GLX Green Line Extension

Massachusetts Bay Transportation Authority

Contract No. E22PS02

REVISED NOTIFICATION OF TSCA SELF-IMPLEMENTING CLEAN UP OF PCBS

Revision #01

12/06/2013

THE HDR/GILBANE TEAM A Joint Venture

MBTA Contract No. E22PS02
Task No.: 2012096.01-A
Revision No.: 01
Revision Date: 12/06/13

Prepared and Reviewed By:

RK Quateman

Richard K. Quateman, LSP, CHMM
PM/CM Licensed Site Professional

December 6, 2013
Date

Reviewed By:

Michael J. McBride, P.E.
PM/CM Program Manager

12/24/13
Date

Approved By:

FOR Mary R. Ainsley
Senior Director of Design & Construction
MBTA Program Manager, Green Line Extension Project

12/24/13
Date

Revision History

Date	Issue	Changes	Notes
September 14, 2012	Rev. 0		
December 6, 2013	Rev. 1	Revision to reflect U.S. EPA Comments and to incorporate additional data.	

1 TABLE OF CONTENTS

1 Introduction 1
1.1 Site Description and Location 2
1.2 Description of Planned Activities 3
2 Sampling Program Description 4
2.1 Initial Hazardous Materials Survey (November 2011) 4
2.2 Site-Specific QAPP Addendum A1, Revision 1.2, ... 5
2.3 Supplemental Building Materials Survey 5
2.4 Site-Specific QAPP Addendum A2 8
2.5 Pavement Sampling Program 8
2.6 Soil Sampling Program 12
2.7 Management Categories 14
3 Remediation Procedures 16
3.1 Safety and Monitoring Requirements 16
3.2 Engineering Control Descriptions 17
3.3 Verification Sampling For Building Materials 18
3.4 Waste Characterization, Transport, and Disposal 19
3.5 Equipment Decontamination 19
3.6 Notification and CertifIcation 19
4 Documentation 20
4.1 Field Notes 20
4.2 Photographs 20
4.3 Report 20
4.4 Transport and Treatment/Disposal Certifications 20
4.5 Recordkeeping 21

Tables

Table 1 Summary of Asphalt Sampling Results

Table 2 Summary of Soil Sampling Results

Figures

Figure 1 Limits of Pavement Removal

Appendices

Appendix A Initial Hazardous Material Survey (Nover-Armstrong)

Appendix B Site Specific QAPP Addendum A2 (Nover-Armstrong)

Appendix C Supplemental Building Materials Survey (Nover-Armstrong)

Appendix D Asphalt Sampling Program Analytical Results (Kleinfelder)

Appendix E Soil Sampling Program Analytical Results (Kleinfelder)

Appendix F MBTA Certification

1 INTRODUCTION

Kleinfelder, on behalf of the HDR/Gilbane Joint Venture, has prepared this Self-Implementing Cleanup Plan (SIP) for use by the Massachusetts Bay Transportation Authority (MBTA) in conducting site remediation tasks prior to the demolition of an MBTA-owned building located at 21 Water Street, Cambridge, Massachusetts. The demolition is to be conducted as part of the MBTA's Green Line Extension (GLX) Project. This Notification has been prepared in accordance with the Toxic Substances Control Act (TSCA) requirements as outlined in 40 CFR 761.61(a).

During the fall of 2011, Nover-Armstrong Associates, Inc. (Nover-Armstrong), as a subcontractor to Kleinfelder, completed an Initial Hazardous Materials Survey of the 21 Water Street building. During the survey, Nover-Armstrong observed floor, exterior window and wall caulking that were considered to potentially contain polychlorinated biphenyls (PCBs). Samples collected by Nover-Armstrong indicated PCBs at concentrations ranging from 110,000 parts per million (ppm) to 993,000 ppm in the window and wall caulking, with lower concentrations detected in the floor caulking and mortar associated with the concrete walls. Based on these results, Nover-Armstrong conducted additional sampling of the concrete masonry units (CMU) surrounding the windows of the facility, of concrete and mortar surrounding impacted floor and wall samples, and confirmatory sampling of floor and wall caulking. Nover-Armstrong's reports are included as Appendices A-C.

Based on the results of this sampling, exterior window and interior and exterior wall caulking at the 21 Water Street building contains elevated concentrations of PCBs, which will require these materials to be disposed of as a PCB bulk product waste during building demolition. Floor caulking contains PCBs but at concentrations which allow for its classification as a federally exempt PCB waste. CMU surrounding facility windows and other building materials have not been significantly impacted by PCBs, but CMU within 6 inches of material identified as bulk waste will be disposed of as PCB bulk product waste in conformance with the U.S. EPA Bulk Product Waste Reinterpretation dated October 24, 2012

Subsequent to the determination of the presence of the PCB caulking, Kleinfelder implemented an iterative sampling and analysis program to evaluate if PCB concentration equal to or greater than 1.0 ppm were present in soil and/or asphalt surrounding the building.

The pavement assessment program determined the limits of pavement impact, with the exception of a paved area currently covered by a large soil stockpile associated with GLX construction. This area will be sampled and remediated as necessary following removal of the stockpile. If PCBs are identified in pavement in this area, a revised SIP will be prepared and submitted to U.S. EPA. The results of the confirmatory sampling program will be provided in the Remedial Action Report (RAR).

The limits of soil have not been determined to-date. Sampling on an adjacent property is planned; the results of that program will be incorporated in an amendment to this SIP; soil remediation and disposal activities will be documented in the RAR.

The goal of the Site Remediation detailed in this SIP is to remove all caulking that is classified as PCB Bulk Product Wastes from the 21 Water Street building, prior to the demolition of the building. The SIP includes removal and disposal of immediately surrounding building materials as Bulk Product Waste. This SIP also includes removal and disposal of all pavement and soils impacted by PCBs at or greater than 1.0 pm. A remedial approach has been developed for this project to achieve compliance with the remedial goals as stated and is presented herein. Due to site constraints, this SIP will address PCB impacts in a phased manner with pavement removal occurring first, followed by building remediation. Following completion of the building remediation and demolition of the remaining building structure to the top of slab, the soil removal program will be implemented.

The MBTA will have contract oversight for the work contained in this SIP and, therefore, will be responsible for the cleanup. Correspondences of final approvals or actions should be addressed to:

Ms. Janis Kearney

Massachusetts Bay Transportation Authority

Department of Environmental Affairs

10 Park Plaza, Room 6720

Boston, Massachusetts 02116

(617) 222-1592

1.1 SITE DESCRIPTION AND LOCATION

The Subject Site is located at 21 Water Street in Cambridge, Massachusetts. The location is shown on Figure 1-2- Site Location, in Appendix B. The Site currently operates as the MBTA's Tire Garage, and is developed with a single, 11,914 square foot, slab on grade CMU block building with a metal frame and flat roof constructed around 1950. Two full size overhead doors provide access for larger vehicles. A tire warranty office is located on the ground floor; additional administrative space and the MBTA Key Shop are located in an upstairs balcony on the western side of the building. A kitchen/break room, furnace room, and a compressor room are also located on the ground floor. The remainder of the building is open garage space for tire maintenance. The building has been operated by MBTA for approximately 6 years. Before the MBTA it was operated as a vehicle maintenance facility by others.

The Site is bound by Water Street, a part public part private right of way, to the west, by the Glass Factory Condominiums (169 Monsignor Obrien Highway) to the south, by an MBTA owned commuter parking lot to the east, and by vacant land owned by NorthPoint LLC to the north. The property boundary to the north of the building is located approximately six-inches (6") off the back of the building. The Site property is also identified by the address 183 Monsignor McGrath O'Brien Highway, and by the City of Cambridge Assessor as Map 1, Block A, Lot 38.

1.2 DESCRIPTION OF PLANNED ACTIVITIES

The Green Line Extension Project is an initiative of the Massachusetts Department of Transportation (MassDOT) and MBTA. The project will extend existing MBTA Green Line service from a relocated Lechmere Station in East Cambridge to Union Square in Somerville and College Avenue in Medford. Demolition of the 21 Water Street building is required as part of the GLX project. Demolition is proposed for Fall/Winter 2013, after which the property will be used as a construction laydown area. The majority of the property will be later developed as a busway associated with the new Lechmere T Station; a portion of the property will be used as a public roadway.

2 SAMPLING PROGRAM DESCRIPTION

2.1 INITIAL HAZARDOUS MATERIALS SURVEY (NOVEMBER 2011)

On November 2, 2011, as part of an initial pre-demolition hazardous materials survey of the 21 Water Street building, Nover-Armstrong, under contract to Kleinfelder, inspected building materials for the potential presence of PCBs. Visual inspection revealed floor, window and wall caulking that were considered potential PCB sources. Window glazing was not observed. Building materials were observed to be in poor to good condition, with areas of isolated damage. Nover-Armstrong collected eleven samples, including four floor caulking samples, three wall mortar samples (one painted and two unpainted), one sample of painted wall caulking, and three samples of the window caulking. Wall and window caulking materials were observed to be consistent and homogenous. Floor caulking samples were observed to be markedly "drier" than the more pliant wall and window caulking. Floor caulking was a very thin seam of caulk completely covered by dirt and fine particle debris. Caulking was not identified in other locations, such as doorways. No information is available regarding the origin of the PCBs. Based on the age of the building (constructed approximately 1950), we assume that the caulking was mixed on-site using PCB-containing oils and a powder base.

A total of 40 windows were identified .

Building Side	No. of Windows	Window Dimension
Eastern side	4 windows	4'1/2" x 3'
Western side	5 windows	4'2" x 4'3"
5 windows	4'2" x 3'	
Southern Side	14 windows	4'1/2" x 3'
4 windows	4'2" x 4'3"	
Northern Side	8 windows	4'2" x 3'

A total of 591.6linear feet of caulk surround the windows. This total equals the sum of all window dimensions, conservatively assuming caulk is present around all windows, with no gaps.

Mortar samples Wall-1, Wall-2 and Wall-4 were obtained in areas where mortar appeared to have been patched / repaired, therefore, a conservative sampling approach was used to assess for PCB content. There is no historical (or other) evidence to indicate the mortar was manufactured with PCBs.

Samples were submitted to Alpha Analytical Inc. (Alpha) of Westborough, Massachusetts for analysis of PCBs via EPA Method SW 846 3540C/8082 (Soxhlet Extraction Method).

PCBs were detected above laboratory reporting limits in the window and wall caulking samples analyzed at concentrations ranging from 110,000 mg/kg to 993,000 mg/kg. Lower PCB concentrations, ranging from 0.172 to 40.4 mg/kg were detected in the floor caulking and mortar associated with the concrete walls. Results are presented on Table 1 – Summary of 11/02/2011 Building Materials Analytical Results (for PCBs), included in Nover-Armstrong's report (Appendix A). The predominant PCB detected was Aroclor 1260. Lower concentrations of Aroclor 1254 were also detected in the floor caulking samples.

A review of the analytical report provided by Alpha for the 11/2/2011 sampling revealed that PCBs were detected in the Method Blank sample at 16.2 mg/kg. According to Alpha, the Method Blank was analyzed as part of the sample batch. During Soxhlet extraction and/or during the blow down process, the Method Blank, and potentially some of the building material samples, was contaminated by the window caulking samples, which contained higher PCB concentrations and were run at the beginning of the batch. Therefore, according to Alpha, samples containing less than 16 mg/kg PCBs, including FLOOR-1, FLOOR-3, FLOOR 4, WALL-1 and WALL-4, may not have contained PCBs, or may have contained PCBs at concentrations lower than indicated by the laboratory report.

Based on the results of the initial hazardous materials building survey, additional sampling was determined to be required to confirm the preliminary results; determine if materials reported as containing PCBs at less than 16 mg/kg actually contained PCBs; and, determine if CMU surrounding the PCB caulking was impacted by PCBs.

A complete copy of Nover-Armstrong's initial hazardous materials survey report, including figures showing sample locations and complete analytical reports, is included as Appendix A.

2.2 SITE-SPECIFIC QAPP ADDENDUM A1, REVISION 1.2,

Based on the findings of the initial hazardous materials building survey, Nover-Armstrong, under contract to Kleinfelder, completed a Site-Specific QAPP Addendum A1, dated June 2012. The QAPP addendum documented all proposed sampling procedures, laboratory analytical methods, equipment necessary to complete the sampling procedures, quality assurance/quality control measures to be taken, and data assessment protocols in place for the supplemental analysis of PCBs in CMU surrounding the windows of the facility and in building materials (concrete, caulking and mortar) surrounding impacted floor and wall samples. The goal of the sampling was to identify potential PCB impacts from window caulking, floor caulking, wall caulking, and/or wall mortar leaching into building materials adjacent to the previously-identified PCB-impacted areas and to assess the limits of any PCB contamination identified. The QAPP is included as Appendix B.

2.3 SUPPLEMENTAL BUILDING MATERIALS SURVEY

A supplemental building materials survey was conducted by Nover-Armstrong, under contract to Kleinfelder, on July 11 through 13 and July 17, 2012 See Appendix C for the results of this survey,

GLX Green Line Extension

Massachusetts Bay Transportation Authority

Contract No. E22PS02

REVISED NOTIFICATION OF TSCA SELF-IMPLEMENTING CLEAN UP OF PCBS

Revision #01

12/06/2013

THE HDR/GILBANE TEAM A Joint Venture

Prepared and Reviewed By:

RK Quateman

Richard K. Quateman, LSP, CHMM
PM/CM Licensed Site Professional

December 6, 2013
Date

Reviewed By:

Michael J. McBride, P.E.
PM/CM Program Manager

12/24/13
Date

Approved By:

FOR Mary R. Ainsley
Senior Director of Design & Construction
MBTA Program Manager, Green Line Extension Project

12/24/13
Date

Revision History

Date	Issue	Changes	Notes
September 14, 2012	Rev. 0		
December 6, 2013	Rev. 1	Revision to reflect U.S. EPA Comments and to incorporate additional data.	

1 TABLE OF CONTENTS

1 Introduction 1
1.1 Site Description and Location 2
1.2 Description of Planned Activities 3
2 Sampling Program Description 4
2.1 Initial Hazardous Materials Survey (November 2011) 4
2.2 Site-Specific QAPP Addendum A1, Revision 1.2, ... 5
2.3 Supplemental Building Materials Survey 5
2.4 Site-Specific QAPP Addendum A2 8
2.5 Pavement Sampling Program 8
2.6 Soil Sampling Program 12
2.7 Management Categories 14
3 Remediation Procedures 16
3.1 Safety and Monitoring Requirements 16
3.2 Engineering Control Descriptions 17
3.3 Verification Sampling For Building Materials 18
3.4 Waste Characterization, Transport, and Disposal 19
3.5 Equipment Decontamination 19
3.6 Notification and CertifIcation 19
4 Documentation 20
4.1 Field Notes 20
4.2 Photographs 20
4.3 Report 20
4.4 Transport and Treatment/Disposal Certifications 20
4.5 Recordkeeping 21

Tables

Table 1 Summary of Asphalt Sampling Results

Table 2 Summary of Soil Sampling Results

Figures

Figure 1 Limits of Pavement Removal

Appendices

Appendix A Initial Hazardous Material Survey (Nover-Armstrong)

Appendix B Site Specific QAPP Addendum A2 (Nover-Armstrong)

Appendix C Supplemental Building Materials Survey (Nover-Armstrong)

Appendix D Asphalt Sampling Program Analytical Results (Kleinfelder)

Appendix E Soil Sampling Program Analytical Results (Kleinfelder)

Appendix F MBTA Certification

1 INTRODUCTION

Kleinfelder, on behalf of the HDR/Gilbane Joint Venture, has prepared this Self-Implementing Cleanup Plan (SIP) for use by the Massachusetts Bay Transportation Authority (MBTA) in conducting site remediation tasks prior to the demolition of an MBTA-owned building located at 21 Water Street, Cambridge, Massachusetts. The demolition is to be conducted as part of the MBTA's Green Line Extension (GLX) Project. This Notification has been prepared in accordance with the Toxic Substances Control Act (TSCA) requirements as outlined in 40 CFR 761.61(a).

During the fall of 2011, Nover-Armstrong Associates, Inc. (Nover-Armstrong), as a subcontractor to Kleinfelder, completed an Initial Hazardous Materials Survey of the 21 Water Street building. During the survey, Nover-Armstrong observed floor, exterior window and wall caulking that were considered to potentially contain polychlorinated biphenyls (PCBs). Samples collected by Nover-Armstrong indicated PCBs at concentrations ranging from 110,000 parts per million (ppm) to 993,000 ppm in the window and wall caulking, with lower concentrations detected in the floor caulking and mortar associated with the concrete walls. Based on these results, Nover-Armstrong conducted additional sampling of the concrete masonry units (CMU) surrounding the windows of the facility, of concrete and mortar surrounding impacted floor and wall samples, and confirmatory sampling of floor and wall caulking. Nover-Armstrong's reports are included as Appendices A-C.

Based on the results of this sampling, exterior window and interior and exterior wall caulking at the 21 Water Street building contains elevated concentrations of PCBs, which will require these materials to be disposed of as a PCB bulk product waste during building demolition. Floor caulking contains PCBs but at concentrations which allow for its classification as a federally exempt PCB waste. CMU surrounding facility windows and other building materials have not been significantly impacted by PCBs, but CMU within 6 inches of material identified as bulk waste will be disposed of as PCB bulk product waste in conformance with the U.S. EPA Bulk Product Waste Reinterpretation dated October 24, 2012

Subsequent to the determination of the presence of the PCB caulking, Kleinfelder implemented an iterative sampling and analysis program to evaluate if PCB concentration equal to or greater than 1.0 ppm were present in soil and/or asphalt surrounding the building.

