May 4, 2012

Mr. Jeffrey Lippert
On-Scene Coordinator
Emergency Response Branch
U.S. Environmental Protection Agency, Region 5
9311 Groh Rd
Grosse Ile, MI 48138

Subject: **Air Monitoring Plan**
Lovers Lane Lead RV
Comstock Park, Kent County, Michigan
TDD No.: TO-01-12-04-1004
OTIE Contract No.: EP-S5-10-10

Dear Mr. Lippert:

Oneida Total Integrated Enterprises (OTIE) Superfund Technical Assessment and Response Team (START) is submitting one copy of the Draft Air Monitoring Plan, Revision 0 for the Lovers Lane Lead Removal Site (the site) located in Comstock Park, Kent County, Michigan. This plan specifies air monitoring procedures to be conducted at the site during the removal action.

START appreciates the opportunity to provide you with this plan. Please contact me at (303) 291-8280 or Raghu Nagam at (312) 220-7005 with any questions or comments regarding this submittal.

Sincerely,

Anne Hellie
Project Manager

Enclosure

cc: Raghu Nagam, START Program Manager

AIR MONITORING PLAN
LOVERS LANE LEAD RV
COMSTOCK PARK, KENT COUNTY, MICHIGAN

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
Emergency Response Branch, Region 5
9311 Groh Rd
Grosse Ile, MI 48138

TDD No.:	TO-01-12-04-1004
Date Prepared:	May 4, 2012
Contract No.:	EP-S5-10-10
Prepared by:	OTIE
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1.0 INTRODUCTION

The Lovers Lane Lead Removal Action consists of the removal and disposal of lead contaminated soil and broken lead-acid automobile battery casings from a 0.39 acre property located at 4407 Lovers Lane NE in Comstock Park, Michigan, on the northern corner of Abrigador Trail NE and Lovers Lane NE (the site). In December 2011, during installation of a new water main in the right of way on Abrigador Trail, broken lead-acid automobile battery casings were found in surface soils and in many layers of subsurface soils. Analysis of soils in the area where the battery pieces were encountered revealed high lead concentrations.

The site consists of a one story house with a possible crawl space and grass-covered lawn and trees surrounding the house and is located in a residential area surrounded by Abrigador Trail to the southwest, a wooded area to the northwest, a residential property with at least one building to the northeast, and Lovers Ln NE to the southeast. There is a creek that runs on the west side of the house and flows into Grand River, located approximately 0.1 miles from the site. Additional information on the site conditions and history are included in the Lovers Lane Lead Site Assessment Report (OTIE, March 2012).

This Air Monitoring Plan comprises a Hot-Zone Air Monitoring Plan (HZAMP) for worker protection and a Perimeter Air Monitoring Plan (PAMP) for surrounding population protection. It is being proposed for implementation during removal activities at the site.

Previous investigations at the site have indicated the presence of elevated levels of lead. Based on the assumed prevalence of this element in other un-tested portions of the site materials, and the general toxicity of lead, it has been selected as the target analyte for the ambient air quality monitoring program.

Real-time air quality monitoring, in conjunction with confirmatory air sampling and laboratory analysis, is to be performed at this location during removal activities in which debris is disturbed and contaminated soil is excavated. The goal of real-time air monitoring and associated responses to exceedences of action levels is to be protective of workers and individuals within the vicinity of the removal action. Real-time air monitoring will act as an early warning system to prevent worker exposure and off-site exposures to elevated levels of site contaminants and document conditions occurring during demolition and removal activities. Engineering controls such as dust suppression will be implemented during demolition and removal activities to prevent migration of fugitive contaminants off-site. If the action levels are exceeded, immediate and aggressive actions will be taken to prevent further exposures, including implementation of additional engineering controls and alteration, or cessation of certain work activities.

