications with the SEM.

Findings:

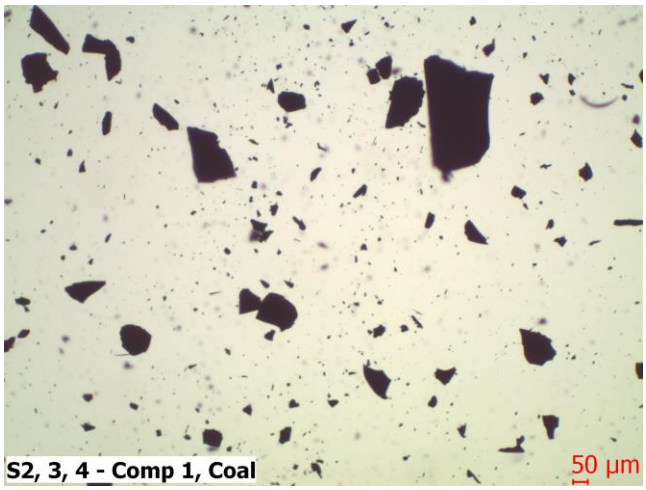
The following pages display the data for each particle type detected in each sample for this project. Each page contains a PLM image, SEM image, and EDS spectrum for the particle types detected for these samples as well as particle type descriptions and observations.

Coal Ash Test

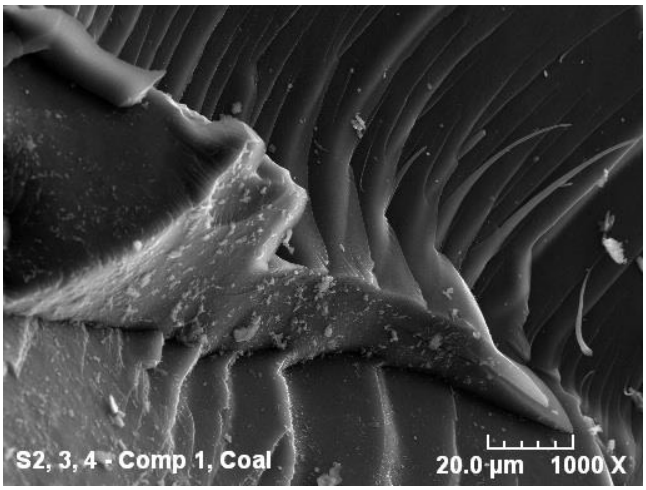
Sample: S2, 3, 4-Comp 1

Number of Suspect Particle Types: Three (3)

Particle type 1 consisted of over forty (40+) shiny, black grains approximately 1mm-30mm in diameter. The PLM examination indicated this particle type to be consistent with coal. The PLM and SEM images of this particle type show the angular edges and typical conchoidal fractures found in coal.

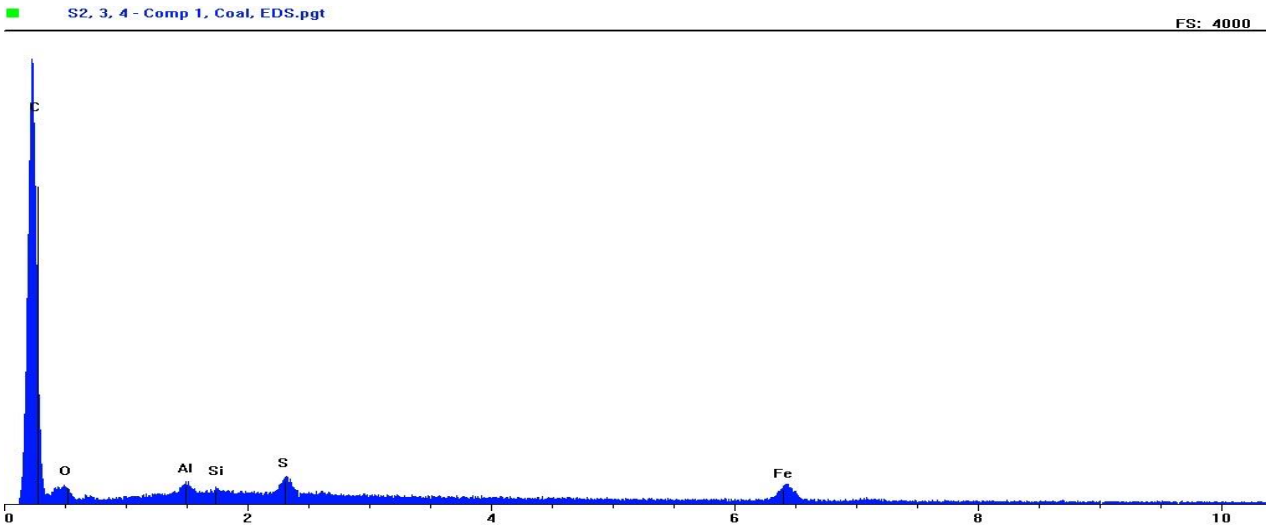


PLM Image



SEM Image

The EDS spectrum, shown below, confirms that this particle type is coal. The analysis for this particle shows a strong peak concentration of carbon, with lower peak concentrations of oxygen, aluminum, silicon, sulfur and iron.



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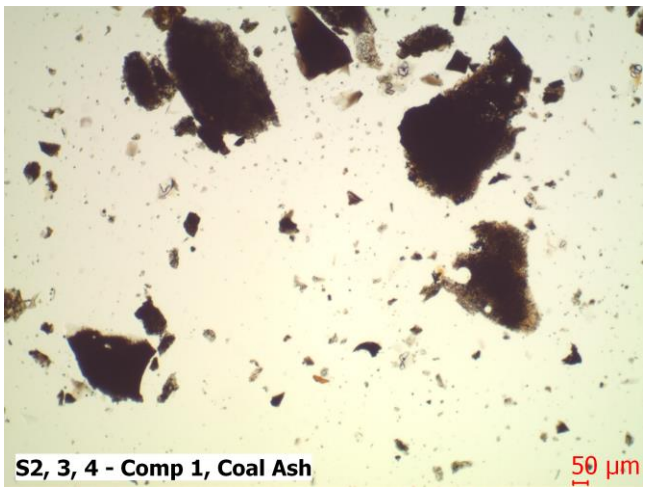
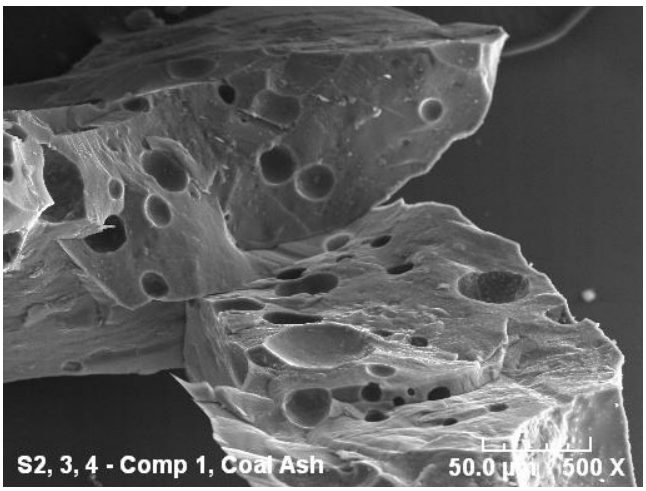
Particle type 2 consisted of over thirty (30+) dark, porous grains approximately 1mm-12mm in diameter. The PLM examination indicated this particle type to be consistent with coal ash. The PLM and SEM images show the spherical gas voids that formed during combustion.