The pavement assessment program determined the limits of pavement impact, with the exception of a paved area currently covered by a large soil stockpile associated with GLX construction. This area will be sampled and remediated as necessary following removal of the stockpile. If PCBs are identified in pavement in this area, a revised SIP will be prepared and submitted to U.S. EPA. The results of the confirmatory sampling program will be provided in the Remedial Action Report (RAR).

The limits of soil have not been determined to-date. Sampling on an adjacent property is planned; the results of that program will be incorporated in an amendment to this SIP; soil remediation and disposal activities will be documented in the RAR.

The goal of the Site Remediation detailed in this SIP is to remove all caulking that is classified as PCB Bulk Product Wastes from the 21 Water Street building, prior to the demolition of the building. The SIP includes removal and disposal of immediately surrounding building materials as Bulk Product Waste. This SIP also includes removal and disposal of all pavement and soils impacted by PCBs at or greater than 1.0 pm. A remedial approach has been developed for this project to achieve compliance with the remedial goals as stated and is presented herein. Due to site constraints, this SIP will address PCB impacts in a phased manner with pavement removal occurring first, followed by building remediation. Following completion of the building remediation and demolition of the remaining building structure to the top of slab, the soil removal program will be implemented.

The MBTA will have contract oversight for the work contained in this SIP and, therefore, will be responsible for the cleanup. Correspondences of final approvals or actions should be addressed to:

Ms. Janis Kearney

Massachusetts Bay Transportation Authority

Department of Environmental Affairs

10 Park Plaza, Room 6720

Boston, Massachusetts 02116

(617) 222-1592

1.1 SITE DESCRIPTION AND LOCATION

The Subject Site is located at 21 Water Street in Cambridge, Massachusetts. The location is shown on Figure 1-2- Site Location, in Appendix B. The Site currently operates as the MBTA's Tire Garage, and is developed with a single, 11,914 square foot, slab on grade CMU block building with a metal frame and flat roof constructed around 1950. Two full size overhead doors provide access for larger vehicles. A tire warranty office is located on the ground floor; additional administrative space and the MBTA Key Shop are located in an upstairs balcony on the western side of the building. A kitchen/break room, furnace room, and a compressor room are also located on the ground floor. The remainder of the building is open garage space for tire maintenance. The building has been operated by MBTA for approximately 6 years. Before the MBTA it was operated as a vehicle maintenance facility by others.

The Site is bound by Water Street, a part public part private right of way, to the west, by the Glass Factory Condominiums (169 Monsignor Obrien Highway) to the south, by an MBTA owned commuter parking lot to the east, and by vacant land owned by NorthPoint LLC to the north. The property boundary to the north of the building is located approximately six-inches (6") off the back of the building. The Site property is also identified by the address 183 Monsignor McGrath O'Brien Highway, and by the City of Cambridge Assessor as Map 1, Block A, Lot 38.

1.2 DESCRIPTION OF PLANNED ACTIVITIES

The Green Line Extension Project is an initiative of the Massachusetts Department of Transportation (MassDOT) and MBTA. The project will extend existing MBTA Green Line service from a relocated Lechmere Station in East Cambridge to Union Square in Somerville and College Avenue in Medford. Demolition of the 21 Water Street building is required as part of the GLX project. Demolition is proposed for Fall/Winter 2013, after which the property will be used as a construction laydown area. The majority of the property will be later developed as a busway associated with the new Lechmere T Station; a portion of the property will be used as a public roadway.

2 SAMPLING PROGRAM DESCRIPTION

2.1 INITIAL HAZARDOUS MATERIALS SURVEY (NOVEMBER 2011)

On November 2, 2011, as part of an initial pre-demolition hazardous materials survey of the 21 Water Street building, Nover-Armstrong, under contract to Kleinfelder, inspected building materials for the potential presence of PCBs. Visual inspection revealed floor, window and wall caulking that were considered potential PCB sources. Window glazing was not observed. Building materials were observed to be in poor to good condition, with areas of isolated damage. Nover-Armstrong collected eleven samples, including four floor caulking samples, three wall mortar samples (one painted and two unpainted), one sample of painted wall caulking, and three samples of the window caulking. Wall and window caulking materials were observed to be consistent and homogenous. Floor caulking samples were observed to be markedly "drier" than the more pliant wall and window caulking. Floor caulking was a very thin seam of caulk completely covered by dirt and fine particle debris. Caulking was not identified in other locations, such as doorways. No information is available regarding the origin of the PCBs. Based on the age of the building (constructed approximately 1950), we assume that the caulking was mixed on-site using PCB-containing oils and a powder base.

A total of 40 windows were identified .

Building Side	No. of Windows	Window Dimension
Eastern side	4 windows	4'1/2" x 3'
Western side	5 windows	4'2" x 4'3"
5 windows	4'2" x 3'	
Southern Side	14 windows	4'1/2" x 3'
4 windows	4'2" x 4'3"	
Northern Side	8 windows	4'2" x 3'

A total of 591.6linear feet of caulk surround the windows. This total equals the sum of all window dimensions, conservatively assuming caulk is present around all windows, with no gaps.

Mortar samples Wall-1, Wall-2 and Wall-4 were obtained in areas where mortar appeared to have been patched / repaired, therefore, a conservative sampling approach was used to assess for PCB content. There is no historical (or other) evidence to indicate the mortar was manufactured with PCBs.

Samples were submitted to Alpha Analytical Inc. (Alpha) of Westborough, Massachusetts for analysis of PCBs via EPA Method SW 846 3540C/8082 (Soxhlet Extraction Method).

PCBs were detected above laboratory reporting limits in the window and wall caulking samples analyzed at concentrations ranging from 110,000 mg/kg to 993,000 mg/kg. Lower PCB concentrations, ranging from 0.172 to 40.4 mg/kg were detected in the floor caulking and mortar associated with the concrete walls. Results are presented on Table 1 – Summary of 11/02/2011 Building Materials Analytical Results (for PCBs), included in Nover-Armstrong's report (Appendix A). The predominant PCB detected was Aroclor 1260. Lower concentrations of Aroclor 1254 were also detected in the floor caulking samples.

A review of the analytical report provided by Alpha for the 11/2/2011 sampling revealed that PCBs were detected in the Method Blank sample at 16.2 mg/kg. According to Alpha, the Method Blank was analyzed as part of the sample batch. During Soxhlet extraction and/or during the blow down process, the Method Blank, and potentially some of the building material samples, was contaminated by the window caulking samples, which contained higher PCB concentrations and were run at the beginning of the batch. Therefore, according to Alpha, samples containing less than 16 mg/kg PCBs, including FLOOR-1, FLOOR-3, FLOOR 4, WALL-1 and WALL-4, may not have contained PCBs, or may have contained PCBs at concentrations lower than indicated by the laboratory report.

Based on the results of the initial hazardous materials building survey, additional sampling was determined to be required to confirm the preliminary results; determine if materials reported as containing PCBs at less than 16 mg/kg actually contained PCBs; and, determine if CMU surrounding the PCB caulking was impacted by PCBs.

A complete copy of Nover-Armstrong's initial hazardous materials survey report, including figures showing sample locations and complete analytical reports, is included as Appendix A.

2.2 SITE-SPECIFIC QAPP ADDENDUM A1, REVISION 1.2,

Based on the findings of the initial hazardous materials building survey, Nover-Armstrong, under contract to Kleinfelder, completed a Site-Specific QAPP Addendum A1, dated June 2012. The QAPP addendum documented all proposed sampling procedures, laboratory analytical methods, equipment necessary to complete the sampling procedures, quality assurance/quality control measures to be taken, and data assessment protocols in place for the supplemental analysis of PCBs in CMU surrounding the windows of the facility and in building materials (concrete, caulking and mortar) surrounding impacted floor and wall samples. The goal of the sampling was to identify potential PCB impacts from window caulking, floor caulking, wall caulking, and/or wall mortar leaching into building materials adjacent to the previously-identified PCB-impacted areas and to assess the limits of any PCB contamination identified. The QAPP is included as Appendix B.

2.3 SUPPLEMENTAL BUILDING MATERIALS SURVEY

A supplemental building materials survey was conducted by Nover-Armstrong, under contract to Kleinfelder, on July 11 through 13 and July 17, 2012 See Appendix C for the results of this survey,

including figures and photographs. The results of the survey were summarized in a "Supplemental Building Materials Survey" dated August 8, 2012.

Note that MBTA assumed, based on the homogeneity of the window caulking observed, that all window caulking contains PCBs > 50 ppm and that it would be managed as a PCB Bulk Product Waste. Therefore, additional window caulking sampling was not conducted in the supplemental survey.

CMU sampling was conducted on all sides of the building to evaluate the potential for leaching of PCBs into surrounding building substrate. Sampling was conducted on all walls to account for potential impacts from differing weathering conditions.

2.3.1 CMU Surrounding Windows

Between July 11 and July 13, 2012, Nover-Armstrong collected samples from concrete CMUs adjacent to facility's forty windows. Ten windows were selected for characterization of CMU surrounding each window. Each window was designated as "A" through "J" to allow for a naming convention for the CMU samples associated with each window. In the same manner, each window could have been designated as "1" through "10." In this instance, the samples surrounding each window would be classified as "CMU A-#." Figure 2 identifies the location of each window by letter designation and associated CMU samples.

Each window was identified as one sample group. Each group was comprised of eight grab sampling points. Samples were obtained from all four sides of each window at a distance from the window equaling approximately one-half of the CMU length (6 inches). CMU are approximately 6" high x 12" wide, laid horizontally. At the top and bottom of the windows the samples were collected from a consistent distance of 6" from the bottom of the concrete sill, or below 1 course of CMU brick. This conservatively included the window and underlying sill. Additional samples were collected from the terminus of one cracked area originating at a window on an exterior wall on each side of the building (four total).

In collecting CMU samples surrounding the windows, MBTA recognized that the sampling locations were, technically, greater than 6" from the actual caulking as the caulking was located on the recessed face of the CMU as opposed to the exterior face of the building. However, by sampling at these locations, we can, based on the results, state that oils have not absorbed to that distance. As the windows are inset it would be impractical to remove the windows by any method save but cutting the interior and exterior surfaces of the walls where we have confirmed there are no PCB impacts ≥ 1 ppm.

The concrete samples were obtained following the guidance provided in the USEPA Region 1 Standard Operating Procedure for Sampling Porous Surface for Polychlorinated Biphenyls (PCBs), Revision 4 (May 2011), EIASOP_POROUSSAMPLING and in accordance with the Code of Federal Regulations (CFR) 761. This guidance was provided within the Standard Operating Procedures appendix of the QAPP, attached to this report as Appendix B.

A rotary impact hammer equipped with a one-inch diameter carbide drill bit was used to generate a fine concrete powder, which was collected into containers provided by Alpha. Samples were

collected at approximately one-inch intervals. Four to eight sampling holes were required to obtain the required amount of concrete powder for laboratory analysis and to include duplicates for quality assurance purposes. A total of 80 concrete grab samples were collected from around the windows and 4 were collected from building cracks proximate to select windows. Six additional duplicate samples were also collected. The samples were submitted to Alpha for analysis of PCBs by EPA Method SW 846 3540C/8082 (Soxhlet Extraction Method).

Disposable sampling equipment was discarded after use and was not reused. All non-disposable sampling equipment was decontaminated after each sample was collected according to the guidelines for decontamination provided in the *Standard Operating Procedure for Sampling Porous Surface for Polychlorinated Biphenyls (PCBs), Revision 4 (May 2011), EIASOP_POROUSSAMPLING* guidance. All rinse liquids generated during the decontamination process were stored in properly labeled 55 gallon drums, pending laboratory analytical results. Six Equipment Blank samples were collected and submitted to Alpha for analysis for PCBs.

2.3.2 Building Materials Not Surrounding Windows

On July 17, 2012, Nover-Armstrong collected additional samples surrounding each of four interior and/or exterior building material sampling locations that were not associated with window caulking, but were identified during the November 2011 Initial Hazardous Materials Survey as potentially containing PCBs. These samples were identified as WALL-1 (interior), WALL-3 (interior), WALL-4 (exterior), and FLOOR-2 (interior). The samples were obtained from all four sides of each sampling location at vertical and horizontal distances of approximately 6 inches from the original November 2011 samples. The number of discrete subsample collection points varied slightly in each location to obtain adequate sample volume. The building materials consisted of caulking, concrete, and mortar, depending on the sample location. The building material samples were obtained following the guidance provided in the USEPA Region 1 *Standard Operating Procedure for Sampling Porous Surface for PCBs, Revision 4 (May 2011, EIASOP_POROUSSAMPLING* and in accordance with 40 CFR 761.

Concrete and mortar samples were collected as described in section 2.3.1. Caulking samples were collected using a chisel and sharp knife to generate representative samples. Samples were submitted to Alpha for analysis of PCBs by EPA Method SW 846 3540C/8082 (Soxhlet Extraction Method).

2.3.3 Wall sample confirmation sampling

In June 2013, NAA collected additional samples of mortar from the area of Wall-1 and Wall-4. Samples were submitted to ESS Laboratories of Cranston, RI and analyzed for PCBs EPA Method SW 846 3540C/8082 (Soxhlet Extraction Method). Samples were collected to determine if the elevated PCB concentrations identified in the prior sampling program were associated with the trip contamination identified in the Method Blank.

The results of the June 2013 sampling reported PCB concentrations of 0.168 and 0.231 mg/kg, respectively.

2.3.4 Sampling Results

Complete sampling results, including laboratory analytical reports, summary tables, and a data quality and usability evaluation, are included in Nover-Armstrong's Supplemental Building Materials Survey, attached to this report as Appendix C.

Of the eighty samples collected from CMU surrounding the 21 Water Street building windows, PCBs were detected above laboratory reporting limits, but below 1.0 mg/kg, in 47 samples. Concentrations detected ranged from 0.0381 to 0.5 mg/kg. PCBs were also detected above laboratory reporting limits, but at concentrations of less than 1 mg/kg, in two of the four concrete samples surrounding building cracks (0.0809 mg/kg and 0.368 mg/kg) and in nine of the twelve samples surrounding the previously sampled locations at the interior and exterior building walls and floor (0.0558 mg/kg to 1.8 mg/kg). In Wall sample 3-3, Aroclor 1254 was reported at 0.922 and Aroclor 1260 at 0.854, for a total PCB concentration of 1.78 mg/kg.

The results of the June 2013 mortar sampling program from the area of Wall-1 and Wall-4, identified PCB concentrations of 0.168 and 0.231 mg/kg, respectively. PCBs were detected in the floor caulk at 0.651 mg/kg and 1.52 mg/kg.

PCBs were detected in the walk caulk at 18,400 mg/kg and 22,500 mg/kg.

2.4 SITE-SPECIFIC QAPP ADDENDUM A2

Based on the findings of the supplemental hazardous materials building survey, Nover-Armstrong, under contract to Kleinfelder, completed a Site-Specific QAPP Addendum A2, dated July 2013. The QAPP addendum documented all proposed sampling procedures, laboratory analytical methods, equipment necessary to complete the sampling procedures, quality assurance/quality control measures to be taken, and data assessment protocols in place for the analysis of PCBs in pavement and soil surrounding the 21 Water Street building. The goal of the sampling was to identify potential PCB impacts from window and wall caulking migrating into pavement and/or soil adjacent to the previously-identified PCB-impacted areas and to assess the limits of any PCB contamination identified. The QAPP is included as Appendix B.

2.5 PAVEMENT SAMPLING PROGRAM

At the direction of U.S. EPA, Kleinfelder implemented an iterative asphalt pavement sampling program to determine if, and to what lateral extent, pavement surrounding the building on the west, south and north sides had been impacted by PCBs from the window and/or expansion joint caulking.

Kleinfelder subsequently conducted four (4) iterative rounds of asphalt sampling to determine the extent of PCBs in asphalt at the 21 Water Street property. Iterative sampling locations were necessary after the initial sampling round failed to identify clear limits of PCB contamination. All samples collected were submitted to Con-Test Analytical Laboratory of East Longmeadow, MA. Samples were analyzed for PCBs by U.S. EPA Method 8082A with Method 3540 Soxhlet extraction,

in accordance with U.S. EPA requirements. A Quality Assurance Program Plan (QAPP) was developed for this sampling program, which included collection of duplicate and trip blanks.

Note that Rounds 1 and 2 also included collection of soil samples; details and results of soil sampling are provided in Section 2.6.

2.5.1 Sampling Protocol

Asphalt samples were collected in rounds 1 – 3 using disposal chisels. In Round 4, heavier chisels were utilized and decontaminated between each sample. Chisels were decontaminated between sample locations using EPA guidance "Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), May 2011.

Samples were collected in one-inch squares to a depth of approximately ½ inch below the asphalt surface. All samples collected were submitted to Con-Test Analytical Laboratory of East Longmeadow, MA. Samples were analyzed for PCBs by U.S. EPA Method 8082A with Method 3540 Soxhlet extraction, in accordance with U.S. EPA requirements. A Quality Assurance Program Plan (QAPP) was developed for this sampling program, which included collection of duplicate and trip blanks.