2.0 PROJECT OBJECTIVES

The overall air monitoring objectives on this project are as follows:

- Minimize risk of exposure to on-site workers as well as to off-site residents from contaminants resulting from removal action work performed at the site;
- Provide an early warning of site conditions allowing site managers to proactively manage potential worker exposures and off-site ambient air impacts;
- Create a comprehensive, full-time database of air quality measurements, meteorological conditions, alarm notifications, equipment calibration and daily observations collected during the project.

2.1 HOT-ZONE AIR MONITORING OBJECTIVES

Hot-Zone monitoring is primarily designed to protect the workers and personnel associated with the work activities. The Hot-Zone Air Monitoring system is designed to accomplish the objectives presented above as well as the following:

- Conduct personal air sampling of target compounds in ambient air during the removal activities following 29 CFR 1910 OSHA requirements for worker protection;
- Establish action levels based on the target compound results to provide worker protection;
- Conduct subsequent air sampling of target compounds whenever a new type of removal activity is performed;
- Provide an early warning (visual indicator) system of potential elevated worker exposures, allowing aggressive responses to exceedences of action levels ensuring that longer-term exposures are below acceptable levels;
- Evaluate ongoing effectiveness of, and need for additional vapor and/or dust suppression controls and/or alteration of work activities, to reduce airborne compounds to below acceptable risk levels;
- Use real-time air monitoring results in conjunction with confirmatory air sampling to demonstrate that no significant human health exposures were caused by the work;
- Establish Data Quality Objectives (DQO) to define the quality of the data gathered in relation to the methods used to collect the data and the data's anticipated end use.

2.2 PERIMETER AIR MONITORING OBJECTIVES

Perimeter air monitoring and as needed air sampling will be performed at upwind, downwind and cross wind locations around the perimeter of the site before and during removal activities. The perimeter air monitoring system is designed to accomplish the objectives presented above as well as the following:

- Establish pre-removal baseline levels of target compounds in ambient air prior to initiation of removal activities;
- Monitor and document perimeter ambient air levels of target compounds during removal activities;
- Provide an early warning (visual indicator) system of potential elevated off-site exposures, allowing aggressive responses to exceedences of action levels ensuring that longer-term exposures at the perimeter are below acceptable levels;
- Evaluate ongoing effectiveness of, and need for additional vapor and/or dust suppression controls and/or alteration of work activities, to reduce airborne compounds to below acceptable risk levels;
- Use real-time perimeter monitoring results in conjunction with confirmatory air sampling to demonstrate that no significant human health exposures were caused by the work;
- Establish Data Quality Objectives (DQO) to define the quality of the data gathered in relation to the methods used to collect the data and the data's anticipated end use.

2.3 DATA QUALITY OBJECTIVES

Both real-time screening level and confirmatory data will be collected to evaluate contaminant levels in ambient air. The number of samples collected for field screening or laboratory analysis depends on the level of data quality that can be expected from the testing method employed. Below is a discussion regarding Data Quality Objectives (DQOs) and the relative quality of the samples needed for types of data to be collected, either real-time or confirmatory.

The following DQO levels will be utilized during the performance of removal actions:

Real-time screening data: This screening data applies to all field screening using portable equipment, such as ambient dust (particulate) monitors. The data collected generally does not include QA/QC information. The real-time data will be used to document conditions occurring on the site during demolition and excavation activities and determine the need for more aggressive dust and/or vapor suppression activities or alteration of work activities. In addition, the real-time data will be used to

demonstrate compliance with the health-protective action levels and will influence the frequency of confirmatory sample analysis.

Confirmatory data: This level applies to the analyses of samples collected on-site and is performed off-site at an EPA-accredited analytical laboratory. The analyses will be conducted in accordance with the appropriate US EPA air sampling methods. Data will include the QA/QC elements specified by the appropriate US EPA analytical methods. In general, the confirmatory samples will be collected on a baseline, start-up, and routine basis and analyzed using appropriate US EPA methods. Confirmatory data will be used to demonstrate compliance with the health-protective action levels and will influence the control measures being utilized during site removal activities.