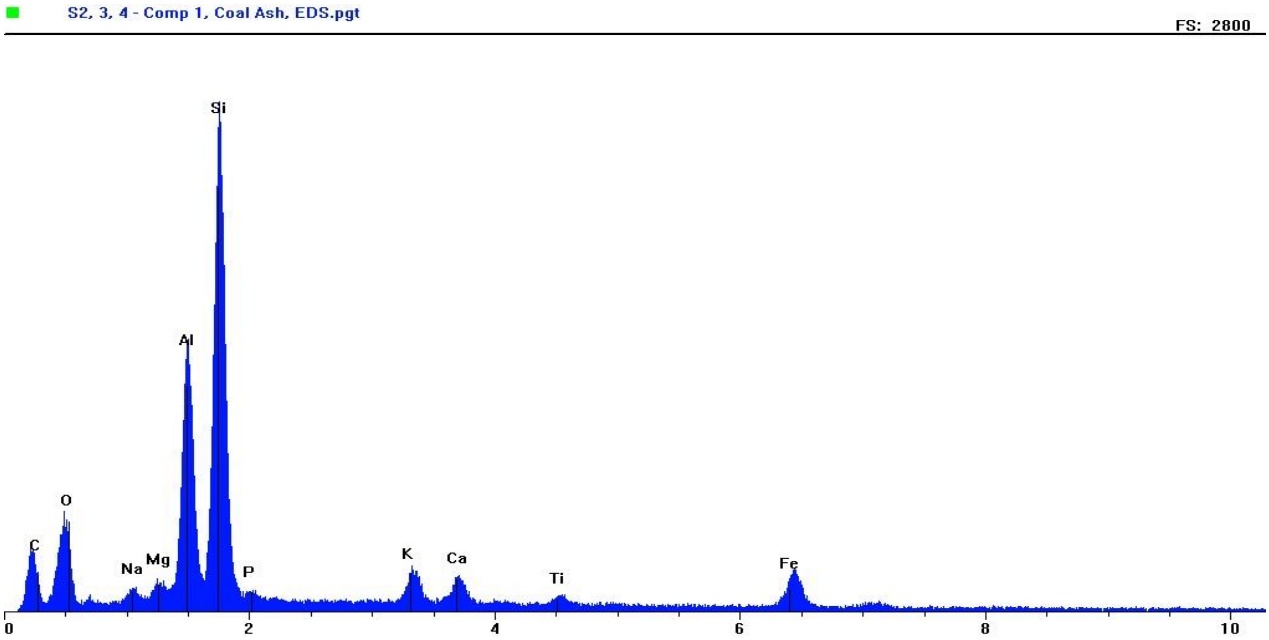


PLM Image



SEM Image

The EDS spectrum, shown below, confirms this particle type is coal ash. The analysis for this particle shows strong to moderate peak concentrations of aluminum and silicon, with lower peak concentrations of carbon, oxygen, sodium magnesium, phosphorus, potassium, calcium, titanium and iron.



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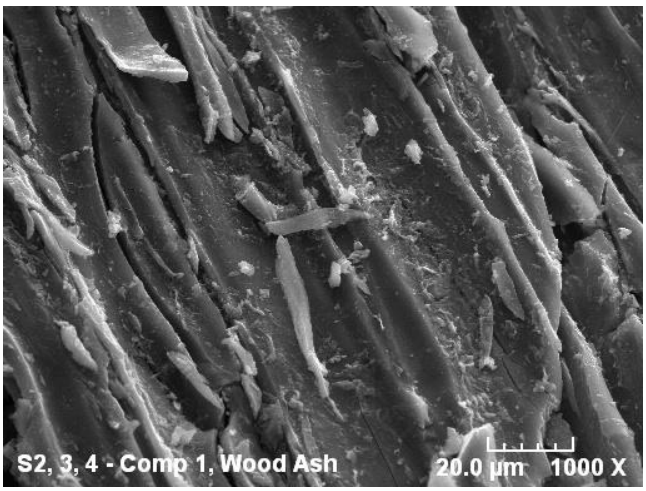
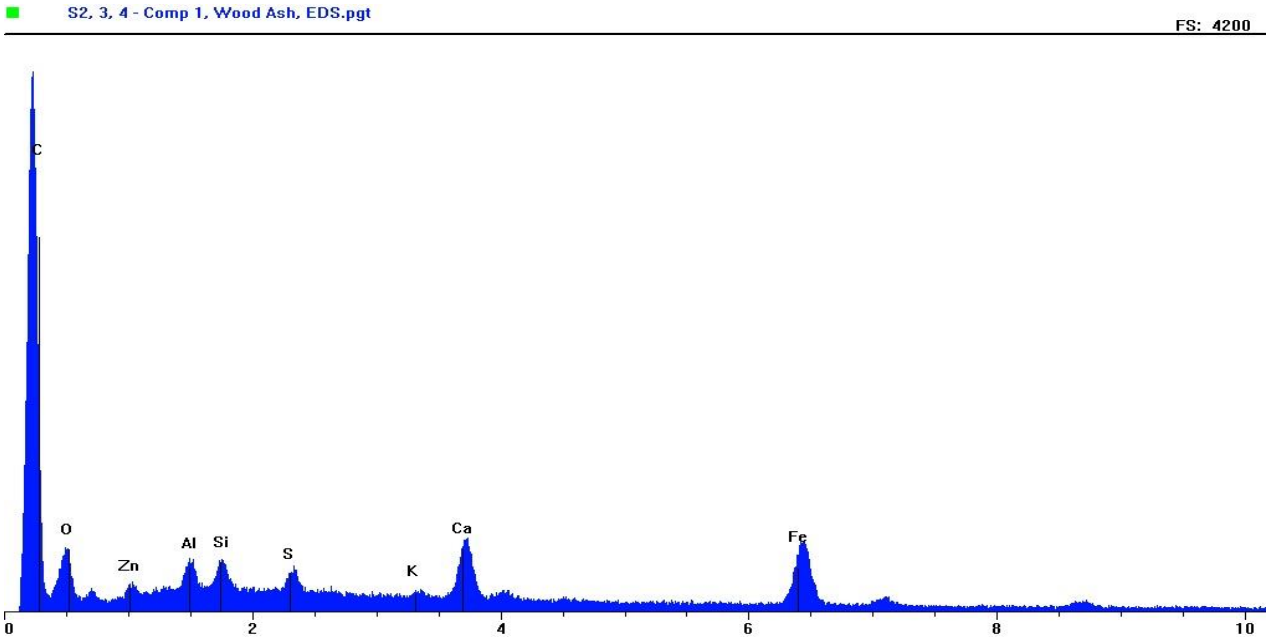
Particle type 3 consisted of four (4) friable, black grains approximately 1mm-3mm in length. The PLM examination indicated this particle type to be consistent with wood ash. The PLM and SEM photos show the cellular structure typical of wood still present in these grains.

PLM Image



SEM Image

The EDS spectrum, shown below, confirms this particle type is wood ash. The analysis for this particle shows a strong peak concentration of carbon, with lower peak concentrations of oxygen, zinc, aluminum, silicon, sulfur, potassium, calcium and iron.



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Lead Analysis

The purpose of the lead analysis was to determine if any lead based paint or lead source may be present in the submitted soil sample by microscopy tests including Scanning Electron Microscopy and Energy Dispersive X-ray Spectroscopy (SEM/EDS) and macroscopic inspection.

Methods:

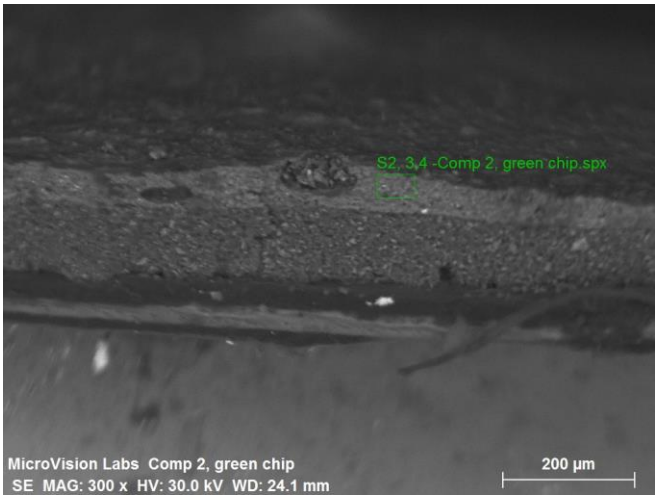
The sample was dried and examined by eye under the stereomicroscope for lead or any suspect colored components or particles that may potentially contain lead located in the soil sample. The suspect particles were mounted on an aluminum analysis SEM stub with double sided adhesive tape, coated with evaporated graphite and examined under the SEM by EDS and BSE to obtain elemental data in the form of EDS spectra. Backscatter electron (BSE) imaging correlates atomic density with image brightness and is used to detect the higher density particles. Digital images of these particles were taken at various magnifications.

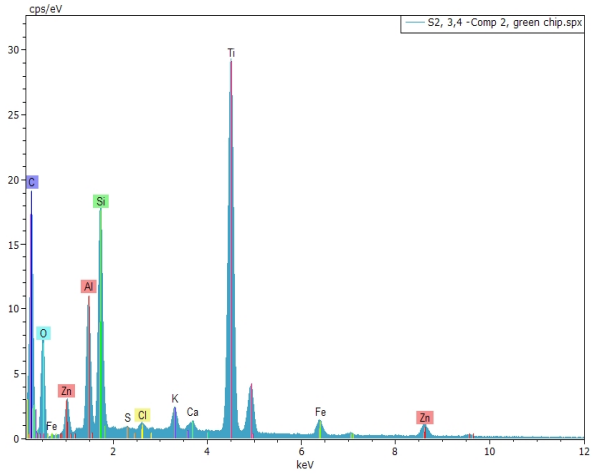
Findings:

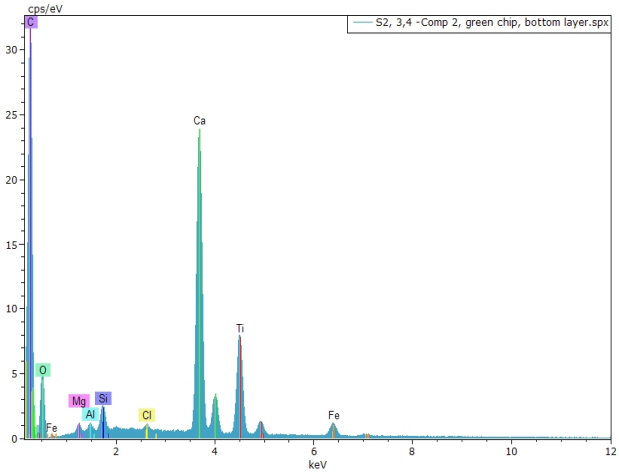
The following pages display the data for the suspect particles detected in the submitted sample for this project. The pages contain an SEM image and EDS spectrum of the particles detected in the sample.