Round 1: Four (4) samples of asphalt were collected at six-inches (6") from the building foundation on the south (3 locations) and east sides (1 location). Designations for Round 1 (asphalt) were: Center Asphalt 6 in., E Asphalt 6 in., SE Asphalt 6 in., and SW asphalt 6 in.

Round 2: In Round 2 and in subsequent rounds, additional sampling locations were added to: 1) fill lateral gaps in characterization and, 2) expand the characterization further outwards from the building. Round 2 consisted of 25 samples collected at six, twelve, twenty-four inches from the building plus two duplicates.

Sample designations in Round 2 included: Center Asphalt 12 in., Center Asphalt 24 in., East 3 Asphalt 12 in. East 3 Asphalt 24 in., East Asphalt 12 in., East Asphalt 24 in., Southeast 2 Asphalt 24 in., Southeast Asphalt 12 in., Southeast Corner Asphalt 24 in., Southwest Asphalt 12 in., Southwest Asphalt 24 in., Southwest Corner Asphalt 12 in., Southwest Corner Asphalt 24 in., West 2 Asphalt 12 in., West 2 Asphalt 24 in., West 3 Asphalt 6 in., West Asphalt 6 in., Southeast 3 Asphalt 12 in., Southeast 3 Asphalt 24 in., and Southeast 3 Asphalt 6 in.

Round 3: Round 3 included 21 samples, collected at distances of between one (1) and five (5) feet outwards from the building.

Sample designations in Round 3 included: Center Asphalt (4ft), Center Asphalt (5ft), East Asphalt (4ft), East Asphalt (5ft), East Asphalt 2 (4ft), East Asphalt 2 (5ft), East Asphalt 4 (1ft), East Asphalt 4 (3ft), East Asphalt 4 (4ft), Southeast Asphalt 2 (3ft), Southeast Asphalt 2 (4ft), Southeast Asphalt 4 (1ft), Southeast Asphalt 4 (3ft) ., Southeast Asphalt 4 (4ft), Southwest Asphalt 2 (1ft), Southwest Asphalt 2 (3ft), Southwest Asphalt 2 (4ft), West Asphalt 2 (3ft), West Asphalt 4 (1ft), West Asphalt 4 (3ft), and West Asphalt 4 (4ft).

Round 4: Round 4 included 28 samples, collected at distances of six inches and 10, 20 and 40 feet from the building. Samples were also collected at the building fence line.

Sample designations in Round 4 included: Center Asphalt (10')., Center Asphalt (20')., Center Asphalt (Fence)., East Asphalt (10')., East Asphalt (20')., East Asphalt (Fence)., East Asphalt 2 (10')., East Asphalt 2 (19')., East Asphalt 2 (Fence)., East Asphalt 4 (20'), East Asphalt 5 (10')., East Asphalt 5 (20'), Southeast Asphalt 2 (10') Southeast Asphalt 2 (20'), Southeast Asphalt 2 (Fence), Southeast Asphalt 4 (Fence), Southeast Corner Asphalt 2 (10'), Southwest Asphalt 2 (10'), Southwest Asphalt 2 (20'), Southeast Asphalt 4 (10'), Southeast Asphalt 4 (20'),

Southwest Asphalt 2 (40'), Southwest Asphalt 2 (Fence), Southwest Asphalt 3 (10'), Southwest Asphalt 3 (40'), Southwest Asphalt 3 (6"), West Asphalt 2 (20'), and West Asphalt 4 (12.5').

2.5.2 Results

Four sampling rounds were conducted by Kleinfelder. See the attached figure, "21 Water Street Asphalt Sample Locations Plan," for sampling locations. The results of each round are summarized in Table 1 – Summary of Asphalt Sampling Results.

Round 1

Three of the four asphalt sampling locations were impacted by PCBs ≥ 1 ppm with detections between 0.26 and 2.5 ppm.

- Center Asphalt 6 in.
- E Asphalt 6 in.
- SE Asphalt 6 in.

Round 2

Of these 25 samples, eight (8) indicated a PCB concentration of ≥ 1.0 ppm, with a maximum concentration of 2.8 ppm. No clear outer boundary for PCBs < 1.0 ppm was identified.

- Center Asphalt 12 in., Center Asphalt 24 in.
- East Asphalt 12 in., East Asphalt 24 in.
- Southeast 2 Asphalt 24 in.
- West 2 Asphalt 12in, West Asphalt 6in.
- East 2 Asphalt 36in.

Round 3

Of the 21 samples, 14 locations contained PCBs at ≥ 1.0 ppm, with a maximum detected concentration of 2.06 ppm.

- Center Asphalt (4ft)
- Center Asphalt (5ft)
- East Asphalt (4ft); East Asphalt (5ft)
- Southeast Asphalt 2 (3ft), Southeast Asphalt 2 (4ft),
- Southeast Asphalt 4 (1ft), Southeast Asphalt 4 (3ft), Southeast Asphalt 4 (4ft)
- Southwest Asphalt 2 (1ft), Southwest Asphalt 2 (3ft), Southwest Asphalt 2 (4ft)

- West Asphalt 4 (1ft), West Asphalt 4 (4ft).

Again, the outer samples did not consistently identify a boundary of PCBs at < 1.0 ppm.

Round 4

Of the 28 samples, PCBs were reported ≥ 1.0 ppm at five (5) locations, with a maximum detected concentration of 5.8 ppm (Southwest Asphalt 3 6").

- Center Asphalt (10'), Center Asphalt (20')
- East Asphalt 2 (10')
- Southeast Asphalt 2 (10'), Southeast Asphalt 4 (10')
- Southwest Asphalt 3 (6")

At the completion of Round 4, a clear pattern of PCB distribution and limits of PCBs ≥ 1 ppm was defined, with the exception of in the area of the pavement not accessible due to the presence of the soil stockpile and concrete blocks containing the pile (front of building). Sampling and analysis of pavement in this area will be conducted in 2014 following removal of the soil stockpile and defining blocks.

2.5.3 Limits of PCBs in Pavement

2.5.3.1 South Side (Front of Building)

At all sampling locations at the fence line (five locations), PCB concentrations were either not detected above the laboratory reporting limits or at concentrations less than 1.0 ppm. Note that the presence of the soil stockpile and defining concrete blocks prevented sampling across the front of the building at the eastern half of the building front at distances beyond 30 feet; samples were collected in this area at 20 feet and at the property boundary (fence line).

At 40' from the building (two samples) PCB concentrations were less than 1.0 ppm. At 20' from the building, one of six samples (Center Asphalt) reported PCBs at 2.9 ppm. The remaining samples were reported at < 1.0 ppm.

2.5.3.2 East Side

At 10' from the side of the building, one sample was reported at 0.98 ppm, which is considered to equal 1.0. At 20' from the building at the east side no sample exceeded 1.0 ppm. Equally, at the further outward fence line sample results were non-detect for PCBs.

2.5.3.3 West Side

At the west side of the building, PCB concentrations in pavement diminish to less than 1.0 ppm at a distance of two feet from the building with the exception of in line with sample West Asphalt 4 where PCBs were detected at 1.26 ppm. Pavement PCB concentrations at West Asphalt 4 were less than 1.0 ppm at the next outward sample (12.5').

2.5.4 Pavement Removal Limits

A plan documenting the pavement sampling locations is attached. Note that in making the boundary determinations, concentrations of 0.95 or greater were rounded upwards to equal 1.0 ppm. Samples of 0.94 ppm or less were considered less than 1.0 ppm. This rounding is considered reasonably conservative given the accuracy of the test method

The results of the sampling program have identified clear limits to PCB impacts ≥ 1.0 ppm in asphalt on the west and east sides of the building. Similarly, at the southwest and southeast corners of the building, the limits of PCBs are defined and close to the building. At the front of the building, there is one outlier sample. Figure 1, Limits of Pavement Removal, 2 highlights PCB concentrations and indicates the recommended asphalt removal limits.

West Side: Saw cut beginning at rear of building at 12.5' (150 inches) out from building; cut southwards to limits of transformer pad then cut eastwards to 3' (36 inches) outward from building in line with sample West Asphalt; continue saw cut at 3 feet to saw cut at front of building per Plate 1 diagram. Remove asphalt from building to limits of saw cut.

East Side: 1 of 4 samples at 10 feet reported PCBs > 1 ppm. At 20 feet, all samples were < 1.0 ppm. Saw cut at 20 feet; remove asphalt from building to 20 feet. A concrete pad is located at the east side of the building within the limits of pavement removal. The concrete pad shall be removed and disposed of with the pavement.

South (Front) Side: Results at the western portion of the building (from corner to sample SW Asphalt 2 and 3 are < 1.0 ppm at 10 feet and outwards. Center Asphalt samples at 10 and 20 feet were > 1.0 ppm. Samples Southeast Asphalt 2 and 4 were < 1.0 ppm at 20 feet. Sampling beyond 20 feet from Center Asphalt and east was prevented by the soil pile. Samples beyond the pile were non-detect for PCBs.

Beginning at building southwest corner saw cut 10 feet outward from building until in line with sample location Southwest Asphalt 2; saw cut southerly to 30' and then easterly to limits of soil pile. Saw cut as close as possible to concrete blocks. See Plate 2.

Kleinfelder will collect additional asphalt samples from below area of soil stockpile following soil removal to confirm no residual PCB contamination ≥ 1.0 ppm.

2.6 SOIL SAMPLING PROGRAM

At the direction of U.S. EPA, Kleinfelder implemented an iterative soil sampling program to determine if, and to what lateral extent soil at the rear of the 21 Water Street building had been impacted by the presence of PCBs from building window and expansion joint caulking. Soil samples were obtained following Nover-Armstrong's standard operating procedure (SOP) for soil sample collection (SOP.NAA_A.01.1), which references USEPA and MassDEP guidance documents, where applicable.

Twenty-four soil samples were collected. Initially, six samples (at six and twelve inches from the building at three locations) were analyzed by the laboratory while the remainder, which included

locations at greater distances and depths below grade were placed on hold. Subsequent to the detection of PCBs >1 ppm in all initial samples, "hold" samples were iteratively authorized for analysis.

Soil samples were collected to the north of the site structure beneath three window groupings identified as "NW Window," "Center Window," and "NE Window" and beneath a building expansion joint. Multiple sampling points are associated with each of the three window groupings. Samples were collected at horizontal distances of 12", 24", 36", and/or 48" away from the exterior wall of the structure beneath the windows. At the expansion joint samples were collected at six and twelve inches from the building. Samples were collected vertically from each sampling location at various depths: 0-6", 6-12", and/or 12-18" below the ground surface. The soil samples were collected using a hand auger and trowel, which were decontaminated between sample locations. As noted previously, samples collected at a distance of greater than six-inches off the rear of the building were determined to be located on an abutting property, the fence line of which was located within the abutting property boundary.

2.6.1 RESULTS

Definition of the horizontal and vertical limits of soil impacts were generally identified on the western half of the rear of the building, as defined by the samples collected at locations "Northwest Window" and "Center Window."

Northwest Window: At sample location Northwest Window, PCB concentrations at the 0 – 6" horizon decreased consistently to < 1 ppm at 36" and outward. Vertically, PCBs were identified above 1.0 ppm in the 0 – 6" horizon to 24" from the building. Beginning at 24" outward, soils at 6+ inches were consistently reported at < 1.0 ppm PCBs.

On the eastern side of the building rear, as defined by sample location Northeast Window, PCB concentrations at the 0-6" horizon was consistently reported above 1 ppm from 6" to the sampling limits at the perimeter fence at 36" outward. At 12" outward, PCBs were reported at < 1.0 ppm in the 6-12" horizon. At 24" outward, PCB concentrations exceeded 1.0 until the 12-18" horizon. Obstructions prevented sampling below 6" at the 36" outward sample. The results of soil sampling conducted to-date are summarized in Table 2 – Results of Soil Sampling Program.

2.6.1.1 Additional Soil Sampling Program

Additional soil samples will be collected at the following locations and depths below grade to clearly define the limits of soil impacts.

- **Building Northwest Corner**: collection of samples at 96" from building at 0-6, 6-12, 12-18 inches below grade (sample Northwest Corner).
- **Between Northwest Window and Northwest Building Corner**: Collection of samples at 12", 24" and 36" from building at 0-6, 6-12, 12-18 inches below grade (Sample NP-1).
- **Between NW Expansion Joint and Center Window**: collection of samples at 24" and 48" from building at 0-6, 6-12, 12-18 inches below grade (Sample NP-2).
- **Center Window**: collection of samples beyond the chain link fence at 60 inches from building at 0-6, 6-12, 12-18 inches below grade.

- **Between Center Window and Northeast Window**: collection of samples at 24" and 48" from building at 0-6, 6-12, 12-18 inches below grade (Sample NP-3).
- **Northeast Window**: collection of samples beyond chain link fence at 48, 60, and 72 inches from the building at 0-6, 6-12, 12-18 inches below grade.
- **Off Northeast Corner**: collection of samples at the intersection of 24" north and 12" east of the building northeast corner at 0-6, 6-12, 12-18 inches below grade.
- **Off East Side:** collection of sample at outside of fence at property boundary beyond fence (72" from building) at 0-6, 6-12, 12-18 inches below grade (Sample NP-4).

2.6.1.2 Soil Remediation Program

Following receipt and review of soil analytical data from the samples described above, Kleinfelder will prepare a supplement to this SIP for U.S. EPA review. The Supplemental SIP will define the limits of soil removal and describe methods for soil removal and Site restoration.

As discussed with U.S. EPA, soil removal will be conducted following demolition of the 21 Water Street building.

2.7 MANAGEMENT CATEGORIES

Based on the results of the 2011 and 2012 building materials surveys:

- Exterior window caulking at the 21 Water Street building contains PCBs at concentrations ranging from 110,000 to 993,000 mg/kg. Three window caulking samples were collected – based on these results, all window caulking from the 21 Water Street building will be presumed to be impacted with PCBs at a concentration of greater than 50 mg/kg and will managed as PCB Bulk Waste.
- Based on the concentrations of PCBs detected in the window caulking, CMU adjacent to the window caulking, up to a distance of approximately 6" outward along the face of the building, will be presumed to be impacted and will be managed as PCB Bulk Waste. The only other option would be to remove the caulking, then the windows and then sample the face of the inset adjacent to where the caulking contacted the CMU. As this would significantly impact the scheduling for removal of the caulking and adjacent CMU, this sampling program is considered a conservative approach. The planned removal program will remove the windows intact with the surrounding CMU to a lateral distance of 7" and dispose of the combined materials as PCB Bulk Waste.
- CMU surrounding the 21 Water Street building windows at a distance of approximately 6 inches contain PCBs below laboratory reporting limits or at concentrations of less than 1 mg/kg. Based on these results, CMU 6 inches and further from the window caulking is not regulated and will be disposed of or recycled as general construction waste.
- CMU surrounding cracks originating at the windows contain PCBs at less than 1 mg/kg and will be managed as general construction waste.
- Wall caulking in the interior of the 21 Water Street building contains PCBs at concentrations ranging from 18,400 mg/kg to 191,000 mg/kg. Based on these results, all interior wall

caulking will be presumed to contain PCBs at greater than 50 mg/kg and will be managed as PCB bulk waste.

- Based on the concentrations of PCB detected in the wall caulking, CMU within 6 inches of the wall caulking will be presumed to be impacted with PCBs at greater than 1 mg/kg, but less than 50 mg/kg. These building materials will be disposed of with the windows and associated caulking as PCB Bulk Waste.
- CMU at a distance of 6 inches and greater from the interior wall caulking contains PCBs at less than 1 mg/kg, if at all, and will be managed as unregulated general construction waste.
- Floor caulking in the interior of the 21 Water Street building contained PCBs at less than 50 mg/kg. There was no indication that the total PCB concentration in the caulk had been modified by subsequent activities. Therefore, the floor caulking is considered a Federally Excluded PCB Product.
- Based on the low concentrations of PCBs detected in the 21 Water Street floor caulking, the concrete floor of the building will be managed as general construction waste.
- Based on the results of the CMU sampling, including the analysis of cracks in the exterior building walls, and based on a visual inspection by Nover-Armstrong, there is no indication that soil or ground surfaces in the vicinity of the 21Water Street building are impacted by PCBs or will require additional sampling for management.
- Based on the results of the asphalt sampling program, certain paved areas of the property surrounding the building on the west, south and west sides have been impacted by PCBs at concentrations ≥ 1.0 ppm. These areas of impacted pavement will be removed and disposed of as PCB Remediation Waste (<50 ppm) in a landfill permitted to receive materials containing less than 50 ppm PCBs. Pavement will be saw-cut at locations where PCB concentrations have been confirmed to be less than 1.0 ppm and asphalt between the saw-cut and the building will be removed and disposed of. In the area of the existing stockpile, as discussed above, asphalt will be cut to as near as feasible to the face of the concrete blocks the side of the stockpile area; following removal of the stockpile and concrete blocks, the currently covered area will be sampled for PCB impacts. Additional asphalt removal will be conducted as required, based on the results of the asphalt sampling program.