2.4 SELECTION OF TARGET COMPOUNDS

The selection of target compounds and action levels for this project is based on the results of the U.S. EPA Site Assessment.

The target compounds selected for the real-time component of this project include Particulate Matter (Nuisance Dust) in the form of respirable coarse particles (PM_{10}) as a surrogate for lead exposure. The target analyte for the confirmatory sampling component of this project is lead. Refer to Section 5 for a detailed discussion of the confirmatory sampling program.

2.5 ACTION LEVELS

As previously mentioned, the real-time component of this project includes PM_{10} as a surrogate for lead exposure. The real-time monitoring action level selected for PM_{10} is 150 micrograms per cubic meter ($\mu g/m^3$) respirable particulates (nuisance dust) and is based on the National Ambient Air Quality Standard (NAAQS) provided in Title 40 of the Code of Federal Regulations (CFR) Part 50. The NAAQS for PM_{10} is averaged over a 24-hour period. The PM_{10} action level for the site is set at 150 $\mu g/m^3$ averaged over a one hour period.

Action Levels have also been selected for use with the supplemental confirmatory sampling for lead. The action level for lead is 3,500 $\mu g/m^3$ (3.5 mg/m^3) averaged over a sampling period (work day) and is based on the highest concentration (7,100 mg/kg) of lead present on-site.

2.6 WARNING LEVELS

In order to allow for mitigation activities to occur prior to a potential exceedance of an action level, warning levels that are lower than the action levels have been established for real time air monitoring.

Additionally, warning levels have also been established for confirmatory air sampling so that site controls can be evaluated for efficacy. The proposed warning level for Nuisance Dust (PM_{10}) is set at 112.5μg/m^3 averaged over a 1-hour period, or 75% of the action level of 150μg/m^3. The proposed warning level for lead is 2,625 μg/m^3 (2.63 mg/$m^{3)}$ averaged over a sampling period (work day), or 75% of the action level of 3,500 μg/m^3 (3.5 mg/m^3).

The following table summarizes the selected action levels and warning levels to be used for the real-time monitoring system, and the supplemental confirmatory sampling.

Table 1 Warning and Action Levels

Compound	Warning Level	Action Level
Nuisance Dust (PM_{10})	112.5 μg/m^3 (.112 mg/m^3)	150 μg/m^3 (.15 mg/m^3)
Lead	3,500 μg/m^3 (3.5 mg/m^3)	2,625 μg/m^3 (2.63 mg/m^3)

Note:

μg/m^3- micrograms per cubic meter
mg/m^3- milligrams per cubic meter

3.0 AIR MONITORING STRATEGY

The environmental monitoring required for the site will be conducted using real-time air monitoring equipment. Data collected through the real-time air monitoring will be supplemented with confirmatory air sampling using U.S. EPA approved sampling and analytical methods.

Real-time perimeter air monitoring is designed to provide an immediate means to evaluate appropriate measures of control of short-term exposure levels for lead, so that acceptable risks for acute and subchronic exposures are not exceeded. The data provided by real-time perimeter air monitoring may also be used to determine the appropriate control actions. While this data will be useful for such determinations, it may be considered supplementary data to the Hot-Zone Air Monitoring data required for determining employee time-weighted average exposures as required by specific OSHA regulations. Perimeter air monitoring is intended to be protective of individuals within the vicinity of the removal action.

4.0 REAL-TIME AIR MONITORING

Real-time air monitoring during soil excavation and removal activities will be conducted using Data-logging Real-time Aerosol Monitor (Data RAM) instruments. Since the work area is outside in front of the home, the perimeter air monitoring will also act as work area monitoring and will be conducted through monitoring stations that are to be established at selected locations surrounding the planned removal areas. Refer to Figure 1 for proposed sampling station locations.