Sample: S2, 3, 4-Comp 2

The sample contained particles that appeared to be paint chips. These paint chips were found to be multilayer titanium and barium bearing paints. No lead based paint chips or lead bearing particles were detected in this sample.







Lead Paint Conclusion:

The collected data showed that there were no lead bearing paint or particles present in this sample. The multilayer paint chips had common components such as titanium and barium present. There were no discrete particles of lead based paint, or particles coated with lead based paint found in the sample.

Results Summary Table:

Sample Name	Material Concentrations
S2, 3, 4-Comp 1	**Coal (heavy), Coal Ash (heavy), Wood Ash (light),**
S2, 3, 4-Comp 2	**Lead Paint (none detected)**

The concentrations of the particle types detected in these samples are listed in parenthesis in the table above and are based on the number of particles found and the relative difficultly in finding them. The concentration information is listed for informational purposes only and has no bearing on exemption status. Please let me know if you have any questions about this analysis or if there is anything else I can do for you.

Sincerely,

Tyler Wozmak
Optical Microscopist

Robert Romano
Microscopist

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Chain Of Custody

Date Rec'd in Lab:

MicroVision Labs Job#: 6997

Client Information

Client: Green Environmental
Address: 120 Longwater Dr.
Norwell MA 02061
Phone: 617-479-0550
Fax: 617-479-5150
Email: Kawed@greenenvironmental.com

Project Information

Project Name: Willis Ave Apts
Project Location: Medford
Project #: 13127
Project Manager: K. Awed

Sample ID	Collected	Matrix	Sampler's Initials	Analyses: Coal Ash Test	SEM/EDS (see instructions)	Dust ID	Particle Size Analysis			
1) S2,3,4 - Comp 1	8-26-13	Soil	W.B.	X						
2) S2,3,4 - Comp 2	8-26-13	Soil	W.B.		X (lead paint chip)					
3)										
4)										
5)										
6)										
7)										
8)										
9)										
10)										
11)										
12)										

Relinquished By:	Date/Time	Received By:	Date/Time	Turn Around Time/Notes:
Kristen Cavel Lubs	8-26-13	Stall	8/27/13 10am	5 day standard

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10/3/2013

Green Environmental
120 Longwater Drive
Norwell, MA 02061
Attn: Kristen Awed

Project Name: Willis Ave Apts
Project#: 13127

MVL Job #: 7083

Dear Kristen:

This report covers the methods and findings of the Coal/Coal Ash and Lead analysis that MicroVision Laboratories, Inc. conducted on one (1) soil sample you submitted for this testing from your project number 13127. The purpose of this analysis was to detect and document any coal, coal ash, wood ash or lead that may be present in the submitted soil samples, by use of a combination of microscopy techniques including SEM/EDS, PLM, and macroscopic inspection.

Methods:

The sample was dried and examined by eye and under the stereomicroscope for any suspect dark components to the soil. Dark suspect particles were separated from the soil sample and prepared for examination by Polarized Light Microscopy (PLM) and Scanning Electron Microscopy with Energy Dispersive X-Ray Spectroscopy (SEM/EDS).

For the PLM examination, the suspect particle types detected in this sample were ground in a mortar and pestle, mounted on glass slides in immersion oil (n=1.515) and covered with glass cover slips. These sample particles were then examined at various magnifications and digital images were taken.

For the SEM examination, the suspect particle types were mounted on an aluminum analysis stub with double sided adhesive tape, coated with evaporated graphite and examined under the SEM by EDS to obtain elemental data in the form of EDS spectra. Digital images were taken of the sample particles at various magnifications with the SEM.

Findings:

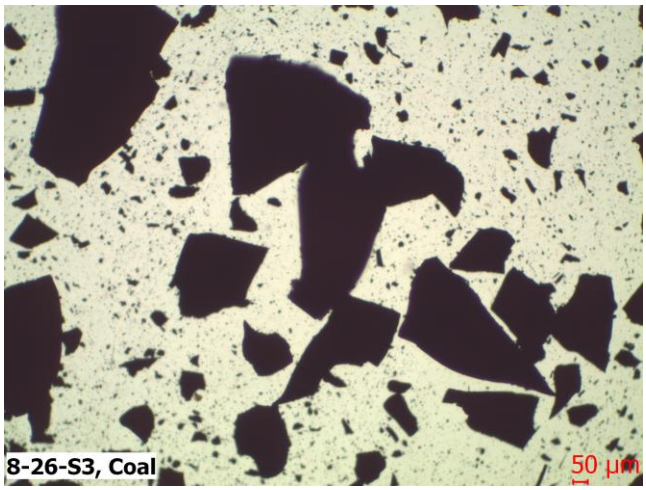
The following pages display the data for each particle type detected in the sample for this project. Each page contains a PLM image, SEM image, and EDS spectrum for the particle types detected for this sample as well as particle type descriptions and observations.

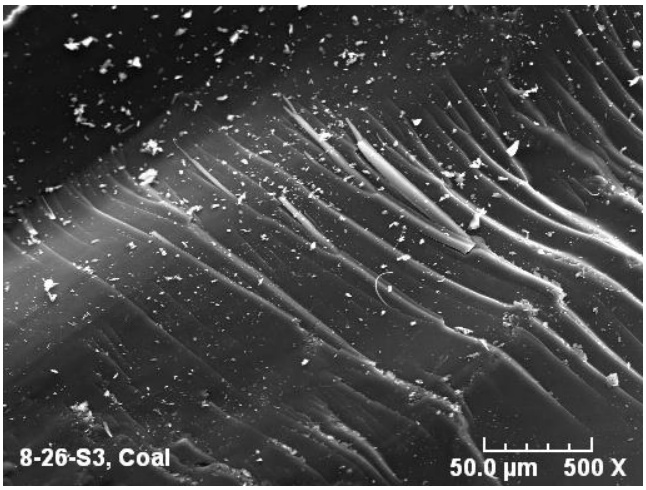
Coal Ash Test

Sample: 8-26-S3

Number of Suspect Particle Types: Two (2)

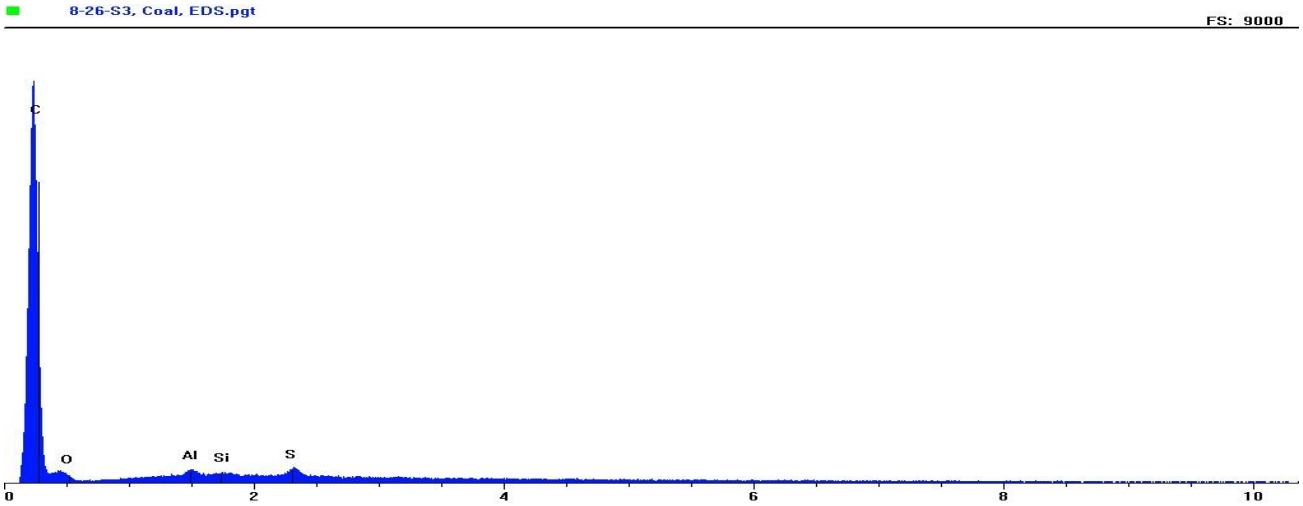
Particle type 1 consisted of over thirty (30+) shiny, black grains approximately 1mm-7mm in diameter. The PLM examination indicated this particle type to be consistent with coal. The PLM and SEM images of this particle type show the angular edges and typical conchoidal fractures found in coal.