3 REMEDIATION PROCEDURES

The goal of these building material remediation efforts is to remove all PCB Bulk Product Wastes, and any associated materials classified as PCB Remediation Waste, from the 21 Water Street building prior to building demolition. PCB Bulk Product Wastes (caulk) and building materials classified as PCB Remediation Waste will be removed using abatement work practices and engineering controls to limit the potential release of PCB dust and/or debris. No segregation of federally and non-federally regulated PCB wastes will be performed during removal and all PCB impacted material will be removed together; caulking and surrounding CMU will be disposed of together as PCB Bulk Product Waste. Pavement impacted by PCBs at ≥ 1.0 ppm will be removed and disposed of as PCB Remediation Waste (<50 ppm).

Soil has been confirmed at the rear of the building to have been impacted by PCBs ≥ 1.0 ppm. The full extent of soil impacts has not been determined to-date, pending completion of additional sampling on a property abutting the MBTA 21 Water Street property to the north. Per discussions with U.S. EPA, this SIP will be implemented in a phased approach. Following a determination of the limits of soil impacts, an amendment to this SIP detailing a proposed soil removal program will be prepared and submitted to U.S. EPA.

The work will be performed by a specialty contractor utilizing workers afforded appropriate hazard communication training and under the supervision of an appropriately educated and trained third party (Field Inspector) that can validate appropriate removal techniques and confirm thorough removal of identified materials. The contractor and Field Inspector have not yet been selected for the project. The Field Inspector shall be provided by the contractor.

Prior to beginning caulk removal, the contractor will establish exclusion and decontamination zones in accordance with OSHA guidelines. The areas will be taped off and proper signage will be installed to keep other workers or visitors out of the work area. The contractor will use poly sheeting to create decontamination zones as needed to perform work in each area.

At each window location, the window and associated caulk will be removed by removing the window intact from the building including surrounding CMU to a distance approximately ½ a block length, or six inches, from the window edge. Conservatively, the contactor may saw cut at seven inches. The window and surrounding CMU will then be containerized and transported offsite for appropriate disposal.

At the location of each wall seam identified as containing PCB caulk, the caulking material will be removed intact with the surrounding building material, by cutting with a cut-off saw or similar tool, at a distance of 6+ inches from the PCB caulk. The caulk and surrounding material will be containerized and transported offsite for appropriate disposal.

3.1 SAFETY AND MONITORING REQUIREMENTS

The abatement work will be performed as described above prior to demolition of the building, but after the building is vacated by its current occupants. It is anticipated that during abatement

activities, only abatement workers and related personnel will be in the remediation area. A control area, demarcated with barriers and signs, will be established outside of the regulated/containment areas. Only properly trained personnel associated with the removal and abatement will be allowed within the control area. The Field Inspector will maintain the control area and prevent unauthorized personnel from entering the area. Only those personnel actively working on the removal and abatement actions will be allowed within the regulated/containment area, and then only when equipped with the appropriate Personal Protective Equipment (PPE), which will be include, but not be limited to, gloves, rubber boots, Tyvek suits, half and / or full face respirators (with combined oil/gas and particulate filter cartridges), and safety glasses.

During removal activities, dust monitoring will be performed in the control area immediately outside of the regulated/containment area. Monitoring will be performed for total suspended particulates (TSP) (dust). The background concentration within each control area will be determined prior to remedial actions and a control area background level will be established. If, during the performance of air monitoring during removal, the dust levels outside the regulated/containment area are observed to increase by 20% over the background level determined prior to the remediation, the contractor shall stop work, and inspect and/or reestablish the regulated/containment area and associated engineering controls. The contractor will then decontaminate the control area if it is determined that engineering controls were not functioning properly.

3.2 ENGINEERING CONTROL DESCRIPTIONS

3.2.1 Interior Building Remediation

Interior remediation procedures are as follows:

- Areas where PCB bulk products will be removed are to be pre-cleaned using HEPA filtered equipment and/or wet methods as appropriate to collect all loose dust and debris which may contain PCB.
- Because PCB remediation will be performed prior to building demolition but after the building is vacated, all movable objects are anticipated to have been removed from the work area prior to the start of work. Fixed objects will be enclosed with one layer of six mil polyethylene sheeting sealed with tape.
- Any openings between the Remediation Area and non-remediation areas will be sealed off with critical barriers consisting of a minimum of one layer of six mil polyethylene sheeting sealed with tape.
- The Contractor shall cover the wall caulking and surrounding CMU to a distance of approximately six-inches with one layer of six mil polyethylene sheeting sealed securely to the surrounding with tape and adhesives.
- The Contractor shall saw-cut the surrounding CMU at a distance of approximately six inches from the caulking in all directions and remove the CMU and windows including caulking intact. The caulking and surrounding CMU will then be containerized and transported offsite for appropriate disposal. Note that the Contractor shall saw-cut from either the interior and/or exterior to facilitate intact removal of the window, surrounding CMU and the concrete sill beneath each window.

- Signs will be posted outside the enclosure to deter unauthorized personnel from entering the building.
- Removal work practices within the regulated area will be implemented which facilitate the removal of the PCB Bulk Product Waste and associated CMU while also limiting the amount of dust and debris generated.
- All building materials removed during the remediation will be wrapped in polyethylene sheeting and transported to the waste storage area. The poly sheeting will be secured with tape to ensure that dust is not released during the transport; the contractor will be responsible for the remediation of any new releases caused by spillage.

3.2.2 Exterior Building Remediation

Exterior remediation procedures are as follows:

- Pavement surrounding the building where PCB concentrations have been identified to be ≥ 1.0 ppm will be removed and disposed of as PCB Remediation Waste (<50 ppm).
- The ground adjacent to and beneath the areas where PCB Bulk Product and Remediation Waste will removed will be protected by the contractor during the remediation activities. Ground surfaces in the regulated area will be covered with two layers of six mil polyethylene sheeting and secured to prevent movement to capture and collect debris generated. The sheeting will extend a minimum of ten feet beyond the building area to be remediated.
- Each window will be sealed on the interior and the exterior with a minimum of one layer of six mil polyethylene sheeting with the edges sealed with tape and adhesive.
- Each window and surrounding CMU will be removed intact to minimize the potential for generation of dust or release of PCB-containing materials.
- Signs will be posted outside the enclosure to deter unauthorized personnel from entering.
- Removal work practices within the regulated containment will be implemented which facilitate the removal of the PCB Bulk Product Waste and associated CMU while also limiting the amount of dust and debris generated.
- All building materials removed during the remediation will be wrapped in polyethylene sheeting and transported to the waste storage area. The poly sheeting will be secured with tape to ensure that no dust is released during the transport and the contractor will be responsible for the remediation of any new releases caused by spillage.

3.3 VERIFICATION SAMPLING FOR BUILDING MATERIALS

Bulk sampling of the substrate material (CMU blocks) was conducted in accordance with Subpart N of the regulations. Samples at a distance of approximately six inches from the location of the PCB Bulk Product (caulk) indicated PCB concentrations less than 1 mg/kg with the exception of at location Wall 3-3 where total PCB concentrations of 1.8 PPM were reported. Building materials

within six inches of the caulk will be removed and disposed of together with the PCB Bulk Product. As MBTA conducted supplemental sampling of 25% of the windows and given the consistency of the caulking and the building construction, this number of samples is considered to be adequate in that the non-sampled locations are presumed to also be constructed using PCB-containing caulks and will be managed as such. Additional verification sampling is not required with the exception of at location Wall 3-3. CMU at this location will be removed laterally outside the limits of the sample collection points representing location Wall 3-3. Confirmatory sampling will be conducted following removal of the caulking and of the CMU outside of sample location Wall 3-3.

3.4 WASTE CHARACTERIZATION, TRANSPORT, AND DISPOSAL

Wastes will be pre-characterized to the satisfaction of the selected disposal facility(s) prior to remedial activities. All wastes generated during building remediation activities will be shipped for disposal as combined PCB Remediation and Bulk Product Waste at a TSCA-permitted facility.

3.5 EQUIPMENT DECONTAMINATION

All moveable equipment, tools, and sampling equipment which has contacted the PCB Bulk Product or Remediation Wastes will be decontaminated prior to leaving the site. Decontamination procedures will comply with either §761.79(b)(3)(i)(A), §761(79(b)(3)(ii)(A) or §761.79(c)(2).

All decontamination wastes, PPE, and polyethylene that come in contact with the PCB Bulk Product or Remediation Wastes will be disposed of as PCB Bulk Product Waste. These wastes will be segregated as to matrix (aqueous, non-aqueous liquids, or solid materials [such as PPE]) and stored in drums or lined containers prior to transport from the site for disposal. Polyethylene sheeting used to contain window or wall caulking will remain on the removed CMU and be disposed of with those materials.

Rinse waters will be tested for PCB content and shipped offsite for disposal at a facility permitted to receive such wastes. Solid wastes will be containerized with the other regulated PCB wastes generated during the remediation project for transport and disposal.

3.6 NOTIFICATION AND CERTIFICATION

The removal and abatement measures described within this SIP will be initiated after receiving written approval of the plan from EPA. Notification of intent to perform these remedial measures is provided to EPA with this submittal.

Also enclosed with this submittal in Appendix D, in accordance with EPA 40 CFR 761.61(a)(3), is a written certification from MBTA stating the location of all reports detailing sample collection and analysis procedures used to assess or characterize the PCB contamination for this SIP that are available for EPA inspection.

4 DOCUMENTATION

4.1 FIELD NOTES

The Field Inspector will maintain a daily log of on-Site activities. The log will include, at a minimum, the following:

- Record of daily health and safety meeting
- Personnel and equipment on site
- Field procedures and observations
- Remediation progress and extents
- Sample locations, selection criteria, samples collected, analyses performed, and sample handling procedures
- Instructions given or received (telephone or verbal)
- Equipment decontamination procedures
- Building structure substrate testing
- Waste transporter information

4.2 PHOTOGRAPHS

Photographs will be taken of representative activities such as containment and remediation. The final extents of the remediation will also be photographed. Selected photographs will be included in the Remedial Action Report.

4.3 REPORT

The RAR will be prepared upon receipt of certifications of treatment/disposal from the treatment /disposal facility. The RAR will include the following:

- Site description
- A description of field procedures
- A photographic record of the remediation
- Waste characterization sample data
- Waste transport and treatment disposal information
- Copies of waste manifests and bills of lading

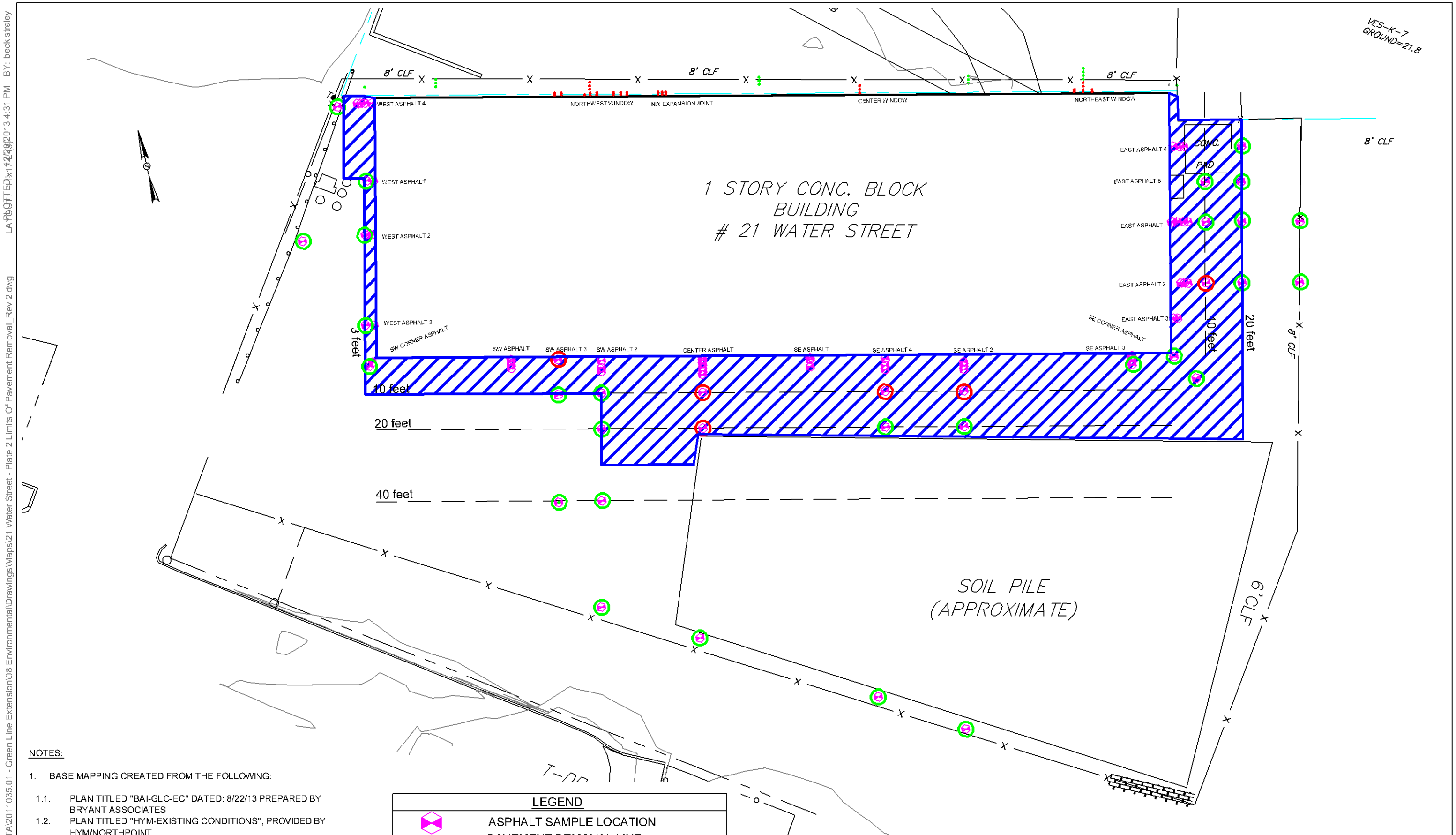
4.4 TRANSPORT AND TREATMENT/DISPOSAL CERTIFICATIONS

Manifests and/or Bills of Lading for the transportation, treatment and disposal of waste materials and certifications for the treatment or disposal of the wastes, if necessary, will be obtained from the transport and from the treatment/disposal facility.

4.5 RECORDKEEPING

All records and documents required by 40 CFR Part 761, including all those records required under Subpart K, will be prepared for and maintained by the MBTA. The records shall be maintained in a centralized location for a minimum of three years and will be available for inspection by representatives of EPA if requested.

FIGURES



NOTES:

1. BASE MAPPING CREATED FROM THE FOLLOWING:

1.1. PLAN TITLED "BAI-GLC-EC" DATED: 8/22/13 PREPARED BY BRYANT ASSOCIATES

1.2. PLAN TITLED "HYM-EXISTING CONDITIONS", PROVIDED BY HYM/NORTHPOINT

0 25 50 Feet

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.