4.1 AIR MONITORING DESIGN

Real-time methods for monitoring particle bound lead do not exist, thus particle levels will be used as a surrogate for this element. The real-time air monitoring program consists of the monitoring for respirable particulates (PM_{10}). Detection levels are described in the following sections.

4.2 RESPIRABLE PARTICULATE MATTER (PM_{10}) PERIMETER AIR MONITORING

Real-time monitoring for airborne lead does not exist. Therefore, respirable dust (PM_{10}) will be measured as an indirect measure of ambient levels of this element.

4.2.1 PM_{10} MONITORS

Direct-reading, real-time particulate monitors are used to monitor for particulates (or dust). For this project activity, Data RAM instruments will be used for continuous PM_{10} measurements.

The data from perimeter monitoring using Data RAMs will also be used for evaluating and monitoring worker action levels. Perimeter monitoring will be conducted with the Data RAM units which will be placed on the fence line of the perimeter on the upwind and downwind directions and will be connected to VIPER to log and display real-time perimeter particulate readings. The PM_{10} data from the Data RAMs will be evaluated on hourly average to compare action levels. All air monitoring units will be operated in accordance with manufacturers' specifications.

4.3 METEOROLOGICAL SYSTEM

On-site meteorological data will be collected to differentiate between upwind and downwind sample locations. The meteorological data will consist of wind speed and direction, temperature, and relative humidity. The meteorological data will be recorded hourly on a central on-site computer via telemetry links and will be used to assign an upwind, downwind, or crosswind designation to each air quality measurement.

4.4 ALARM SYSTEM

If a warning or action level is exceeded based on PM_{10} concentrations, a yellow (warning) or red (action level) visual alarm will be displayed on the VIPER system and the field technician and the site supervisor will be alerted.

4.4.1 ALARM RESPONSE ACTIONS

Alarms from the automated system will be sent to various site personnel based on the type of alarm and the time of day. There are two general types of alarms generated by the system; air concentration exceedance alarms, and monitoring station parameter alarms. The air concentration exceedance alarms are based on the comparison of the measured air concentration to the established action levels. Alerts are generated for warning level exceedences (yellow) and action level exceedences (red). The monitoring station parameter alarms are generated based on two criteria; loss of communication to the station, and loss of battery power. During work hours, alarms will be sent to both the air monitoring technician and the removal site manager. The responses will include; investigating the cause of the alarm, notifying the site Task Monitor, or directly remediating the cause of the alarm, if possible. In the event of a warning level exceedance on a monitoring station, mitigative actions will be taken or work activities will be temporarily halted until measured concentrations are less than the warning levels. If the concentrations are less than the warning level, site work will continue. The air monitoring technician will directly respond to monitoring station parameter alarms (loss of power, loss of communication) and take necessary actions to resolve.

5.0 CONFIRMATORY AIR SAMPLING

At a minimum at least one round of confirmatory laboratory air sampling will be conducted at the upwind and downwind locations of the perimeter, in order to document ambient levels of target contaminants using US EPA approved sampling and analytical methods. Analyses will performed be by an accredited off-site analytical laboratory demonstrating proficiency for the specific methods stated in this section. The laboratory will provide the analytical data in an electronic data format for level III data package In addition to the form one summary pages, this report also includes raw data, Spectral defense, if applicable, run logs, raw data of QC, including CAL and MDL information, also if applicable. Refer to section 6.0 for the occasion and frequency of sampling. The confirmatory sampling methodologies for the analyte class is as follows.

5.1 LEAD

At a minimum, three lead samples, one upwind, one downwind and one crosswind will be collected during intrusive (excavation) activities. One additional sample will be used as a field blank and will be submitted along with the field samples to the laboratory. The sampling location will be chosen based on actual and predicted wind conditions for the sampling day. Lead samples will be collected using air samplers such as Aircons/gilian pumps with programmable, constant flow air sampling pumps with 0.8-micron pore size Mixed Cellulose Ester (MCE) filters enclosed in a 37 millimeter (mm) diameter cassette. Samples will be analyzed by NIOSH Method 7400, Inductively Coupled Argon Plasma, Atomic Emission Spectroscopy (ICP-AES). The lead samples will be analyzed by an off-site EPA accredited laboratory.