PLM Image **SEM Image**

The EDS spectrum, shown below, confirms that this particle type is coal. The analysis for this particle shows a strong peak concentration of carbon, with lower peak concentrations of oxygen, aluminum, silicon, and sulfur.



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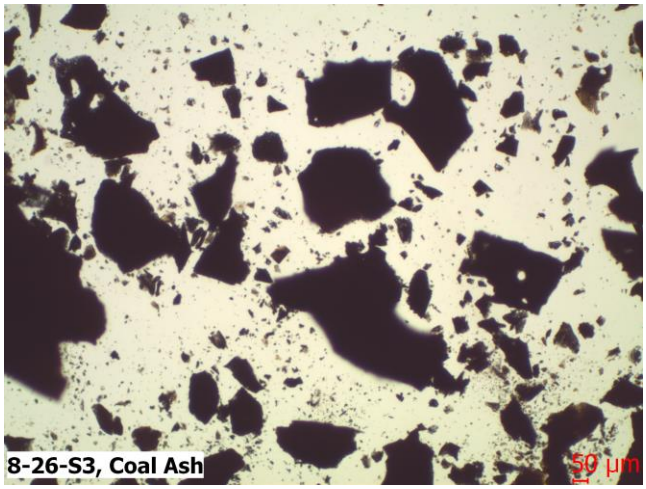
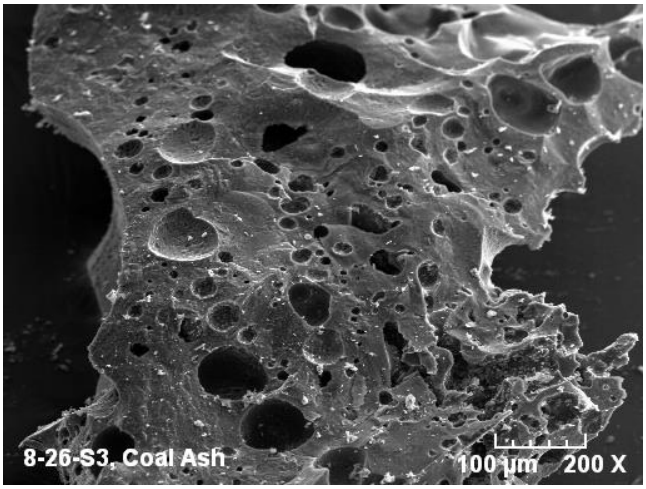
Particle type 2 consisted of over forty (40+) dark, porous grains approximately 1mm-8mm in diameter. The PLM examination indicated this particle type to be consistent with coal ash. The PLM and SEM images show the spherical gas voids that formed during combustion.

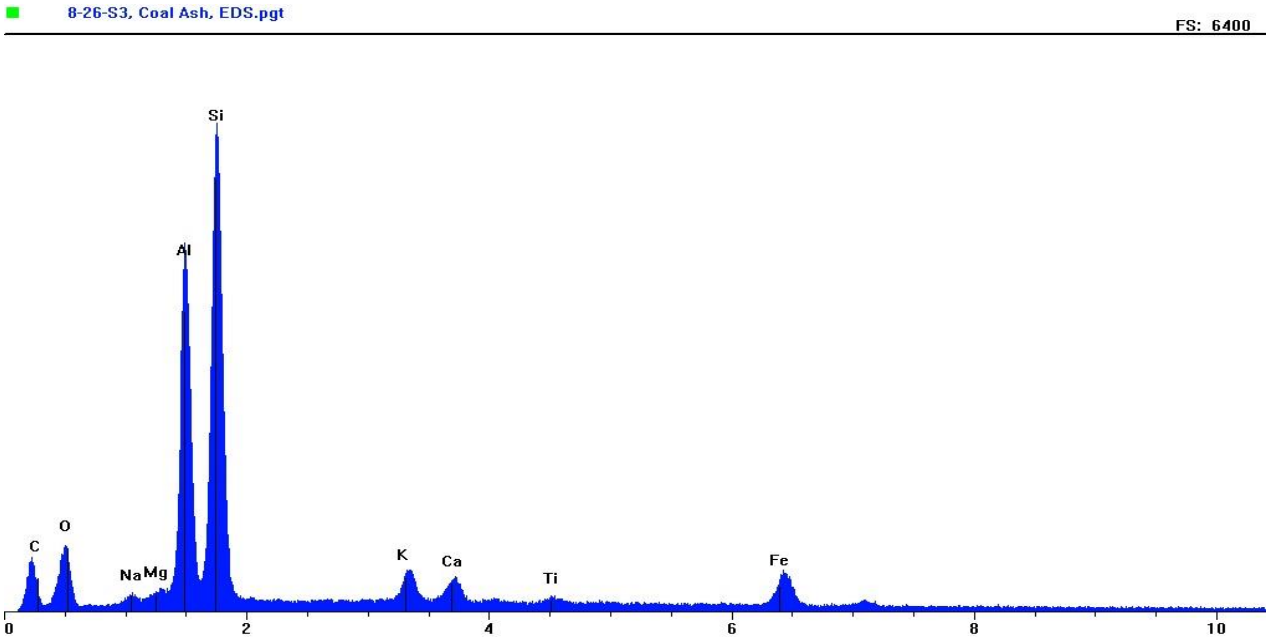


PLM Image



SEM Image

The EDS spectrum, shown below, confirms this particle type is coal ash. The analysis for this particle shows strong to moderate peak concentrations of aluminum and silicon, with lower peak concentrations of carbon, oxygen, sodium, magnesium, potassium, calcium, titanium and iron.



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Lead Analysis

The purpose of the lead analysis was to determine if any lead based paint or lead source may be present in this submitted soil sample by microscopy tests including Scanning Electron Microscopy and Energy Dispersive X-ray Spectroscopy (SEM/EDS) and macroscopic inspection.

Methods:

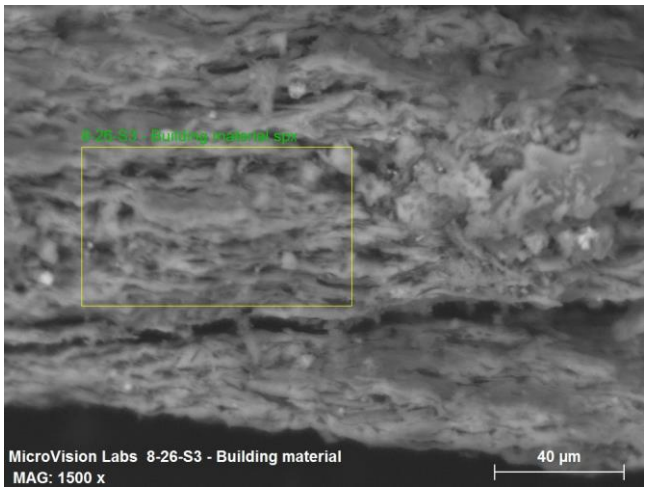
The sample was dried and examined by eye under the stereomicroscope for lead or any suspect colored components or particles that may potentially contain lead located in the soil samples. The suspect particles were mounted on an aluminum analysis SEM stub with double sided adhesive tape, coated with evaporated graphite and examined under the SEM by EDS and BSE to obtain elemental data in the form of EDS spectra. Backscatter electron (BSE) imaging correlates atomic density with image brightness and is used to detect the higher density particles. Digital images of these particles were taken at various magnifications.

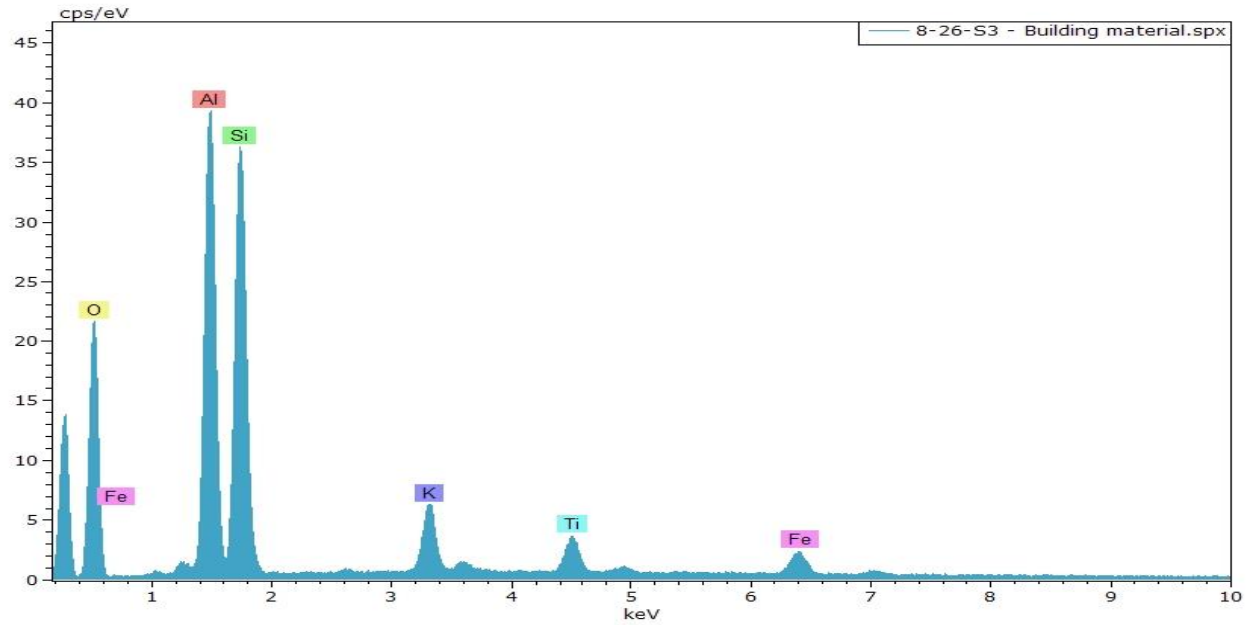
Findings:

The following pages display the data for the suspect particles detected in the submitted sample for this project. The pages contain an SEM image and EDS spectrum of the particles detected in this sample.