LEGEND

- ASPHALT SAMPLE LOCATION
- PAVEMENT REMOVAL LINE
- LIMITS OF CONFIRMED PCB IMPACT
- PCB CONCENTRATION <0.95 mg/kg
- PCB CONCENTRATION >0.95 mg/kg
- SOIL SAMPLE LOCATION
- SOIL SAMPLE LOCATION - PROPOSED

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.	20120096
DRAWN BY	BJS
CHECKED BY	RKQ
DATE:	10/22/2013
REVISED:	

21 WATER STREET
LIMITS OF PAVEMENT REMOVAL

GREEN LINE EXTENSION
21 WATER STREET

FIGURE
1

CAD FILE: G:_clients\MBTA\2011035.01 - Green Line Extension\08 Environmental\Drawings\Maps\21 Water Street - Plate 2 Limits Of Pavement Removal_Rev 2.dwg
LAYOUT: D-x1 12/20/2013 4:31 PM BY: beck straley

TABLES

GLX 21 Water Street
Asphalt Sampling Results
Round 1

Parameter	SAMPLING LOCATION						
	Center Asphalt 6in	Center Window Soil 24in (0-6in)	Center Window Soil 36in (0-6in)	Center Window Soil 6in (0-6in)	E Asphalt 6in	NE Window Soil 12in (6-12in)	NE Window Soil 24in (0-6in)
Sampling Date	7/17/2013 8:50:00 AM	7/17/2013 10:50:00 AM	7/17/2013 11:00:00 AM	7/17/2013 10:15:00 AM	7/17/2013 9:15:00 AM	7/17/2013 11:40:00 AM	7/17/2013 11:45:00 AM
Sample Distance (From Building)	6- Inches	6-12 Inches	6-12 Inches	6-12 Inches	6- Inches	6-12 Inches	6-12 Inches
SM 2540G (% Wt)							
% Solids	NT	89.6	90.2	89.6	NT	93.8	90.6
SW-846 8082A (mg/Kg dry)							
PCB 1016	ND (0.88)	ND (0.11)	ND (0.11)	ND (0.44)	ND (0.92)	ND (0.42)	ND (0.43)
PCB 1221	ND (0.88)	ND (0.11)	ND (0.11)	ND (0.44)	ND (0.92)	ND (0.42)	ND (0.43)
PCB 1232	ND (0.88)	ND (0.11)	ND (0.11)	ND (0.44)	ND (0.92)	ND (0.42)	ND (0.43)
PCB 1242	ND (0.88)	ND (0.11)	ND (0.11)	ND (0.44)	ND (0.92)	ND (0.42)	ND (0.43)
PCB 1248	ND (0.88)	ND (0.11)	ND (0.11)	ND (0.44)	ND (0.92)	ND (0.42)	ND (0.43)
PCB 1254	ND (0.88)	ND (0.11)	ND (0.11)	ND (0.44)	ND (0.92)	ND (0.42)	ND (0.43)
PCB 1260	**1.9**	**0.99**	**0.88**	**2.8**	**1.1**	**2.3**	**3.2**
PCB 1262	ND (0.88)	ND (0.11)	ND (0.11)	ND (0.44)	ND (0.92)	ND (0.42)	ND (0.43)
PCB 1268	ND (0.88)	ND (0.11)	ND (0.11)	ND (0.44)	ND (0.92)	ND (0.42)	ND (0.43)
TOTAL PCBs	**1.9**	**0.99**	**0.88**	**2.8**	**1.1**	**2.3**	**3.2**

Parameter	SAMPLING LOCATION							
	NE Window Soil 36in (0-6in)	NW Window Soil 12in (6-12in)	NW Window Soil 24in (0-6in)	NW Window Soil 36in (0-6in)	NW Window Soil 48in (0-6in)	SE Asphalt 6in	SW Asphalt 6in	SW Asphalt 6in Dup
Sampling Date	7/17/2013 11:50:00 AM	7/17/2013 9:40:00 AM	7/17/2013 10:25:00 AM	7/17/2013 10:45:00 AM	7/17/2013 11:20:00 AM	7/17/2013 9:00:00 AM	7/17/2013 8:35:00 AM	7/17/2013 8:35:00 AM
Sample Distance (From Building)	6-12 Inches	6-12 Inches	6-12 Inches	6-12 Inches	6-12 Inches	6- Inches	6- Inches	6- Inches
SM 2540G (% Wt)								
% Solids	93.0	92.1	88.9	90.2	91.0	NT	NT	NT
SW-846 8082A (mg/Kg dry)								
PCB 1016	ND (0.42)	ND (0.11)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.77)	ND (0.19)	ND (0.17)
PCB 1221	ND (0.42)	ND (0.11)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.77)	ND (0.19)	ND (0.17)
PCB 1232	ND (0.42)	ND (0.11)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.77)	ND (0.19)	ND (0.17)
PCB 1242	ND (0.42)	ND (0.11)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.77)	ND (0.19)	ND (0.17)
PCB 1248	ND (0.42)	ND (0.11)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.77)	ND (0.19)	ND (0.17)
PCB 1254	ND (0.42)	ND (0.11)	ND (0.21)	ND (0.11)	0.12	ND (0.77)	ND (0.19)	ND (0.17)
PCB 1260	**2**	**0.83**	**1.5**	**0.68**	**0.38**	**2.5**	**0.26**	**0.29**
PCB 1262	ND (0.42)	ND (0.11)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.77)	ND (0.19)	ND (0.17)
PCB 1268	ND (0.42)	ND (0.11)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.77)	ND (0.19)	ND (0.17)
TOTAL PCBs	**2**	**0.83**	**1.5**	**0.68**	**0.38**	**2.5**	**0.26**	**0.29**

NOTES:
1. An asterisk (*) following a detection limit indicates that the minimum laboratory reporting limit exceeds one or more of the regulatory criteria.
2. ND = Not detected above the lab reporting limits shown in parenthesis.
5. Shaded values exceed the TSCA Limit of 1 ppm
6. Bolded values were detected above laboratory reporting limits

21 Water Street
Asphalt Sampling Round 2

Parameter	SAMPLING LOCATION				
	Center Asphalt 12in	Center Asphalt 24in	East 3 Asphalt 12in	East 3 Asphalt 24in	East Asphalt 12in
Sampling Date	7/31/2013 11:00:00 AM	7/31/2013 11:15:00 AM	7/31/2013 1:00:00 PM	7/31/2013 1:20:00 PM	7/31/2013 12:50:00 PM
Sample Distance (From Building)	12- Inches	24- Inches	12- Inches	24- Inches	12- Inches
SM 2540G (% Wt)					
% Solids	NT	NT	NT	NT	NT
SW-846 8082A (mg/Kg dry)					
PCB 1016	ND (0.97)	ND (1.0)	ND (0.97)	ND (0.092)	ND (0.097)
PCB 1221	ND (0.97)	ND (1.0)	ND (0.97)	ND (0.092)	ND (0.097)
PCB 1232	ND (0.97)	ND (1.0)	ND (0.97)	ND (0.092)	ND (0.097)
PCB 1242	ND (0.97)	ND (1.0)	ND (0.97)	ND (0.092)	ND (0.097)
PCB 1248	ND (0.97)	ND (1.0)	ND (0.97)	ND (0.092)	ND (0.097)
PCB 1254	ND (0.97)	ND (1.0)	ND (0.97)	ND (0.092)	ND (0.097)
PCB 1260	**1.4**	**1.1**	**2**	**0.51**	**0.63**
PCB 1262	ND (0.97)	ND (1.0)	ND (0.97)	ND (0.092)	ND (0.097)
PCB 1268	ND (0.97)	ND (1.0)	ND (0.97)	ND (0.092)	ND (0.097)
TOTAL PCBs	**1.4**	**1.1**	**2**	**0.51**	**0.63**

Parameter	SAMPLING LOCATION						
	East Asphalt 24in	Southeast 2 Asphalt 24in	Southeast Asphalt 12in	Southeast Corner Asphalt 24in	Southwest Asphalt 12in	Southwest Asphalt 24in	Southwest Corner Asphalt 12 in DUP
Sampling Date	7/31/2013 1:00:00 PM	7/31/2013 12:15:00 PM	7/31/2013 11:20:00 AM	7/31/2013 12:45:00 PM	7/31/2013 10:30:00 AM	7/31/2013 10:40:00 AM	7/31/2013 10:00:00 AM
Sample Distance (From Building)	24- Inches	24- Inches	12- Inches	6- Inches	12- Inches	24- Inches	12- Inches
SM 2540G (% Wt)							
% Solids	NT	NT	NT	NT	NT	NT	NT
SW-846 8082A (mg/Kg dry)							
PCB 1016	ND (0.93)	ND (0.97)	ND (0.096)	ND (0.098)	ND (0.099)	ND (0.099)	ND (0.096)
PCB 1221	ND (0.93)	ND (0.97)	ND (0.096)	ND (0.098)	ND (0.099)	ND (0.099)	ND (0.096)
PCB 1232	ND (0.93)	ND (0.97)	ND (0.096)	ND (0.098)	ND (0.099)	ND (0.099)	ND (0.096)
PCB 1242	ND (0.93)	ND (0.97)	ND (0.096)	ND (0.098)	ND (0.099)	ND (0.099)	ND (0.096)
PCB 1248	ND (0.93)	ND (0.97)	ND (0.096)	ND (0.098)	ND (0.099)	ND (0.099)	ND (0.096)
PCB 1254	ND (0.93)	ND (0.97)	ND (0.096)	ND (0.098)	ND (0.099)	ND (0.099)	ND (0.096)
PCB 1260	**1.1**	**1.9**	0.56	0.26	ND (0.099)	ND (0.099)	**0.099**
PCB 1262	ND (0.93)	ND (0.97)	ND (0.096)	ND (0.098)	ND (0.099)	ND (0.099)	ND (0.096)
PCB 1268	ND (0.93)	ND (0.97)	ND (0.096)	ND (0.098)	ND (0.099)	ND (0.099)	ND (0.096)
TOTAL PCBs	**1.1**	**1.9**	**0.56**	**0.26**	ND (0.099)	ND (0.099)	**0.099**

Parameter	SAMPLING LOCATION					
	Southwest Corner Asphalt 12in	Southwest Corner Asphalt 24in	West 2 Asphalt 12in	West 2 Asphalt 24in	West 3 Asphalt 6in	West Asphalt 6in
Sampling Date	7/31/2013 10:00:00 AM	7/31/2013 10:15:00 AM	7/31/2013 9:00:00 AM	7/31/2013 9:25:00 AM	7/31/2013 9:50:00 AM	7/31/2013 8:25:00 AM
Sample Distance (From Building)	12- Inches	24- Inches	12- Inches	24- Inches	6- Inches	6- Inches
SM 2540G (% Wt)						
% Solids	NT	NT	NT	NT	NT	NT
SW-846 8082A (mg/Kg dry)						
PCB 1016	ND (0.097)	ND (0.097)	ND (0.99)	ND (0.097)	ND (0.098)	ND (0.97)
PCB 1221	ND (0.097)	ND (0.097)	ND (0.99)	ND (0.097)	ND (0.098)	ND (0.97)
PCB 1232	ND (0.097)	ND (0.097)	ND (0.99)	ND (0.097)	ND (0.098)	ND (0.97)
PCB 1242	ND (0.097)	ND (0.097)	ND (0.99)	ND (0.097)	ND (0.098)	ND (0.97)
PCB 1248	ND (0.097)	ND (0.097)	ND (0.99)	ND (0.097)	ND (0.098)	ND (0.97)
PCB 1254	ND (0.097)	ND (0.097)	ND (0.99)	ND (0.097)	ND (0.098)	ND (0.97)
PCB 1260	ND (0.097)	ND (0.097)	**1.8**	**0.89**	**0.21**	**2.8**
PCB 1262	ND (0.097)	ND (0.097)	ND (0.99)	ND (0.097)	ND (0.098)	ND (0.97)
PCB 1268	ND (0.097)	ND (0.097)	ND (0.99)	ND (0.097)	ND (0.098)	ND (0.97)
TOTAL PCBs	**0**	**0**	**1.8**	**0.89**	**0.21**	**2.8**

21 Water Street
Asphalt Sampling Round 2

Parameter	SAMPLING LOCATION					
	Center Asphalt 36in	East 2 Asphalt 36in	East 2 Asphalt 36 in DUP	Southeast Asphalt 36in	West 3 Asphalt 36in	West Asphalt 36in
Sampling Date	7/31/2013 11:30:00 AM	7/31/2013 1:20:00 PM	7/31/2013 1:20:00 PM	7/31/2013 11:35:00 AM	7/31/2013 10:10:00 AM	7/31/2013 8:45:00 AM
Sample Distance (From Building)	36- Inches	36- Inches	36- Inches	36- Inches	6- Inches	36- Inches
SW-846 8082A (mg/Kg)						
PCB 1016	ND (0.92)	ND (0.99)	ND (0.96)	ND (0.095)	ND (0.099)	ND (0.10)
PCB 1221	ND (0.92)	ND (0.99)	ND (0.96)	ND (0.095)	ND (0.099)	ND (0.10)
PCB 1232	ND (0.92)	ND (0.99)	ND (0.96)	ND (0.095)	ND (0.099)	ND (0.10)
PCB 1242	ND (0.92)	ND (0.99)	ND (0.96)	ND (0.095)	ND (0.099)	ND (0.10)
PCB 1248	ND (0.92)	ND (0.99)	ND (0.96)	ND (0.095)	ND (0.099)	ND (0.10)
PCB 1254	ND (0.92)	ND (0.99)	ND (0.96)	ND (0.095)	ND (0.099)	ND (0.10)
PCB 1260	**0.93**	**1.1**	**1**	**0.39**	ND (0.099)	**0.54**
PCB 1262	ND (0.92)	ND (0.99)	ND (0.96)	ND (0.095)	ND (0.099)	ND (0.10)
PCB 1268	ND (0.92)	ND (0.99)	ND (0.96)	ND (0.095)	ND (0.099)	ND (0.10)
TOTAL PCBs	**0.93**	**1.1**	**1**	**0.39**	ND	**0.54**

Parameter	SAMPLING LOCATION		
	Southeast 3 Asphalt 12in	Southeast 3 Asphalt 24in	Southeast 3 Asphalt 6in
Sampling Date	8/1/2013 8:35:00 AM	8/1/2013 8:50:00 AM	8/1/2013 8:20:00 AM
Sample Distance (From Building)	6- Inches	6- Inches	6- Inches
SW-846 8082A (mg/Kg)			
PCB 1016	ND (0.083)	ND (0.095)	ND (0.080)
PCB 1221	ND (0.083)	ND (0.095)	ND (0.080)
PCB 1232	ND (0.083)	ND (0.095)	ND (0.080)
PCB 1242	ND (0.083)	ND (0.095)	ND (0.080)
PCB 1248	ND (0.083)	ND (0.095)	ND (0.080)
PCB 1254	ND (0.083)	ND (0.095)	ND (0.080)
PCB 1260	0.87	0.85	0.18
PCB 1262	ND (0.083)	ND (0.095)	ND (0.080)
PCB 1268	ND (0.083)	ND (0.095)	ND (0.080)
TOTAL PCBs	**0.87**	**0.85**	**0.18**

GLX 21 Water Street
Asphalt Sampling Program
Round 3

Parameter	SAMPLING LOCATION						
	Center Asphalt (4ft)	**Center Asphalt (5ft)**	**East Asphalt (4ft)**	**East Asphalt (5ft)**	**East Asphalt 2 (4ft)**	**East Asphalt 2 (4ft)_DUP**	**East Asphalt 2 (5ft)**
Sampling Date	9/6/2013 8:45:00 AM	9/6/2013 9:00:00 AM	9/6/2013 11:00:00 AM	9/6/2013 11:15:00 AM	9/6/2013 10:30:00 AM	9/6/2013 10:30:00 AM	9/6/2013 10:45:00 AM
Sample Distance (From Building)	4- Feet	5- Feet	4- Feet	5- Feet	4- Feet	4- Feet	5- Feet
SW-846 8082A (mg/Kg)							
PCB 1016	ND (0.10)	ND (0.097)	ND (0.10)	ND (0.093)	ND (0.097)	ND (0.096)	ND (0.095)
PCB 1221	ND (0.10)	ND (0.097)	ND (0.10)	ND (0.093)	ND (0.097)	ND (0.096)	ND (0.095)
PCB 1232	ND (0.10)	ND (0.097)	ND (0.10)	ND (0.093)	ND (0.097)	ND (0.096)	ND (0.095)
PCB 1242	ND (0.10)	ND (0.097)	ND (0.10)	ND (0.093)	ND (0.097)	ND (0.096)	ND (0.095)
PCB 1248	ND (0.10)	ND (0.097)	ND (0.10)	ND (0.093)	ND (0.097)	ND (0.096)	ND (0.095)
PCB 1254	0.2	0.25	0.28	0.4	0.15	0.14	0.15
PCB 1260	0.75	0.84	0.84	1	0.54	0.48	0.49
PCB 1262	ND (0.10)	ND (0.097)	ND (0.10)	ND (0.093)	ND (0.097)	ND (0.096)	ND (0.095)
PCB 1268	ND (0.10)	ND (0.097)	ND (0.10)	ND (0.093)	ND (0.097)	ND (0.096)	ND (0.095)
TOTAL PCBs	**0.95**	**1.09**	**1.12**	**1.4**	**0.69**	**0.62**	**0.64**

Parameter	SAMPLING LOCATION							
	East Asphalt 4 (1ft)	**East Asphalt 4 (3ft)**	**East Asphalt 4 (4ft)**	**Southeast Asphalt 2 (3ft)**	**Southeast Asphalt 2 (3ft)_DUP**	**Southeast Asphalt 2 (4ft)**	**Southeast Asphalt 4 (1ft)**	**Southeast Asphalt 4 (3ft)**
Sampling Date	9/6/2013 11:30:00 AM	9/6/2013 11:45:00 AM	9/6/2013 12:00:00 PM	9/6/2013 10:00:00 AM	9/6/2013 10:00:00 AM	9/6/2013 10:15:00 AM	9/6/2013 9:15:00 AM	9/6/2013 9:30:00 AM
Sample Distance (From Building)	1- Feet	3- Feet	4- Feet	3- Feet	3- Feet	4- Feet	1- Feet	3- Feet
SW-846 8082A (mg/Kg)								
PCB 1016	ND (0.099)	ND (0.093)	ND (0.097)	ND (0.093)	ND (0.093)	ND (0.095)	ND (0.10)	ND (0.095)
PCB 1221	ND (0.099)	ND (0.093)	ND (0.097)	ND (0.093)	ND (0.093)	ND (0.095)	ND (0.10)	ND (0.095)
PCB 1232	ND (0.099)	ND (0.093)	ND (0.097)	ND (0.093)	ND (0.093)	ND (0.095)	ND (0.10)	ND (0.095)
PCB 1242	ND (0.099)	ND (0.093)	ND (0.097)	ND (0.093)	ND (0.093)	ND (0.095)	ND (0.10)	ND (0.095)
PCB 1248	ND (0.099)	ND (0.093)	ND (0.097)	ND (0.093)	ND (0.093)	ND (0.095)	ND (0.10)	ND (0.095)
PCB 1254	ND (0.099)	ND (0.093)	ND (0.097)	0.5	0.48	0.68	0.33	0.34
PCB 1260	0.8	0.14	0.13	1	0.82	0.73	0.91	0.98
PCB 1262	ND (0.099)	ND (0.093)	ND (0.097)	ND (0.093)	ND (0.093)	ND (0.095)	ND (0.10)	ND (0.095)
PCB 1268	ND (0.099)	ND (0.093)	ND (0.097)	ND (0.093)	ND (0.093)	ND (0.095)	ND (0.10)	ND (0.095)
TOTAL PCBs	**0.8**	**0.14**	**0.13**	**1.5**	**1.3**	**1.41**	**1.24**	**1.32**