6.0 SAMPLING PLAN

As presented in previous sections, sampling for respirable dust (as a surrogate for lead) will occur on a real-time basis during site demolition and removal activities. Confirmatory air sampling for lead will occur on a less frequent basis as described in the following paragraphs.

6.1 BACKGROUND (PRE-REMOVAL) MONITORING

Prior to the initiation of excavation activities, background monitoring will be performed to quantify “background" levels of site-specific contaminants. The anticipated background sampling program involves collecting a minimum of at least one-set of perimeter air samples (one upwind and one downwind). The samples will be collected during normal work hours prior to the planned intrusive

removal action activities. The samples will be submitted to the laboratory for lead analyses via NIOSH Method 7400.

6.2 ROUTINE MONITORING

During on-going removal activities, confirmatory air sampling will be performed to quantify airborne levels of lead. Sampling will be conducted at a minimum of one round during excavation activities with a 48-hr turnaround time (TAT). Based on the results, additional as needed air sampling will be conducted until there is no documented perimeter lead release above the site action level, after which the TAT will become standard.

6.3 SAMPLE ANALYSES

Lead samples will be collected and analyzed in accordance with NIOSH Method 7300, ICP-AES.

Confirmatory air sample analysis during start-up phases of the work will be completed on an expedited schedule with the goal to receive data as soon as practicable. Once the adequacy of site controls in minimizing the potential contribution of site-related contaminants to the local environment off-site has been fully demonstrated, the sample analyses turnaround time may be reduced. Additionally, the requested turnaround times for results will likely be extended to the standard two to three weeks of the laboratory's receipt of the sample, depending on the appropriate holding times specified in the analytical methods. In the event of potential releases (e.g., if high levels are detected during real-time monitoring or confirmatory sampling), the sample collection frequency and turnaround time for sample analysis may be adjusted to expedite the assessment of the potential release. Analysis of field blanks will be completed within three weeks of the laboratory's receipt of the samples.

Sample number, collection, holding times, calibration procedures and handling will be performed in accordance with the requirements of the appropriate Method.

6.4 EQUIPMENT CALIBRATION

Equipment calibration will be performed in accordance with the manufacturer's instructions. Field checks using the appropriate reference standards will be made on-site at the minimum frequency of once per shift. The dust monitors will be zero checked once per shift (pre-sampling) and calibration will be performed according to the manufacturer's instructions for each instrument. A daily log of all instrument readings, as well as all field reference checks and calibration information will be maintained.

Additional spare monitoring instrumentation and sampling equipment will be maintained off-site by the vendor and available for use as needed to minimize air monitoring system downtime. If monitoring or sampling equipment is determined not to be in proper working order, it will be removed from service, replaced with other equipment and sent to the appropriate manufacturer or supplier for service and calibration.

7.0 DATA EVALUATION

Air monitoring results will be generated in graphical form at the end of each monitoring day. These graphs will be reviewed each day and will be used in conjunction with daily field reports to generate summary reports. The summary reports will be prepared weekly and will summarize the previous weeks' data, any exceedences, and any response actions taken, if appropriate. At the conclusion of the project, a perimeter air monitoring summary report will be prepared. The report will include all analytical data generated from the real time monitoring system, confirmatory analytical sampling results, meteorological monitoring, and a summary of any exceedances of action levels, including the response to them. All data will be provided in an Excel spreadsheet and included on a DVD disk at the completion of the project

REFERENCES

1. Oneida Total Integrated Enterprises (OTIE) Superfund Technical Assessment and Response Team (OTIE-START). Lovers Lane Lead Site Assessment Report. March 9, 2012.

APPENDIX A
FIGURES