Sample: 8-26-S3

This sample contained grains that appeared to be plaster, painted brick and mortar, and other clay based construction debris with small, discrete, individual particles containing lead. These individual lead particles are not consistent with the distribution and concentration associated with a lead based paint layer on building debris.





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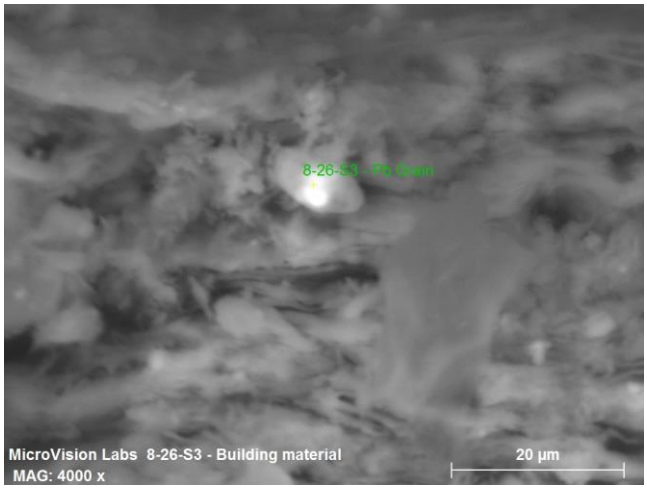

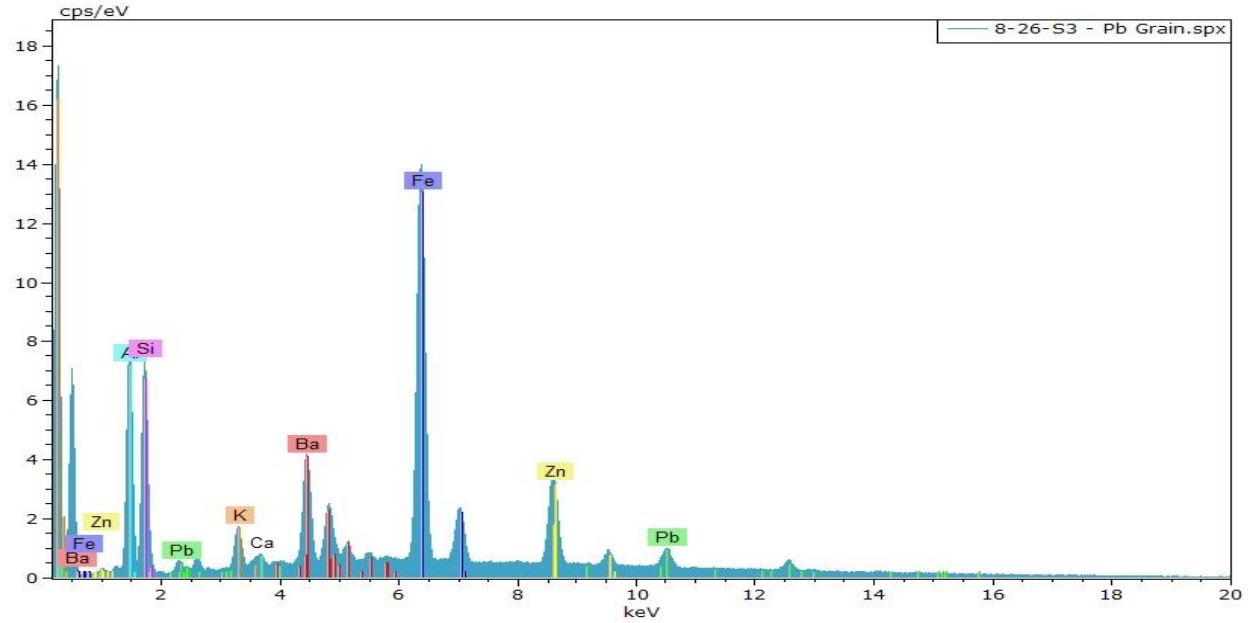

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Lead Paint Conclusion:

No discrete particles consistent with lead bearing paint were observed in the sample. Numerous particles that were consistent with plaster, painted brick and mortar, and other clay based construction debris were observed. Many of these particles showed signs of surface coating or treatment, but the vast majority of them were not painted. Typical building debris in this sample was characterized primarily as being clay aggregates of aluminum and silicon with smaller amounts of potassium and titanium. Iron oxide was present in these particles in areas where the surface appeared red. A handful of discrete, low concentration lead bearing particles were observed interspersed between clay particles and aggregates in two of the more porous building debris samples. These particles were under 40 um in size, and consisted of small amounts of metallic or oxidized lead along with other minerals in a composite aggregate particle. While the presence of barium in these fine particles may indicate some association with pigmented particles, only a few individual particles were observed, which well could be surface contamination from another source, or precipitates of solubilized lead from a water source. No source of discrete lead bearing paint was observed in this sample.

Results Summary Table:

Sample Name	Material Concentrations
8-26-S3	**Coal (heavy), Coal Ash (heavy), Lead (detected – no paint)**

The concentrations of the particle types detected in this sample are listed in parenthesis in the table above and are based on the number of particles found and the relative difficultly in finding them. The concentration information is listed for informational purposes only and has no bearing on exemption status. Please let me know if you have any questions about this analysis or if there is anything else I can do for you.

Sincerely,

Tyler Wozmak
Optical Microscopist

Jared Kelly
Laboratory Manager/
Senior Analyst

MICROVISION LABORATORIES, INC.

Chain Of Custody

MicroVision Labs Job#: 7083

Client Information

Client: Green Environmental
Billing Address: 120 Longwater Drive Norwell, MA
Phone: 617-479-0550
Fax: 617-479-5150
Email: Kawed@greenenvironmental.com

Project Information

Project Name: Willis Ave. Apts
Project Location: Medford
Project Number: 13127
Project Manager: K. Awed
PO#:

Sample ID	Collected Date	Sampler's Initials	Requested Analyses: Coal Ash Test	Lead Paint	SEM/EDS	PLM/Light Microscopy	Soot ID	Dust ID	Unknow Matl ID	FTIR	Polished Cross Section	Particle Size Analysis	Wildfire	Other
1) 8-26-53	8/26/13	BB	✓	✓										
2)														
3)														
4)														
5)														
6)														
7)														
8)														
9)														
10)														
11)														
12)														

Relinquished By: Date/Time	Received By: Date/Time	Turn Around Time and Notes:
	SHall 9/26/13 10Am	standard

Hazardous Contaminants: YES / NO If Yes, please list:
Analytical Report Requested: YES / NO

MicroVision Laboratories, Inc.
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microvisionlabs.com

Kristen Awed

CERTIFICATE OF ANALYSIS

Kristen Awed Ladas
Green Environmental, Inc.
120 Longwater Drive
Norwell, MA 02061

RE: Willis Avenue Apartments (13127)
ESS Laboratory Work Order Number: 1310346

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 12:52 pm, Oct 24, 2013

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibratins, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1310346

SAMPLE RECEIPT

The following samples were received on October 17, 2013 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has performed and reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

For EPH soil samples, the aromatic range results have been corrected for identified cartridge contaminant in accordance with the CAM protocol.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Lab Number	SampleName	Matrix	Analysis
1310346-01	1016S1 0-0.5ft	Soil	6010B
1310346-02	1016S2 0-0.5ft	Soil	6010B
1310346-03	1016S3 0-0.5ft	Soil	6010B
1310346-04	1016S4 0-0.5ft	Soil	6010B
1310346-05	1016S5b 2-2.5ft	Soil	6010B
1310346-06	1016S5c 0-0.5ft	Soil	6010B
1310346-07	1016S5e 1.5-2ft	Soil	6010B
1310346-08	1016S6a 2-2.5ft	Soil	6010B
1310346-09	1016S6b 1-1.5ft	Soil	6010B
1310346-10	1016S7 0-0.5ft	Soil	6010B
1310346-11	1016S8 1-1.5ft	Soil	6010B
1310346-12	1016S9 0-0.5ft	Soil	6010B
1310346-13	1016S10 0-0.5ft	Soil	6010B
1310346-14	1016S11 0-0.5ft	Soil	6010B
1310346-15	1016S12 0-0.5ft	Soil	6010B