Parameter								
	Southeast Asphalt 4 (4ft)	**Southwest Asphalt 2 (1ft)**	**Southwest Asphalt 2 (3ft)**	**Southwest Asphalt 2 (4ft)**	**West Asphalt 2 (3ft)**	**West Asphalt 4 (1ft)**	**West Asphalt 4 (3ft)**	**West Asphalt 4 (4ft)**
Sampling Date	9/6/2013 9:45:00 AM	9/6/2013 8:00:00 AM	9/6/2013 8:15:00 AM	9/6/2013 8:30:00 AM	9/6/2013 7:45:00 AM	9/6/2013 7:00:00 AM	9/6/2013 7:15:00 AM	9/6/2013 7:30:00 AM
Sample Distance (From Building)	4- Feet	1- Feet	3- Feet	4- Feet	3- Feet	1- Feet	3- Feet	4- Feet
SW-846 8082A (mg/Kg)								
PCB 1016	ND (0.10)	ND (0.20)	ND (0.095)	ND (0.098)	ND (0.10)	ND (0.10)	ND (0.096)	ND (0.097)
PCB 1221	ND (0.10)	ND (0.20)	ND (0.095)	ND (0.098)	ND (0.10)	ND (0.10)	ND (0.096)	ND (0.097)
PCB 1232	ND (0.10)	ND (0.20)	ND (0.095)	ND (0.098)	ND (0.10)	ND (0.10)	ND (0.096)	ND (0.097)
PCB 1242	ND (0.10)	ND (0.20)	ND (0.095)	ND (0.098)	ND (0.10)	ND (0.10)	ND (0.096)	ND (0.097)
PCB 1248	ND (0.10)	ND (0.20)	ND (0.095)	ND (0.098)	ND (0.10)	ND (0.10)	ND (0.096)	ND (0.097)
PCB 1254	0.22	0.46	0.29	0.33	0.18	0.22	0.24	0.26
PCB 1260	0.75	1.6	0.75	1	0.41	1.2	0.66	1
PCB 1262	ND (0.10)	ND (0.20)	ND (0.095)	ND (0.098)	ND (0.10)	ND (0.10)	ND (0.096)	ND (0.097)
PCB 1268	ND (0.10)	ND (0.20)	ND (0.095)	ND (0.098)	ND (0.10)	ND (0.10)	ND (0.096)	ND (0.097)
TOTAL PCBs	**0.97**	**2.06**	**1.04**	**1.33**	**0.59**	**1.42**	**0.9**	**1.26**

NOTES:
1. An asterisk (*) following a detection limit indicates that the minimum laboratory reporting limit exceeds one or more of the regulatory criteria.
2. ND = Not detected above the lab reporting limits shown in parenthesis.
5. Shaded values exceed the TSCA Limit of 1 ppm
6. Bolded values were detected above laboratory reporting limits

GLX 21 Water Street
Asphalt Sampling Program
Round 4

Parameter	SAMPLING LOCATION						
	Center Asphalt (10')	Center Asphalt (20')	Center Asphalt (Fence)	East Asphalt (10')	East Asphalt (20')	East Asphalt (Fence)	East Asphalt 2 (10')
Sampling Date	9/25/2013 8:25:00 AM	9/25/2013 8:30:00 AM	9/25/2013 9:00:00 AM	9/25/2013 12:40:00 PM	9/25/2013 12:50:00 PM	9/25/2013 1:40:00 PM	9/25/2013 12:10:00 PM
Sample Distance (From Building)	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet
SW-846 8082A (mg/Kg)							
PCB 1016	ND (0.49)	ND (0.49)	ND (0.29)	ND (0.49)	ND (0.43)	ND (0.27)	ND (0.49)
PCB 1221	ND (0.49)	ND (0.49)	ND (0.29)	ND (0.50)	ND (0.43)	ND (0.27)	ND (0.49)
PCB 1232	ND (0.49)	ND (0.49)	ND (0.29)	ND (0.50)	ND (0.43)	ND (0.27)	ND (0.49)
PCB 1242	ND (0.49)	ND (0.49)	ND (0.29)	ND (0.49)	ND (0.43)	ND (0.27)	ND (0.49)
PCB 1248	ND (0.49)	ND (0.49)	ND (0.29)	ND (0.50)	ND (0.43)	ND (0.27)	ND (0.49)
PCB 1254	ND (0.49)	**2.0**	ND (0.29)	ND (0.50)	ND (0.43)	ND (0.27)	ND (0.49)
PCB 1260	**1**	**0.91**	ND (0.29)	**0.84**	**0.83**	ND (0.27)	**0.98**
PCB 1262	ND (0.49)	ND (0.49)	ND (0.29)	ND (0.50)	ND (0.43)	ND (0.27)	ND (0.49)
PCB 1268	ND (0.49)	ND (0.49)	ND (0.29)	ND (0.50)	ND (0.43)	ND (0.27)	ND (0.49)
Total PCBs	1	2.91	ND (0.29)	**0.84**	**0.83**	ND (0.27)	0.98

Parameter	SAMPLING LOCATION						
	East Asphalt 2 (10')_DUP	East Asphalt 2 (19')	East Asphalt 2 (Fence)	East Asphalt 4 (20')	East Asphalt 5 (10')	East Asphalt 5 (20')	Southeast Asphalt 2 (10')
Sampling Date	9/25/2013 12:10:00 PM	9/25/2013 12:20:00 PM	9/25/2013 12:30:00 PM	9/25/2013 1:20:00 PM	9/25/2013 1:00:00 PM	9/25/2013 1:10:00 PM	9/25/2013 8:45:00 AM
Sample Distance (From Building)	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet
SW-846 8082A (mg/Kg)							
PCB 1016	ND (0.29)	ND (0.27)	ND (0.27)	ND (0.30)	ND (0.48)	ND (0.29)	ND (0.49)
PCB 1221	ND (0.29)	ND (0.27)	ND (0.27)	ND (0.30)	ND (0.48)	ND (0.29)	ND (0.49)
PCB 1232	ND (0.29)	ND (0.27)	ND (0.27)	ND (0.30)	ND (0.48)	ND (0.29)	ND (0.49)
PCB 1242	ND (0.29)	ND (0.27)	ND (0.27)	ND (0.30)	ND (0.48)	ND (0.29)	ND (0.49)
PCB 1248	ND (0.29)	ND (0.27)	ND (0.27)	ND (0.30)	ND (0.48)	ND (0.29)	ND (0.49)
PCB 1254	ND (0.29)	ND (0.27)	ND (0.27)	ND (0.30)	ND (0.48)	ND (0.29)	1.1
PCB 1260	**0.51**	ND (0.27)	ND (0.27)	**0.53**	**0.93**	ND (0.29)	**0.72**
PCB 1262	ND (0.29)	ND (0.27)	ND (0.27)	ND (0.30)	ND (0.48)	ND (0.29)	ND (0.49)
PCB 1268	ND (0.29)	ND (0.27)	ND (0.27)	ND (0.30)	ND (0.48)	ND (0.29)	ND (0.49)
Total PCBs	**0.51**	ND (0.27)	ND (0.27)	0.53	**0.93**	0	1.82

Parameter	SAMPLING LOCATION							
	Southeast Asphalt 2 (20')	Southeast Asphalt 2 (Fence)	Southeast Asphalt 4 (10')	Southeast Asphalt 4 (20')	Southeast Asphalt 4 (Fence)	Southeast Corner Asphalt 2 (10')	Southwest Asphalt 2 (10')	Southwest Asphalt 2 (20')
Sampling Date	9/25/2013 8:50:00 AM	9/25/2013 9:10:00 AM	9/25/2013 8:35:00 AM	9/25/2013 8:40:00 AM	9/25/2013 9:05:00 AM	9/25/2013 12:00:00 PM	9/25/2013 8:00:00 AM	9/25/2013 8:05:00 AM
Sample Distance (From Building)	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet
SW-846 8082A (mg/Kg)								
PCB 1016	ND (0.29)	ND (0.30)	ND (0.48)	ND (0.49)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)
PCB 1221	ND (0.29)	ND (0.30)	ND (0.48)	ND (0.49)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)
PCB 1232	ND (0.29)	ND (0.30)	ND (0.48)	ND (0.49)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)
PCB 1242	ND (0.29)	ND (0.30)	ND (0.48)	ND (0.49)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)
PCB 1248	ND (0.29)	ND (0.30)	ND (0.48)	ND (0.49)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)
PCB 1254	ND (0.29)	ND (0.30)	ND (0.48)	ND (0.49)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)
PCB 1260	**0.35**	ND (0.30)	**0.95**	**0.81**	ND (0.29)	**0.38**	**0.65**	**0.74**
PCB 1262	ND (0.29)	ND (0.30)	ND (0.48)	ND (0.49)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)
PCB 1268	ND (0.29)	ND (0.30)	ND (0.48)	ND (0.49)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)
Total PCBs	**0.35**	ND (0.30)	0.95	**0.81**	ND (0.29)	**0.38**	**0.65**	**0.74**

Parameter	SAMPLING LOCATION							
	Southwest Asphalt 2 (40')	Southwest Asphalt 2 (40')_DUP	Southwest Asphalt 2 (Fence)	Southwest Asphalt 3 (10')	Southwest Asphalt 3 (40')	Southwest Asphalt 3 (6'')	West Asphalt 2 (20')	West Asphalt 4 (12.5')
Sampling Date	9/25/2013 8:10:00 AM	9/25/2013 8:10:00 AM	9/25/2013 8:15:00 AM	9/25/2013 7:50:00 AM	9/25/2013 7:55:00 AM	9/25/2013 7:45:00 AM	9/25/2013 7:40:00 AM	9/25/2013 7:35:00 AM
Sample Distance (From Building)	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet	- Feet
SW-846 8082A (mg/Kg)								
PCB 1016	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.97)	ND (0.29)	ND (0.29)
PCB 1221	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.97)	ND (0.29)	ND (0.29)
PCB 1232	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.97)	ND (0.29)	ND (0.29)
PCB 1242	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.97)	ND (0.29)	ND (0.29)
PCB 1248	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.97)	ND (0.29)	ND (0.29)
PCB 1254	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.97)	ND (0.29)	ND (0.29)
PCB 1260	**0.46**	ND (0.29)	**0.29**	**0.49**	**0.55**	**5.8**	**0.34**	**0.3**
PCB 1262	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.97)	ND (0.29)	ND (0.29)
PCB 1268	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.97)	ND (0.29)	ND (0.29)
Total PCBs	**0.46**	ND (0.29)	**0.29**	**0.49**	**0.55**	5.8	**0.34**	**0.3**

NOTES:
1. An asterisk (*) following a detection limit indicates that the minimum laboratory reporting limit exceeds one or more of the regulatory criteria.
2. ND = Not detected above the lab reporting limits shown in parenthesis.
5. Shaded values exceed the TSCA Limit of 1 ppm
6. Bolded values were detected above laboratory reporting limits

21 Water Street, Cambridge
Summary of Soil Results

Parameter	TSCA Standard	SAMPLING LOCATION & DEPTH								
		NE Window 6in	NE Window 12in	NE Window Soil 12in (6-12in)	NE Window Soil 12in (12-18in)	NE Window Soil 24in (0-6in)	NE Window Soil 24in (6-12in)	NE Window Soil 24in (12-18in)	NE Window Soil 24in (6-12in)	NE Window Soil 36in (0-6in)
Sampling Date		6/25/2013	6/25/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013
Sample Depth		6- Inches	12- Inches	6-12 Inches	12-18 Inches	6-12 Inches	6-12 Inches	12-18 Inches	6-12 Inches	6-12 Inches
% Solids	~	82.2	79.3	93.8	93.1	90.6	93.3	92.5	93.3	93.0
SW-846 8082A (mg/Kg dry)										
PCB 1016	<1	ND (0.48)	ND (2.4) *	ND (0.42)	ND (0.21)	ND (0.43)	ND (0.21)	ND (0.11)	ND (0.21)	ND (0.42)
PCB 1221	<1	ND (0.48)	ND (2.4) *	ND (0.42)	ND (0.21)	ND (0.43)	ND (0.21)	ND (0.11)	ND (0.21)	ND (0.42)
PCB 1232	<1	ND (0.48)	ND (2.4) *	ND (0.42)	ND (0.21)	ND (0.43)	ND (0.21)	ND (0.11)	ND (0.21)	ND (0.42)
PCB 1242	<1	ND (0.48)	ND (2.4) *	ND (0.42)	ND (0.21)	ND (0.43)	ND (0.21)	ND (0.11)	ND (0.21)	ND (0.42)
PCB 1248	<1	ND (0.48)	ND (2.4) *	ND (0.42)	ND (0.21)	ND (0.43)	ND (0.21)	ND (0.11)	ND (0.21)	ND (0.42)
PCB 1254	<1	ND (0.48)	ND (2.4) *	ND (0.42)	ND (0.21)	ND (0.43)	ND (0.21)	ND (0.11)	ND (0.21)	ND (0.42)
PCB 1260	<1	5.1	19	2.3	1.4	3.2	1	**0.48**	1	2
PCB 1262	<1	ND (0.48)	ND (2.4) *	ND (0.42)	ND (0.21)	ND (0.43)	ND (0.21)	ND (0.11)	ND (0.21)	ND (0.42)
PCB 1268	<1	ND (0.48)	ND (2.4) *	ND (0.42)	ND (0.21)	ND (0.43)	ND (0.21)	ND (0.11)	ND (0.21)	ND (0.42)
TOTAL PCBs		5.1	19	2.3	1.4	3.2	1	**0.48**	1	2

Parameter	TSCA Standard	SAMPLING LOCATION & DEPTH	
		NW Expansion Joint 6in	NW Window 12in
Sampling Date		6/25/2013	6/25/2013
Sample Depth		6- Inches	12- Inches
% Solids	~	81.0	79.8
SW-846 8082A (mg/Kg dry)			
PCB 1016	<1	ND (1.2)	ND (0.49)
PCB 1221	<1	ND (1.2)	ND (0.49)
PCB 1232	<1	ND (1.2)	ND (0.49)
PCB 1242	<1	ND (1.2)	ND (0.49)
PCB 1248	<1	ND (1.2)	ND (0.49)
PCB 1254	<1	ND (1.2)	ND (0.49)
PCB 1260	<1	6	3.8
PCB 1262	<1	ND (1.2)	ND (0.49)
PCB 1268	<1	ND (1.2)	ND (0.49)
TOTAL PCBs		6	3.8

Parameter	TSCA Standard	SAMPLING LOCATION & DEPTH	
	RCS-1	NW Window Soil 24in (6-12in) Dup	NW Window Soil 36in (0-6in) - Dup
Sampling Date		7/17/2013	7/17/2013
Sample Depth		6-12 Inches	0-6 Inches
% Solids	~	94.6	91.1
SW-846 8082A (mg/Kg dry)			
PCB 1016	<1	ND (0.10)	ND (0.11)
PCB 1221	<1	ND (0.10)	ND (0.11)
PCB 1232	<1	ND (0.10)	ND (0.11)
PCB 1242	<1	ND (0.10)	ND (0.11)
PCB 1248	<1	ND (0.10)	ND (0.11)
PCB 1254	<1	ND (0.10)	ND (0.11)
PCB 1260	<1	**0.25**	**0.57**
PCB 1262	<1	ND (0.10)	ND (0.11)
PCB 1268	<1	ND (0.10)	ND (0.11)
TOTAL PCBs		**0.25**	**0.57**

Parameter	TSCA Standard	SAMPLING LOCATION & DEPTH										
		NW Window 6in	NW Window 12in	NW Window Soil 12in (12-18in)	NW Window Soil 24in (0-6in)	NW Window Soil 24in (6-12in)	NW Window Soil 24in (12-18in)	NW Window Soil 36in (0-6 in)	NW Window Soil 36in (6-12 in)	NW Window Soil 36in (12-14 in)	NW Window Soil 48in (0-6 in)	NW Window Soil 48in (6- 10 in)
Sampling Date		6/25/2013	6/25/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013
Sample Depth		6- Inches	12- Inches	12-18 Inches	6-12 Inches	6-12 Inches	12-18 Inches	6-12 Inches	6-12 Inches	12-14 Inches	6-12 Inches	6-10 Inches
% Solids	~	74.2	79.8	94.2	88.9	92.2	91.6	90.2	91.8	94.9	91.0	93.0
SW-846 8082A (mg/Kg dry)												
PCB 1016	<1	ND (1.3)	ND (0.49)	ND (0.10)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.10)	ND (0.11)	ND (0.11)
PCB 1221	<1	ND (1.3)	ND (0.49)	ND (0.10)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.10)	ND (0.11)	ND (0.11)
PCB 1232	<1	ND (1.3)	ND (0.49)	ND (0.10)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.10)	ND (0.11)	ND (0.11)
PCB 1242	<1	ND (1.3)	ND (0.49)	ND (0.10)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.10)	ND (0.11)	ND (0.11)
PCB 1248	<1	ND (1.3)	ND (0.49)	ND (0.10)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.10)	ND (0.11)	ND (0.11)
PCB 1254	<1	ND (1.3)	ND (0.49)	ND (0.10)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.10)	**0.12**	ND (0.11)
PCB 1260	<1	6.3	3.8	**0.86**	1.5	**0.29**	**0.17**	**0.68**	**0.13**	**0.12**	**0.38**	**0.41**
PCB 1262	<1	ND (1.3)	ND (0.49)	ND (0.10)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.10)	ND (0.11)	ND (0.11)
PCB 1268	<1	ND (1.3)	ND (0.49)	ND (0.10)	ND (0.21)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.10)	ND (0.11)	ND (0.11)
TOTAL PCBs		6.3	3.8	**0.86**	1.5	**0.29**	**0.17**	**0.68**	**0.13**	**0.12**	**0.5**	**0.41**

Parameter	TSCA Standard	SAMPLING LOCATION & DEPTH					
		Center Window Soil 24in (6-12in)	Center Window Soil 36in (6-12in)	Center Window Soil 6in (6-12in)	Center Window Soil 24in (0-6in)	Center Window Soil 36in (0-6in)	Center Window Soil 6in (0-6in)
Sampling Date		7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013	7/17/2013
Sample Depth		6-12 Inches	6-12 Inches	6-12 Inches	6-12 Inches	6-12 Inches	6-12 Inches
% Solids	~	94.9	94.8	94.8	89.6	90.2	89.6
SW-846 8082A (mg/Kg dry)							
PCB 1016	<1	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.44)
PCB 1221	<1	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.44)
PCB 1232	<1	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.44)
PCB 1242	<1	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.44)
PCB 1248	<1	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.44)
PCB 1254	<1	ND (0.10)	**0.17**	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.44)
PCB 1260	<1	**0.18**	**0.3**	**0.27**	0.99	**0.88**	2.8
PCB 1262	<1	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.44)
PCB 1268	<1	ND (0.10)	ND (0.10)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.44)
TOTAL PCBs		**0.18**	**0.47**	**0.27**	0.99	**0.88**	2.8

NOTES:

An asterisk (*) indicates that the minimum laboratory reporting limit exceeds the TSCA Standard (1 ppm)

Shaded values exceed the TSCA Limit of 1 ppm

Bolded values were detected above laboratory reporting limits

APPENDIX A

INITIAL HAZARDOUS MATERIAL SURVEY

NOVER-ARMSTRONG ASSOCIATES, INC.