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1310346

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1310346

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5035 - Solid Purge and Trap

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1310346

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1310346-01 through 1310346-15**

Matrices: ( ) Ground Water/Surface Water (X) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

( ) 8260 VOC CAM II A	( ) 7470/7471 Hg CAM III B	( ) MassDEP VPH CAM IV A	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
( ) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) 8330 Explosives CAM VIII A	( ) TO-15 VOC CAM IX B
(X) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	( ) 8082 PCB CAM V A	( ) 6860 Perchlorate CAM VIII B	( ) 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ( )
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes ( ) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ( )

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes (X) No ( )*
	***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (X) No ( )*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ( ) No (X)*

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ Date: October 24, 2013

Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S1 0-0.5ft
Date Sampled: 10/16/13 09:30
Percent Solids: 81

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**542** (5.5)		6010B		1	JP	10/18/13 17:03	2.24	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S2 0-0.5ft
Date Sampled: 10/16/13 09:45
Percent Solids: 89

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**355** (5.5)		6010B		1	JP	10/18/13 17:08	2.06	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S3 0-0.5ft
Date Sampled: 10/16/13 09:50
Percent Solids: 81

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**447** (5.1)		6010B		1	JP	10/18/13 17:14	2.43	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S4 0-0.5ft
Date Sampled: 10/16/13 10:05
Percent Solids: 89

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**380** (4.9)		6010B		1	JP	10/18/13 17:19	2.32	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S5b 2-2.5ft
Date Sampled: 10/16/13 11:00
Percent Solids: 85

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**2420** (5.7)		6010B		1	JP	10/18/13 17:25	2.08	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S5c 0-0.5ft
Date Sampled: 10/16/13 11:45
Percent Solids: 87

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-06
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**781** (5.4)		6010B		1	JP	10/18/13 17:31	2.16	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S5e 1.5-2ft
Date Sampled: 10/16/13 12:20
Percent Solids: 85

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-07
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**1210** (4.9)		6010B		1	JP	10/18/13 17:36	2.42	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S6a 2-2.5ft
Date Sampled: 10/16/13 13:00
Percent Solids: 77

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-08
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**842** (6.2)		6010B		1	JP	10/18/13 17:42	2.09	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S6b 1-1.5ft
Date Sampled: 10/16/13 13:30
Percent Solids: 86

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-09
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**772** (5.1)		6010B		1	JP	10/18/13 17:47	2.28	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S7 0-0.5ft
Date Sampled: 10/16/13 13:45
Percent Solids: 91

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-10
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**1580** (5.4)		6010B		1	JP	10/18/13 18:01	2.04	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S8 1-1.5ft
Date Sampled: 10/16/13 14:00
Percent Solids: 83

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-11
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**2460** (5.9)		6010B		1	JP	10/18/13 18:27	2.04	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S9 0-0.5ft
Date Sampled: 10/16/13 14:15
Percent Solids: 93

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-12
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**1700** (5.0)		6010B		1	JP	10/18/13 18:33	2.15	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S10 0-0.5ft
Date Sampled: 10/16/13 14:30
Percent Solids: 83

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-13
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**1030** (5.6)		6010B		1	JP	10/18/13 18:38	2.14	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S11 0-0.5ft
Date Sampled: 10/16/13 14:40
Percent Solids: 91

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-14
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**205** (5.2)		6010B		1	JP	10/18/13 18:44	2.09	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: 1016S12 0-0.5ft
Date Sampled: 10/16/13 14:45
Percent Solids: 96

ESS Laboratory Work Order: 1310346
ESS Laboratory Sample ID: 1310346-15
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

				MA - RCS1						
Analyte	**Results (MRL)**	**MDL**	**Method**	**Limit**	**DF**	**Analyst**	**Analyzed**	**I/V**	**F/V**	**Batch**
Lead	**365** (4.7)		6010B		1	JP	10/18/13 18:49	2.21	100	CJ31825

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1310346

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals Solid										
Batch CJ31825 - 3050B										
Blank										
Lead	ND	5.0	mg/kg wet							
LCS										
Lead	111	18.2	mg/kg wet	115.0		97	80-120			
LCS Dup										
Lead	108	19.6	mg/kg wet	115.0		94	80-120	3	20	

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments ESS Laboratory Work Order: 1310346

Notes and Definitions

U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1310346

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)
A2LA Accredited: Testing Cert# 2864.01
http://www.a2la.org/scopepdf/2864-01.pdf

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited) Potable and Non PotableWater, Solid and Hazardous Waste: 2424
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/dep/DEP_OPRA/

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301
http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
http://www.A2LA.org/dirsearchnew/newsearch.cfm

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
http://www.cpsc.gov/cgi-bin/labapplist.aspx

Sample and Cooler Receipt Checklist

Client: Green Enviromental-GREN-EL
Client Project ID: _____
Shipped/Delivered Via: ESS Courier

ESS Project ID: 13100346
Date Project Due: 10/24/13
Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present?	* No	10. Are the samples properly preserved?	Yes
Air No.:		11. Proper sample containers used?	Yes
2. Were Custody Seals Present?	No	12. Any air bubbles in the VOA vials?	N/A
3. Were Custody Seals Intact?	N/A	13. Holding times exceeded?	No
4. Is Radiation count < 100 CPM?	Yes	14. Sufficient sample volumes?	Yes
5. Is a cooler present?	Yes	15. Any Subcontracting needed?	No
Cooler Temp: **3.6**		16. Are ESS labels on correct containers?	**Yes** | **No**
Iced With: **Ice**		17. Were samples received intact?	**Yes** | **No**
6. Was COC included with samples?	Yes	ESS Sample IDs:	
7. Was COC signed and dated by client?	Yes	Sub Lab:	
8. Does the COC match the sample	Yes	Analysis:	
9. Is COC complete and correct?	Yes	TAT:	

18. Was there need to call project manager to discuss status? If yes, please explain.

Dallas jars for samples 1-6 and 8 cas 10/17/13

Who was called?: _____ By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	Other Glass	1	NP
2	Yes	Other Glass	1	NP
3	Yes	Other Glass	1	NP
4	Yes	Other Glass	1	NP
5	Yes	Other Glass	1	NP
6	Yes	Other Glass	1	NP
7	Yes	4 oz Soil Jar	1	NP
8	Yes	Other Glass	1	NP
9	Yes	4 oz Soil Jar	1	NP
10	Yes	4 oz Soil Jar	1	NP
11	Yes	4 oz Soil Jar	1	NP
12	Yes	4 oz Soil Jar	1	NP
13	Yes	4 oz Soil Jar	1	NP
14	Yes	4 oz Soil Jar	1	NP
15	Yes	4 oz Soil Jar	1	NP

Completed By: _____ Date/Time: 10/17/13 1715
Reviewed By: _____ Date/Time: 10/17/13 1745

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time: X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____
State where samples were collected from: MA RI CT NH NJ NY ME Other ____
Is this project for any of the following: MA-MCP Navy USACE Other ____

Reporting Limits: MCP RCS-1
ESS LAB PROJECT ID: 1310346
Electronic Deliverable: Yes X No ____
Format: Excel X Access ____ PDF X Other ____

Co. Name: Green Environmental, Inc.	Project #: 13127	Project Name (20 Char. or less): Willis Ave. Apts	
Contact Person: Kristen Awed Ladas	Address: 120 Longwater Drive		
City: Norwell	State: MA	Zip: 02061	PO#: 6439
Telephone #: 617-479-0550	Fax #: 617-479-5150	Email Address: Kawed@greenenvironmental.com	

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis: Total Lead
1	10-16-13	9:30		X	S	101651, 0-0.5'		1	G	X
2		9:45				101652, 0-0.5'				
3		9:50				101653, 0-0.5'				
4		10:05				101654, 0-0.5'				
5		11:00				101655b, 2-2.5'				
6		11:45				101655c, 0-0.5'				
7		12:20				101655e, 1.5-2'				
8		1:00				101656a, 2-2.5'				
9		1:30				101656b, 1-1.5'				
10	10-16-13	1:45		X	S	101657, 0-0.5'		1	G	X

Container Type: P-Poly G-Glass S-Sterile V-VOA
Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present: Yes ___ No
Seals Intact: ___ Yes ___ No NA: ___
Cooler Temp: 3.6 (10/17)
Internal Use Only: [ ] Pickup [ ] Technicians ____
Preservation Code: 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____
Sampled by: K. Awed
Comments:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Kristen Awed Ladas	10/17 | 12:30		10/17 | 12:30		10/17 | 1610		10/17/13 1702
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 A

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time: X Standard Other _____
If faster than 5 days, prior approval by laboratory is required # _____
State where samples were collected from: MA RI CT NH NJ NY ME Other _____
Is this project for any of the following: MA-MCP Navy USACE Other _____

Reporting Limits: MCP RCS-1
ESS LAB PROJECT ID: 1310346
Electronic Deliverable: Yes X No ___
Format: Excel X Access ___ PDF X Other _____