124 Main Street, Unit 2GG
Carver, Massachusetts 02330
Telephone 508.866.8383
Facsimile 508.866.9898

SDO-certified DBE & WBE
www.noverarmstrong.com

November 16, 2011

Richard K. Quateman, LSP, CHMM
Principal Scientist
Kleinfelder ▪ S E A Consultants
215 First Street
Cambridge, MA 02142

RE: Initial Hazardous Materials Survey
MBTA Tire Maintenance Facility
21 Water Street
Cambridge, Massachusetts
NAA File P2814
K/SEA Reference No. 2011035.01-A

Dear Mr. Quateman,

Nover-Armstrong Associates, Inc. (Nover-Armstrong) has completed an Initial Hazardous Materials Survey of the MBTA Tire Maintenance Facility located at 21 Water Street in Cambridge, Massachusetts (the site).

The MBTA Tire Maintenance Facility consists of approximately 11,914 square feet. Nover-Armstrong understands the Facility is scheduled for future demolition as part of the MBTA's Green Line Extension (GLX) project. Our survey findings are presented below.

1.0 Lead Based Paint (LBP)

Mel Blackman, Master Lead Inspector, conducted an OSHA Pre-Renovation Lead-Based Paint Survey on building materials (using XRF testing technology). Materials tested included accessible interior and exterior walls, floors, doors and trim, windows and trim, ceilings, structural steel, floor and wall ceramic tiles, lockers, stall dividers, window bars, staircase components, cabinets, lally columns, radiators, baseboards, pipes and overhead door systems.

As detailed in the attached inspection report, our survey found materials containing lead equal to or greater than >1.0 mg/cm^2 to include yellow floor paint and white metal window grates. These painted materials were observed to be in good condition.

In areas where future demolition is to occur and lead is present, the demolition debris waste stream should be analyzed for Lead using Toxicity Characteristic Leaching Procedure (TCLP) methodologies prior to waste segregation. Please refer to Attachment A -*OSHA Pre-Renovation Lead-Based Paint Survey Report,* dated November 2, 2011.

2.0 Asbestos Containing Materials (ACMs)

An initial survey was conducted to identify ACMs associated with the MBTA Tire Maintenance Facility. The survey was conducted in accordance with Massachusetts Department of Labor and Workforce Development (DLWD) – The Removal, Containment and Encapsulation of Asbestos Regulations – 453 CMR 6.00 and other applicable federal asbestos regulations. The survey was conducted by Marylou Armstrong who is certified as an Asbestos Inspector (License #AI041371) pursuant to Title II of the Toxic Substance Control Act (TSCA), 15, U.S.C. 2646. See Appendix E for license / certification details.

The Facility is constructed of concrete block walls, concrete slab floor, steel I-beams and steel ceiling. Within the western end of the structure (interior offices, break room, hallways and bath rooms), Nover-Armstrong observed carpet over concrete, carpet over wood, tile over wood, panel walls over dry wall, suspended ceiling tiles. Visual inspection revealed mortar, concrete, caulking, pipe insulation, dry wall, cove base, ceiling materials, vinyl floor tile (VFT), mastic, stair treads, ceramic tile and roofing materials that were considered suspect ACMs. Building materials considered suspect of containing asbestos were observed to be in poor to good condition with areas of isolated damage, as noted in Table 1 on the following page.

Accessible areas were assessed, inspected and / or sampled. Materials hidden or not accessible were evaluated and / or sampled within reasonable access limitations. Prior to obtaining samples, distinct homogeneous sampling areas and specific sampling sites were determined. A homogeneous sampling area is described as material that is identical in color, appearance and having the same installation date. Miscellaneous materials such as ceiling tile and vinyl floor tile are classified as homogeneous areas, unless otherwise noted. Suspect ACMs are classified as friable or non-friable material. Friable material may be crumpled, pulverized or reduced to powder with hand pressure. Friable materials are more hazardous than non-friable materials because they can readily release airborne asbestos fibers.

Bulk samples of suspect materials were collected into sealed plastic bags and hand delivered to SciLab Boston, Inc. (SciLab) in Weymouth, Massachusetts for analysis. Bulk samples were analyzed by Polarized Light Microscopy (PLM) utilizing dispersion staining (DS) techniques in accordance with EPA Method 600/M4-28-020. A total of forty (40) bulk samples were submitted for analysis. Table 1 below details analytical results. The analytical laboratory report and corresponding chain of custody (COC) forms are included in Attachment C of this report.

Table 1 – 11/2011 ACM Analysis Summary

SAMPLE ID	ANALYTICAL RESULTS	DESCRIPTION	LOCATION	CONDITION
AS-1.1	NAD	concrete block wall	shop area	fair to good
AS-1.2	NAD	concrete block wall	shop area	fair to good
AS-1.3	NAD	concrete block wall	shop area	fair to good
AS-1.4	NAD	concrete block wall	shop area	fair to good
AS-2.1	NAD	4” pipe insulation & wrap	utility room	fair to good
AS-2.2	NAD	4” pipe insulation & wrap	utility room	fair to good
AS-2.3	NAD	4” pipe insulation & wrap	utility room	fair to good
AS-3.1	NAD	dry wall	storage room	good
AS-3.2	NAD	dry wall	storage room	good
AS-3.3	NAD	dry wall	storage room	good
AS-4.1	NAD	wall caulking	shop area	fair, isolated damage
AS-4.1	NAD	horse hair plaster	shop area	fair, isolated damage
AS-4.2	NAD	wall caulking	shop area	fair, isolated damage
AS-4.2	NAD	horse hair plaster	shop area	fair, isolated damage
AS-5.1	NAD	dry wall	break room	fair, isolated damage
AS-5.2	NAD	dry wall	break room	fair, isolated damage
AS-5.3	NAD	dry wall	break room	fair, isolated damage
AS-6.1	NAD	black cove base	break room	good
AS-6.2	NAD	black cove base	break room	good
AS-6.3	NAD	black cove base	break room	good
AS-7.1	NAD	suspended ceiling tile	break room	fair, isolated damage
AS-7.2	NAD	suspended ceiling tile	break room	fair, isolated damage
AS-7.3	NAD	suspended ceiling tile	1st floor offices	fair, isolated damage
AS-7.4	NAD	suspended ceiling tile	2nd floor hallway	fair, isolated damage
AS-8.1	NAD	12” VFT – light grey & blue	break room	fair
AS-8.1	NAD	mastic associated AS-8.1 VFT	break room	fair
AS-8.2	NAD	12” VFT – light grey & blue	break room	fair
AS-8.2	NAD	mastic associated AS-8.1 VFT	break room	fair
AS-8.3	NAD	12” VFT – light grey & blue	break room	fair
AS-8.3	NAD	mastic associated AS-8.1 VFT	break room	fair
AS-9.1	NAD	black stairway tread – rubber	1st to 2nd floor offices	good
AS-9.2	NAD	black stairway tread – rubber	1st to 2nd floor offices	good
AS-9.3	NAD	black stairway tread – rubber	1st to 2nd floor offices	good
AS-10.1	**3% Chrysotile**	**9” VFT – grey**	**rear hallway**	**poor, damaged**
AS-10.1	NAD	mastic associated AS-8.1 VFT	rear hallway	poor, damaged
AS-10.2	**NA/PS**	**9” VFT – grey**	**rear hallway**	**poor, damaged**
AS-10.2	NAD	mastic associated AS-8.1 VFT	rear hallway	poor, damaged
AS-10.3	**NA/PS**	**9” VFT – grey**	**rear hallway**	**poor, damaged**
AS-10.3	NAD	mastic associated AS-8.1 VFT	rear hallway	poor, damaged
AS-11.1	NAD	1” ceramic tile	2nd floor ladies room	fair to poor
AS-11.1	NAD	caulking / grout	2nd floor ladies room	fair to poor
AS-11.2	NAD	1” ceramic tile	2nd floor ladies room	fair to poor
AS-11.2	NAD	caulking / grout	2nd floor ladies room	fair to poor
AS-11.3	NAD	1” ceramic tile	2nd floor ladies room	fair, isolated damage
AS-11.3	NAD	caulking / grout	2nd floor ladies room	fair, isolated damage
AS-12.1	NAD	exterior window caulking	south side of building	fair, weathered
AS-12.2	NAD	exterior window caulking	west side of building	fair, weathered
AS-12.3	NAD	exterior window caulking	north side of building	fair, weathered
AS-13.1	NAD	mortar assoc. with concrete wall	shop area	fair to good
AS-13.2	NAD	mortar assoc. with concrete wall	shop area	fair to good
Roof-1	NAD	gravel, tar, paper, membrane	south side of roof	good

Notes: NAD = No Asbestos Detected NA/PS = Not Applicable/Positive Stop VFT = Vinyl Floor Tile

Bulk material analytical results revealed evidence of friable ACM in the form of 9" VFT in the rear hallway (adjacent to the Warranty Department doorway). There is less than 30 square feet of this 9" VFT.

3.0 Polychlorinated Biphenyls (PCBs)

Building materials were inspected for potential presence of PCBs. Visual inspection revealed mortar, floor caulking and painted caulking that were considered potential PCB sources. Building materials were observed to be in poor to good condition, with areas of isolated damage. The building material samples were submitted to Alpha Analytical, Inc. (Alpha) and analyzed for PCBs via EPA Method 3540C (Soxhlet Extraction Method).

The attached Table 2 – Summary of 11/02/2011 Building Materials Analytical Results (for PCBs) summarizes analytical findings. Concentrations of PCBs were detected in all window caulking samples and one wall caulking sample. PCB concentrations ranged from 110,000 parts per million (ppm) to 993,000 ppm. Lower PCB concentrations ranging from 0.172 ppm to 40.4 ppm were detected in floor caulking and mortar associated with concrete walls. Review of the analytical laboratory report revealed that 16 ppm PCBs was also detected in the Method Blank sample. Nover-Armstrong contacted Glenn Breland of Alpha relative to the detection of PCBs in the Method Blank. Mr. Breland stated that the Method Blank was run as part of the sample batch. During the soxhlet extraction and / or blow down process, the Method Blank (and potentially some of the building material samples) was contaminated from the window caulking samples containing very high PCB concentrations run at the beginning of the batch. Therefore, samples containing less than 16 ppm PCBs, including FLOOR-1, FLOOR-3, FLOOR-4, WALL-1 AND WALL-4, may not contain PCBs or may have concentrations less than the concentrations reported by Alpha in their laboratory report.

4.0 Conclusions and Recommendations

Lead-Based Paint

As detailed in the attached inspection report, building materials containing lead equal to or greater than >1.0 mg/cm^2 were minimal, including yellow floor paint and white metal window grates. These painted materials were observed to be in good condition. During future demolition activities, building materials containing lead will require disposal. The demolition debris waste stream should be analyzed for Lead using TCLP methodologies prior to waste segregation to determine whether the waste stream can be disposed of as construction debris or as a TCLP waste.

ACMs

During future demolition activities, building materials (9" VFT) containing asbestos will require disposal. ACM-containing materials should be managed and disposed of in accordance with applicable MassDEP regulations.

Nover-Armstrong understands the Facility is scheduled for demolition in the future, however, the Facility is currently occupied and operating as a tire maintenance facility. Therefore, only accessible areas were assessed, inspected and sampled. Materials hidden or not accessible were evaluated and / or sampled within reasonable access limitations.

During future demolition activities, additional inaccessible building materials suspect of containing asbestos may be identified. If so, said materials should be sampled and analyzed by a certified asbestos inspector prior to disturbance or removal.

PCBs

Analytical results revealed window caulking containing PCB concentrations. The caulking materials were observed to be consistent and homogeneous. There are forty (40) windows throughout the Facility. Additional assessment of building materials and potentially ground surfaces surrounding the windows will likely be required, per TCSA requirements. During future demolition activities, caulking materials should be appropriately managed and disposed of under applicable TSCA regulations.

One caulking sample obtained from the interior southern wall (in the lower section that is painted green) contained PCB concentrations. Additional survey should be conducted throughout the painted sections of the concrete block wall to assess for the presence of caulking vs. mortar. If identified, additional sampling & analysis should be conducted.

Due to the detection of PCBs within the Method Blank sample, Nover-Armstrong recommends re-sampling and analysis of the building materials with PCB concentrations less than 16 ppm to determine / confirm the presence of PCBs.

Sincerely,

Nover-Armstrong Associates, Inc.

Marylou Armstrong, LSP
Principal

Attachments:

A - Table 2 – Summary of 11/02/2011 Building Materials Analytical Results (for PCBs)
B - OSHA Pre-Demolition Lead-Based Paint Survey, Report, dated November 2, 2011
C - AmeriSci Asbestos Analytical Laboratory Report, dated November 11, 2011
D - Asbestos Inspector Certification, Photographs & Notes
E - Alpha Analytical Report (PCBs), dated November 11, 2011

Attachment A

Table 2 – Summary of 11/02/2011 Building Materials Analytical Results (for PCBs)

TABLE 2 - Summary of 11/02/2011 Building Materials Analytical Results (PCBs)

SAMPLE ID	**FLOOR-1**	**FLOOR-2**	**FLOOR-3**	**FLOOR-4**	**WALL-1**	**WALL-2**	**WALL-3**	**WALL-4**	**WINDOW-1**	**WINDOW-2**	**WINDOW-3**	**Method Blank**
SAMPLE MATERIAL	**caulking**	**caulking**	**caulking**	**caulking**	**painted mortar**	**mortar**	**painted caulking**	**mortar**	**caulking**	**caulking**	**caulking**	
SAMPLING DATE	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	
LAB SAMPLE ID	L1118311-08	L1118311-09	L1118311-10	L1118311-11	L1118311-01	L1118311-02	L1118311-03	L1118311-04	L1118311-05	L1118311-06	L1118311-07	
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)												
Aroclor 1016	BRL(<0.104)	BRL(<1.42)	BRL(<0.0621)	BRL(<0.14)	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1221	BRL(<0.104)	BRL(<1.42)	BRL(<0.0621)	BRL(<0.14)	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1232	BRL(<0.104)	BRL(<1.42)	BRL(<0.0621)	BRL(<0.14)	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1242	BRL(<0.104)	BRL(<1.42)	BRL(<0.0621)	BRL(<0.14)	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1248	BRL(<0.0694)	BRL(<0.943)	BRL(<0.0414)	BRL(<0.0934)	BRL(<0.493)	BRL(<0.352)	BRL(<12900)	BRL(<0.472)	BRL(<37300)	BRL(<8330)	BRL(<32200)	BRL(<0.0374)
Aroclor 1254	**0.313**	BRL(<1.42)	**0.172**	**0.665**	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1260	**0.394**	**40.4**	**0.265**	**0.336**	**1.24**	BRL(<0.352)	**191,000**	**11.4**	**993,000**	**110,000**	**620,000**	**16.2**
Aroclor 1262	BRL(<0.0347)	BRL(<0.472)	BRL(<0.0207)	BRL(<0.0467)	BRL(<0.246)	BRL(<0.176)	BRL(<6440)	BRL(<0.236)	BRL(<18600)	BRL(<4170)	BRL(<16100)	BRL(<0.0187)
Aroclor 1268	BRL(<0.0347)	BRL(<0.472)	BRL(<0.0207)	BRL(<0.0467)	BRL(<0.246)	BRL(<0.176)	BRL(<6440)	BRL(<0.236)	BRL(<18600)	BRL(<4170)	BRL(<16100)	BRL(<0.0187)

Notes: Concentrations presented in mg/kg - milligrams per kilogram - parts per million
BRL - Below laboratory reporting limit

Attachment B

OSHA Pre-Demolition Lead-Based Paint Survey, Report, dated November 2, 2011

MEL BLACKMAN
MASTER LEAD INSPECTOR

OSHA PRE-DEMOLITION LEAD BASED PAINT SURVEY

Project:

MBTA Tire Maintenance Shop
21 Water Street
Cambridge, MA

Date:

November 2, 2011

Prepared For:

NOVER-ARMSTRONG ASSOCIATES, INC.
124 MAIN STREET, UNIT 2GG
CARVER, MA 02330
508-866-8383

Prepared & Inspected By:

MEL BLACKMAN
P O BOX 358
STONEHAM, MA 02180
781-820-8611

MEL BLACKMAN
MASTER LEAD INSPECTOR
P.O. BOX 358 - STONEHAM, MA. 02180
PHONE / FAX (781) 665-3806

1 Executive Summary:

Mel Blackman was retained by Nover-Armstrong Associates, Inc. of Carver, MA, to conduct an OSHA pre-demolition lead paint survey located at **21 Water Street,** the **MBTA Tire Maintenance Shop** in **Cambridge, Massachusetts** on **November 2, 2011**. The survey included representative sampling of interior and exterior painted surfaces.