Co. Name	Project #	Project Name (20 Char. or less)
Green Environmental, Inc.	13127	Willis Ave. Apts

Contact Person	Address
Kristen Awed Ladas	120 Longwater Drive

City	State	Zip	PO#
Norwell	MA	02061	6439

Telephone #	Fax #	Email Address
617-479-0550	617-479-5150	kawed2greenenvironmental.com

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis: Total Lead
11	10-16-13	2:00		X	S	101658, 1-1.5'		1	G	X
12	"	2:15		"	"	101659, 0-0.5'		"	"	"
13	"	2:30		"	"	101510, 0-0.5'		"	"	"
14	"	2:40		"	"	101511, 0-0.5'		"	"	"
15	10-16-13	2:45		X	S	101512, 0-0.5'		1	G	X

Container Type: P-Poly G-Glass S-Sterile V-VOA
Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present: X Yes ___ No
Seals Intact: ___ Yes ___ No NA: ___
Cooler Temp: 3.6 Bagged ice 10/17 ML
Internal Use Only: [ ] Pickup [ ] Technicians ___

Preservation Code: 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____
Sampled by: K. Awed
Comments:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Kristen Awed Ladas	10/17 12:30		10/17 12:30		10/17 1610		10/17/13 1702
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 A

CERTIFICATE OF ANALYSIS

Joe Molloy
Green Environmental, Inc.
120 Longwater Drive
Norwell, MA 02061

RE: Willis Avenue Apartments (13127)
ESS Laboratory Work Order Number: 1312363

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 5:07 pm, Dec 26, 2013

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibratins, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1312363

SAMPLE RECEIPT

The following samples were received on December 19, 2013 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has performed and reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Data Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

For EPH soil samples, the aromatic range results have been corrected for identified cartridge contaminant in accordance with the CAM protocol.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Lab Number	SampleName	Matrix	Analysis
1312363-01	S12 - 18-1	Soil	6010B
1312363-02	S12 - 18-2	Soil	6010B
1312363-03	S12 - 18-3	Soil	6010B
1312363-04	S12 - 18-4	Soil	6010B
1312363-05	S12 - 18-5	Soil	6010B
1312363-06	S12 - 18-6	Soil	6010B
1312363-07	S12 - 18-7	Soil	6010B
1312363-08	S12 - 18-8	Soil	6010B
1312363-09	S12 - 18-9	Soil	6010B
1312363-10	S12 - 18-10	Soil	6010B
1312363-11	S12 - 18-11	Soil	6010B
1312363-12	S12 - 18-12	Soil	6010B
1312363-13	S12 - 18-13	Soil	6010B
1312363-14	S12 - 18-14	Soil	6010B
1312363-15	S12 - 18-15	Soil	6010B
1312363-16	S12 - 18-16	Soil	6010B
1312363-17	S12 - 18-17	Soil	6010B
1312363-18	S12 - 18-18	Soil	6010B
1312363-19	S12 - 18-19	Soil	6010B
1312363-20	S12 - 18-20	Soil	6010B
1312363-21	S12 - 18-21	Soil	6010B

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments ESS Laboratory Work Order: 1312363

1312363-22	S12 - 18-22	Soil	6010B
1312363-23	S12 - 18-23	Soil	6010B
1312363-24	S12 - 18-24	Soil	6010B

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1312363

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1312363

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5035 - Solid Purge and Trap

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1312363

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **1312363-01 through 1312363-24**

Matrices: ( ) Ground Water/Surface Water (X) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

( ) 8260 VOC CAM II A	( ) 7470/7471 Hg CAM III B	( ) MassDEP VPH CAM IV A	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
( ) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) 8330 Explosives CAM VIII A	( ) TO-15 VOC CAM IX B
(X) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	( ) 8082 PCB CAM V A	( ) 6860 Perchlorate CAM VIII B	( ) 9014 Total Cyanide/PAC CAM VI A	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ( )
E	a. VPH, EPH, APH and TO-15 only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes ( ) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ( )

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes (X) No ( )*
	***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes (X) No ( )*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ( ) No (X)*

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ Date: December 26, 2013

Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-1
Date Sampled: 12/18/13 09:00
Percent Solids: 85

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**11.9** (5.2)		6010B		1	LLZ	12/23/13 20:24	2.28	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-2
Date Sampled: 12/18/13 09:00
Percent Solids: 82

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**286** (5.3)		6010B		1	LLZ	12/23/13 20:50	2.28	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-3
Date Sampled: 12/18/13 09:15
Percent Solids: 77

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**221** (6.1)		6010B		1	LLZ	12/23/13 20:56	2.14	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-4
Date Sampled: 12/18/13 09:15
Percent Solids: 82

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**1750** (5.4)		6010B		1	LLZ	12/23/13 21:01	2.25	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-5
Date Sampled: 12/18/13 09:30
Percent Solids: 79

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**155** (5.6)		6010B		1	LLZ	12/23/13 21:07	2.26	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-6
Date Sampled: 12/18/13 09:30
Percent Solids: 92

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-06
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**227** (4.9)		6010B		1	LLZ	12/23/13 21:21	2.21	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-7
Date Sampled: 12/18/13 09:45
Percent Solids: 83

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-07
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

				MA - RCS1						
Analyte	**Results (MRL)**	**MDL**	**Method**	**Limit**	**DF**	**Analyst**	**Analyzed**	**I/V**	**F/V**	**Batch**
Lead	**311** (5.1)		6010B		1	LLZ	12/23/13 21:25	2.36	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-8
Date Sampled: 12/18/13 09:45
Percent Solids: 72

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-08
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

				MA - RCS1						
Analyte	**Results (MRL)**	**MDL**	**Method**	**Limit**	**DF**	**Analyst**	**Analyzed**	**I/V**	**F/V**	**Batch**
Lead	**196** (5.4)		6010B		1	LLZ	12/23/13 21:29	2.56	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-9
Date Sampled: 12/18/13 10:00
Percent Solids: 80

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-09
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**625** (5.3)		6010B		1	LLZ	12/23/13 21:33	2.36	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-10
Date Sampled: 12/18/13 10:00
Percent Solids: 73

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-10
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**469** (5.1)		6010B		1	LLZ	12/23/13 21:38	2.68	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-11
Date Sampled: 12/18/13 10:15
Percent Solids: 85

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-11
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**211** (4.6)		6010B		1	LLZ	12/23/13 21:44	2.53	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-12
Date Sampled: 12/18/13 10:15
Percent Solids: 82

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-12
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**424** (4.8)		6010B		1	LLZ	12/23/13 21:48	2.53	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-13
Date Sampled: 12/18/13 10:30
Percent Solids: 84

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-13
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**91.8** (4.8)		6010B		1	LLZ	12/23/13 21:53	2.51	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-14
Date Sampled: 12/18/13 10:30
Percent Solids: 83

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-14
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**515** (5.0)		6010B		1	LLZ	12/23/13 21:57	2.43	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-15
Date Sampled: 12/18/13 10:45
Percent Solids: 85

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-15
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**136** (5.0)		6010B		1	LLZ	12/23/13 22:03	2.34	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-16
Date Sampled: 12/18/13 10:45
Percent Solids: 86

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-16
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**178** (4.5)		6010B		1	LLZ	12/23/13 22:17	2.57	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-17
Date Sampled: 12/18/13 11:00
Percent Solids: 80

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-17
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**534** (5.2)		6010B		1	LLZ	12/23/13 22:20	2.41	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-18
Date Sampled: 12/18/13 11:00
Percent Solids: 83

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-18
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**613** (5.2)		6010B		1	LLZ	12/23/13 22:26	2.33	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-19
Date Sampled: 12/18/13 11:15
Percent Solids: 85

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-19
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**144** (4.7)		6010B		1	LLZ	12/23/13 22:31	2.48	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-20
Date Sampled: 12/18/13 11:15
Percent Solids: 84

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-20
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**538** (5.0)		6010B		1	LLZ	12/23/13 22:35	2.39	100	CL32301

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-21
Date Sampled: 12/18/13 11:30
Percent Solids: 81

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-21
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**451** (5.2)		6010B		1	LLZ	12/23/13 18:29	2.36	100	CL32302

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-22
Date Sampled: 12/18/13 11:30
Percent Solids: 84

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-22
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**240** (5.0)		6010B		1	LLZ	12/23/13 18:35	2.39	100	CL32302

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-23
Date Sampled: 12/18/13 12:00
Percent Solids: 83

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-23
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**419** (4.5)		6010B		1	LLZ	12/23/13 18:40	2.66	100	CL32302

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments
Client Sample ID: S12 - 18-24
Date Sampled: 12/18/13 12:00
Percent Solids: 84

ESS Laboratory Work Order: 1312363
ESS Laboratory Sample ID: 1312363-24
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals Solid

MA - RCS1

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Lead	**134** (5.2)		6010B		1	LLZ	12/23/13 18:46	2.32	100	CL32302

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1312363

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals Solid										
Batch CL32301 - 3050B										
Blank										
Lead	ND	5.0	mg/kg wet							
LCS										
Lead	114	16.7	mg/kg wet	115.0		99	80-120			
LCS Dup										
Lead	113	16.7	mg/kg wet	115.0		98	80-120	0.4	20	
Batch CL32302 - 3050B										
Blank										
Lead	ND	5.0	mg/kg wet							
LCS										
Lead	106	16.7	mg/kg wet	115.0		92	80-120			
LCS Dup										
Lead	107	16.7	mg/kg wet	115.0		93	80-120	0.6	20	

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments ESS Laboratory Work Order: 1312363

Notes and Definitions

U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report

CERTIFICATE OF ANALYSIS

Client Name: Green Environmental, Inc.
Client Project ID: Willis Avenue Apartments

ESS Laboratory Work Order: 1312363

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)
A2LA Accredited: Testing Cert# 2864.01
http://www.a2la.org/scopepdf/2864-01.pdf

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI0002
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited) Potable and Non PotableWater, Solid and Hazardous Waste: 2424
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/dep/DEP_OPRA/

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301
http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
http://www.A2LA.org/dirsearchnew/newsearch.cfm

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
http://www.cpsc.gov/cgi-bin/labapplist.aspx

Sample and Cooler Receipt Checklist

Client: Green Enviromental-GREN-EL
Client Project ID: _____
Shipped/Delivered Via: ESS Courier

ESS Project ID: 13120363
Date Project Due: 12/26/13
Days For Project: 5 Day

Items to be checked upon receipt:

1. Air Bill Manifest Present?	* No	10. Are the samples properly preserved?	Yes
Air No.:		11. Proper sample containers used?	Yes
2. Were Custody Seals Present?	No	12. Any air bubbles in the VOA vials?	N/A
3. Were Custody Seals Intact?	N/A	13. Holding times exceeded?	No
4. Is Radiation count < 100 CPM?	Yes	14. Sufficient sample volumes?	Yes
5. Is a cooler present?	Yes	15. Any Subcontracting needed?	No
Cooler Temp: **1.1**		16. Are ESS labels on correct containers?	Yes No
Iced With: **Ice**		17. Were samples received intact?	Yes No
6. Was COC included with samples?	Yes	ESS Sample IDs: _____	
7. Was COC signed and dated by client?	Yes	Sub Lab: _____	
8. Does the COC match the sample	Yes	Analysis: _____	
9. Is COC complete and correct?	Yes	TAT: _____	

18. Was there need to call project manager to discuss status? If yes, please explain.

_____

_____

_____

Who was called?:_____ By whom? _____

Sample Number	Properly Preserved	Container Type	# of Containers	Preservative
1	Yes	4 oz Soil Jar	1	NP
2	Yes	4 oz Soil Jar	1	NP
3	Yes	4 oz Soil Jar	1	NP
4	Yes	4 oz Soil Jar	1	NP
5	Yes	4 oz Soil Jar	1	NP
6	Yes	4 oz Soil Jar	1	NP
7	Yes	4 oz Soil Jar	1	NP
8	Yes	4 oz Soil Jar	1	NP
9	Yes	4 oz Soil Jar	1	NP
10	Yes	4 oz Soil Jar	1	NP
11	Yes	4 oz Soil Jar	1	NP
12	Yes	4 oz Soil Jar	1	NP
13	Yes	4 oz Soil Jar	1	NP
14	Yes	4 oz Soil Jar	1	NP
15	Yes	4 oz Soil Jar	1	NP
16	Yes	4 oz Soil Jar	1	NP
17	Yes	4 oz Soil Jar	1	NP
18	Yes	4 oz Soil Jar	1	NP
19	Yes	4 oz Soil Jar	1	NP
20	Yes	4 oz Soil Jar	1	NP
21	Yes	4 oz Soil Jar	1	NP
22	Yes	4 oz Soil Jar	1	NP
23	Yes	4 oz Soil Jar	1	NP
24	Yes	4 oz Soil Jar	1	NP

Sample and Cooler Receipt Checklist

Client: Green Enviromental-GREN-EL ESS Project ID: 13120363

Completed By: [signature] Date/Time: 12/19/13 2330

Reviewed By: [signature] Date/Time: ~~12/20/13~~ 1007
CJ
12/20/13 12/20/13

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time ✓ Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____

State where samples were collected from:
MA RI CT NH NJ NY ME Other ____

Is this project for any of the following:
MA-MCP Navy USACE Other ____

Reporting Limits: MCP - RS1

ESS LAB PROJECT NO: 1312363

Electronic Deliverable Yes ✓ No ____
Format: Excel ✓ Access ____ PDF ✓ Other ____

Co. Name	Project #	Project Name (20 Char. or less)
Green Environmental	13127	Medford Housing

Contact Person	Address
Joe Molloy	120 Longwater Dr

City	State	Zip	PO#
Norwell	MA	02061	6545

Telephone #	Fax #	Email Address
6174790550	617 479 5150	jmolloy@greenenvironmental.com

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis: Total LEAD
1	12/18/13	900		X	S	S12/18-1	1	1	G	X
2	↓	↓				S12/18-2				
3		915				S12/18-3				
4		↓				S12/18-4				
5		930				S12/18-5				
6		↓				S12/18-6				
7		945				S12/18-7				
8		↓				S12/18-8				
9		1000				S12/18-9				
10	↓	↓		↓	↓	S12/18-10	↓	↓	↓	↓

Container Type: P-Poly G-Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ✓ Yes ___ No
Seals Intact ___ Yes ___ No NA: ✓
Cooler Temp: 1.1 Ice Kit

Internal Use Only
[✓] Pickup
[ ] Technicians ____

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____

Sampled by: J. Molloy

Comments:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
				FRIDGE	12/18/13 11:33		12/19/13 11:33
	12/19/13 11:25		12/19/13 2318				

*By circling MA-MCP, client acknowledges samples were collected in accordance with ~~MADEP~~ CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 A

ESS Laboratory

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Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time: ✓ Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____
State where samples were collected from: MA RI CT NH NJ NY ME Other ____
Is this project for any of the following: MA-MCP Navy USACE Other ____

Reporting Limits: MCP-RS1
ESS LAB PROJECT ID: 1312363
Electronic Deliverable: Yes ✓ No ____
Format: Excel ✓ Access ____ PDF ✓ Other ____

Co. Name	Project #	Project Name (20 Char. or less)
GREEN ENVIRONMENTAL	13127	Medford Housing

Contact Person	Address
Joe Molloy	120 Long Water Dr.

City	State	Zip	PO#
Norwell	MA	02061	6545

Telephone #	Fax #	Email Address
617 479 0550	617 479 5150	jmolloy@greenenvironmental.com

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis: TCLP LEAD
11	12/18/13	10:15		X	S	S 12/18-11	1	1	6	X
12		↓				S12/18-12				
13		10:30				S12/18-13				
14		↓				S12/18-14				
15		10:45				S12/18-15				
16		↓				S12/18-16				
17		11:00				S12/18-17				
18		↓				S12/18-18				
19		11:15				S12/18-19				
20		↓		↓	↓	S12/18-20	↓	↓	↓	

Container Type: P-Poly G-Glass S-Sterile V-VOA
Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present: ✓ Yes ___ No
Seals Intact: ___ Yes ___ No NA: ✓
Cooler Temp: 1.1 ICE KH
Internal Use Only: [✓] Pickup [ ] Technicians ____

Preservation Code: 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____
Sampled by: J. Molloy
Comments:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
				FRIDGE	12/19/13 11:33		12/19/13 11:33
	12/19/13 18:25		12/19/13 23:18				

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

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10/26/04 A

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CHAIN OF CUSTODY

Turn Time ✓ Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____

State where samples were collected from:
MA RI CT NH NJ NY ME Other ____

Is this project for any of the following:
MA-MCP Navy USACE Other ____

Reporting Limits: MCP-RS1

ESS LAB ~~PROJECT~~ ID: 1312363

Electronic Deliverable ✓ Yes ___ No ___

Format: Excel ✓ Access ___ PDF ✓ Other ____

Co. Name	Project #	Project Name (20 Char. or less)
Green Environmental	3127	Medford Housing

Contact Person	Address
Joe Molloy	120 Longwater Dr

City	State	Zip	PO#
Norwell	MA	02061	6545

Telephone #	Fax #	Email Address
617 479 0550	617 471 5150	jmolloy@greenenvironmental.com

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis: Total Lead
21	12/18/13	13:30		X	S	S 12/18-21	1	1	6	X
22	↓	↓				S 12/18-22				
23	↓	1200				S 12/18-23				
24	↓	↓		↓	↓	S 12/18-24	↓	↓	↓	↓

Container Type: P-Poly G-Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ✓ Yes ___ No

Seals Intact ___ Yes ___ No NA: ✓

Cooler Temp: 1.1 ICE

Internal Use Only
[ ] Pickup
[ ] Technicians ____

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____

Sampled by: J. Molloy

Comments:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
				FRIDGE	12/18/13 11:33		12/18/13 11:33
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	12/19/13 8:25		12/19/13 2:18				

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 A