The intent of the lead paint survey was to identify building surfaces coated with lead based paint, utilizing XRF testing technology. The information collected, as a result of the testing, can be used to ensure OSHA compliance relative to worker exposure and proper disposal of renovation or demolition debris.

Very few of the interior surfaces were found to have high concentrations of lead based paint. Components coated with high concentrations of lead based paint include specific:

- Metal windows
- Yellow floor paint

A summary of components coated with lead based paint can be found in section 5.

The information contained in this report summarizes the sampling and analytical methodologies, site description, materials found to contain lead, locations of surfaces, sample results and qualifications of personnel. Massachusetts Childhood Lead Poisoning Prevention Program regulations CMR 160.00 define a dangerous level of lead for residential premises to be equal to or greater than 1.0 milligrams per square centimeter (mg/cm2). The New Hampshire Rules HeP-1600 agrees with Massachusetts, however, refers to that level of lead content as a "lead based substance". OSHA believes that lead exposure with "any" lead content may cause a health risk to workers.

2 Site Description:

The building inspected for the presence of lead based paint is located at **21 Water Street** in **Cambridge, Massachusetts**. The structure was built in approximately 1950 and is currently in operation.

The buildings' exterior is cinder block with metal windows. The MBTA owns the building and plans to demolish the entire structure.

The property is known as the **MBTA Tire Maintenance Shop.**

Surfaces tested consisted of interior and exterior walls, floors, doors and trim, windows and trim, ceilings, structural steel, floor and wall ceramic tiles, lockers, stall dividers, window bars, staircase components, cabinets, lally columns, radiators, baseboards, pipes, and overhead door systems.

3 Survey Personnel:

The OSHA survey for lead based paint was conducted by Mel Blackman, Massachusetts licensed Master Lead Inspector #M-1377, and New Hampshire Risk Assessor #RA-0026.

4 Testing Methodology:

Lead in paint sampling of representative interior and exterior building surfaces was conducted to assist with contractor compliance with the United States Department of Labor (US DOL) Occupational Safety and Health Administration (OSHA) Lead Exposure in Construction Standard (29 CFR 1936.62), and EPA Hazardous Waste Disposal Regulations (40 CFR Parts 260 through 271), as well as EPA's Renovation, Repair and Painting Final Rule (40 CFR 745), if applicable.

Representative surfaces from selected accessible areas of the buildings were analyzed using an X-Ray Fluorescence Analyzer (XRF). An RMD, LPA-1B Lead Paint Analyzer XRF, Serial Number ENG 1 was utilized, which is a complete lead paint analysis system that quickly, accurately, and non-destructively measures the concentration of LBP on surfaces.

An RMD X-Ray Fluorescence Analyzer, Model LPA-1, was used to perform the lead based paint survey. In conducting the determination, various representative architectural elements were tested. Not all painted surfaces in each functional space were tested for the presence of lead-based paint. The contractor should assume that similar components that were not tested must be treated with the same caution and requirements as potentially having high lead concentrations.

Surfaces, which are listed as N/A, were not reachable for testing, and therefore the condition of the paint was listed. At least three to ten readings were taken for all similar groups of components.

The LPA-1 XRF relies on the measurement of the K-shell X-rays to determine the amount of lead present in the painted surface. K-shell X-rays can penetrate many layers of paint and allow a good measurement of the lead content of paint to be made without being significantly affected by the thickness or number of layers of paints on the surface of the sample.

The LPA-1 has the ability to analyze and compute corrections for the difference in the energy spectrums relating the different substrates. This analysis of the energy spectrum means that the lead paint reading displayed on the instrument already accounts for any substrate effects and no correction is required by the operator. The LPA-1's field of view is limited to a depth of 3/8", deep enough to handle virtually all painted surfaces, but not prone to detect lead objects located behind the surface.

There are two measurement modes of operation in the LPA-1 analyzer namely the "Standard Mode" and the "Quick Mode". In the "Standard" mode, the operator selects a fixed measurement time that remains constant irrespective of the lead signal. In the "Quick" mode, the analyzer automatically adjusts the measurement time to be the least time that is needed to make a definitive measurement with a 95% confidence level (2 sigma). The LPA-1 analyzer will finish a measurement once the 2-sigma confidence level is achieved and the data is statistically meaningful. This time period for conclusive measurements is typically between 1 to 5 seconds, but can extend to a measurement of 60 seconds depending on the action level for abatement.

I utilized the LPA-1 in the "Quick" mode to achieve a 95% confidence level down to 0.2 mg/cm2 for the testing performed at this unit. The highest level of LBP reported by the LPA-1 using the "Quick" mode is a result of >9.9 mg/cm2 (greater than 9.9 mg/cm2). Calibrations conducted indicated the instrument was functioning within the standard deviation as defined by the manufacturer.

Following the manufacturers' requirements for calibration, here are the results:

Cal. In: 1.1, 1.0, 1.1 mg/cm2
Cal. Out: 1.1, 1.0, 1.0 mg/cm2

5 Summary of XRF Testing Results:

The following list is arranged by location and component type. Surfaces found to have higher lead concentrations are listed first in each section. The contractor should assume that similar components that were not tested should be treated with the same caution and requirements as potentially having high lead concentrations. Surfaces, which are listed as N/A, were not reachable for testing, and therefore it is assumed that they contain lead paint. The condition of the majority of painted surfaces containing any concentrations of lead paint is intact.

INTERIOR

1st FLOOR SHOP & OFFICE AREAS

Yellow floor paint 3.6 – 3.9 mg/cm2
White metal windows 1.4 – 1.7 mg/cm2
Red metal "I" beams 0.2 – 0.7 mg/cm2
White metal roof 0.2 – 0.5 mg/cm2
Red metal lally columns 0.1 – 0.5 mg/cm2
Gray concrete window sills 0.1 – 0.4 mg/cm2
Green, beige, and brown cinderblock walls 0.0 – 0.3 mg/cm2
White metal roof trusses 0.1 – 0.3 mg/cm2
Brown metal door 0.0 – 0.3 mg/cm2
Green and brown metal doors and trim 0.1 – 0.4 mg/cm2
Brown wood walls 0.0 – 0.2 mg/cm2
Gray concrete floor 0.0 – 0.1 mg/cm2
Silver metal gate 0.1- 0.2 mg/cm2
Brown wood window and door trim 0.0 – 0.1 mg/cm2
White wood stair risers and treads 0.0 – 0.2 mg/cm2
Brown wood handrails 0.0 – 0.1 mg/cm2
Brown wood kitchen cabinets 0.0 – 0.1 mg/cm2

1ST FLOOR BATH AND LOCKER AREA

White metal windows 1.4 – 1.6 mg/cm2
Brown metal door and trim 0.1 – 0.3 mg/cm2
Green metal stall dividers 0.0 – 0.2 mg/cm2
Beige cinderblock walls 0.0 – 0.1 mg/cm2
Beige metal lockers 0.0 – 0.2 mg/cm2

2ND FLOOR

White metal windows 1.0 – 1.5 mg/cm2
Green and beige metal roof trusses 0.0 – 0.4 mg/cm2
Green and brown wood doors and trim 0.0 – 0.4 mg/cm2
Green and beige metal roof 0.1 – 0.3 mg/cm2
White metal radiators 0.1 – 0.3 mg/cm2

Beige cinderblock walls 0.1 – 0.3 mg/cm2
Brown, green, and white wood walls 0.0 – 0.2 mg/cm2
White wood door trim 0.0 – 0.2 mg/cm2
Brown wood baseboards 0.0 – 0.1 mg/cm2
White metal pipes 0.0 – 0.1 mg/cm2
Gray wood floor 0.0 – 0.1 mg/cm2

2ND FLOOR BATHROOMS
White and gray tile floors 0.1 – 0.3 mg/cm2
White tile lower walls 0.0 – 0.2 mg/cm2
Gray and brown metal stall dividers 0.1 – 0.3 mg/cm2

EXTERIOR
Blue metal overhead door trim 0.5 – 0.6 mg/cm2
Yellow metal overhead door trim 0.4 – 0.6 mg/cm2
Yellow metal lally columns 0.4 – 0.6 mg/cm2
Brown metal door and trim 0.1 – 0.4 mg/cm2
Yellow and orange wood overhead door 0.1 – 0.3 mg/cm2
Beige cinderblock walls 0.1 – 0.3 mg/cm2
White metal overhead door 0.0 – 0.2 mg/cm2
Gray metal windows 0.0 – 0.1 mg/cm2

Conclusions and Recommendations:

Few of the interior surfaces tested contain high levels of lead paint. A composite sampling of the aggregate waste stream from demolition would be necessary to determine whether the TCLP testing is considered hazardous waste. Prior to demolition of this building an OSHA site specific lead compliance plan should be developed including wasted segregation to minimize the potential generation of hazardous waste.

In areas where demolition is to occur and lead is present, the demolition debris waste stream should be further analyzed during segregation for compliance with EPA and MA DES regulations to ensure proper disposal. TCLP testing should be performed to characterize all waste prior to disposal. TCLP testing can be performed prior to waste segregation but results may not be indicative of the actual waste streams produced during demolition. Demolition/renovation workers should be trained and protected in accordance with OSHA regulations 29 CFR 1926.62 and EPA's Renovation, Repair and Painting Final Rule (40 CFR 745).

This section applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry for lead by 29 CFR 1910.1025 (a)(2) is covered by this standard. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following:

- Demolition or salvage of structures where lead or materials containing lead is present
- Removal or encapsulation of materials containing lead;
- New Construction, alteration, repair, or renovation of structures, substrates, or portions thereof that contain lead, or materials containing lead.
- Handlers of salvageable materials and the treatment/disposal facility must be informed of the material's lead content. All personnel involved must be trained in personal protection and proper work practice procedures in accordance with OSHA regulations.
- All waste contaminated with lead paint should be disposed of in accordance with all state, local, and federal regulations.

Respectfully submitted

Mel Blackman

Attachment C

AmeriSci Asbestos Analytical Laboratory Report, dated November 11, 2011

Please Reply To:

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-1800

FACSIMILE TELECOPY TRANSMISSION

To: Marylou Armstrong
Nover - Armstrong Associates Inc.

Fax #:

Email: mla_noverarmstrong@msn.com

From: David W. Ralbovsky
AmeriSci Job #: 111111359
Subject: PLM 3 day Results
Client Project: P2814; P2814; 21 Water St.

Date: Thursday, November 10, 2011
Time: 13:14:26
Comments:

Number of Pages: 14
(including cover sheet)

CONFIDENTIALITY NOTICE: Unless otherwise indicated, the information contained in this communication is confidential information intended for use of the individual named above. If the reader of this communication is not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is prohibited. If you have received this communication in error, please immediately notify the sender by telephone and return the original message to the above address via the US Postal Service at our expense. Preliminary data reported here will be verified before final report is issued. Samples are disposed of in 60 days or unless otherwise instructed by the protocol or special instructions in writing. Thank you.

AmeriSci Richmond
13635 GENITO ROAD
MIDLOTHIAN, VIRGINIA 23112
TEL: (804) 763-1200 • FAX: (804) 763-1800

PLM Bulk Asbestos Report

Nover - Armstrong Associates Inc.
Attn: Marylou Armstrong
124 Main Street
Unit 2GG
Carver, MA 02330

Date Received 11/08/11
Date Examined 11/10/11

AmeriSci Job # 111111359
P.O. # P2814

RE: P2814; P2814; 21 Water St.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
AS-1.1 1	111111359-01 **Location:** Shop Area; Concrete Block Wall	*No*	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-1.2 1	111111359-02 **Location:** Utility Room; Concrete Block Wall	*No*	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-1.3 1	111111359-03 **Location:** Exterior Corner Of Bldg; Concrete Block Wall	*No*	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-1.4 1	111111359-04 **Location:** Exterior Corner Of Bldg; Concrete Block Wall	*No*	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-2.1 2	111111359-05.1 **Location:** Utility Room; 4" Pipe Insulation & Wrap	*No*	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray/Gold/Yellow, Heterogeneous, Fibrous, Wrap/Insulation **Asbestos Types:** **Other Material:** Fibrous glass 93 %, Non-fibrous 7 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

P2814; P2814; 21 Water St.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
AS-2.2 2	111111359-06 **Location:** Utility Room; 4" Pipe Insulation & Wrap	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray/Yellow, Heterogeneous, Fibrous, Wrap/Insulation **Asbestos Types:** **Other Material:** Fibrous glass 93 %, Non-fibrous 7 %			
AS-2.3 2	111111359-07 **Location:** Utility Room; 4" Pipe Insulation & Wrap	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray/Yellow, Heterogeneous, Fibrous, Wrap/Insulation **Asbestos Types:** **Other Material:** Fibrous glass 93 %, Non-fibrous 7 %			
AS-3.1 3	111111359-08 **Location:** Storage Room; Drywall	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Brown/Off-White, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Fibrous glass Trace, Non-fibrous 95 %			
AS-3.2 3	111111359-09 **Location:** Storage Room; Drywall	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Off White, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 4 %, Fibrous glass Trace, Non-fibrous 96 %			
AS-3.3 3	111111359-10 **Location:** Storage Room; Drywall	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Brown/Off-White, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Fibrous glass Trace, Non-fibrous 95 %			
AS-4.1 4	111111359-11.1 **Location:** Shop Area; Caulking / Horse Hair Plaster	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Caulk **Asbestos Types:** **Other Material:** Non-fibrous 100 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

P2814; P2814; 21 Water St.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
AS-4.1 4	111111359-11.2 **Location:** Shop Area; Caulking / Horse Hair Plaster	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Brown, Heterogeneous, Fibrous, Fibrous Material **Asbestos Types:** **Other Material:** Cellulose 95 %, Non-fibrous 5 %			
AS-4.2 4	111111359-12.1 **Location:** Shop Area; Caulking / Horse Hair Plaster	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Caulk **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-4.2 4	111111359-12.2 **Location:** Shop Area; Caulking / Horse Hair Plaster	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Brown, Heterogeneous, Non-Fibrous, Fibrous Material **Asbestos Types:** **Other Material:** Cellulose 95 %, Non-fibrous 5 %			
AS-5.1 5	111111359-13 **Location:** Break Room; Drywall	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Brown/Gray, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
AS-5.2 5	111111359-14 **Location:** Break Room; Drywall	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Brown/Gray, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			
AS-5.3 5	111111359-15 **Location:** Break Room; Drywall	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Brown/Gray, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Non-fibrous 95 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

P2814; P2814; 21 Water St.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
AS-6.1 6	111111359-16 **Location:** Break Room; Black Cove Base	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-6.2 6	111111359-17 **Location:** Break Room; Black Cove Base	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-6.3 6	111111359-18 **Location:** Break Room; Black Cove Base	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-7.1 7	111111359-19 **Location:** Break Room; 24"x48" Suspended Ceiling Tile	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: White/Lt.Grey, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 45 %, Fibrous glass 28 %, Non-fibrous 5 %, Perlite 22 %			
AS-7.2 7	111111359-20 **Location:** Break Room; 24"x48" Suspended Ceiling Tile	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: White/Lt.Grey, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 45 %, Fibrous glass 26 %, Non-fibrous 5 %, Perlite 24 %			
AS-7.3 7	111111359-21 **Location:** 1st Floor Offices; 24"x48" Suspended Ceiling Tile	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: White/Lt.Grey, Heterogeneous, Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 45 %, Fibrous glass 26 %, Non-fibrous 5 %, Perlite 24 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

P2814; P2814; 21 Water St.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
AS-7.4 7	111111359-22 **Location:** 2nd Floor Hallway; 24"x48" Suspended Ceiling Tile	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: White/Lt.Grey, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 45 %, Fibrous glass 22 %, Non-fibrous 5 %, Perlite 28 %			
AS-8.1 8	111111359-23.1 **Location:** Break Room; 12" VFT - Light Grey & Blue	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Blue/Gray, Heterogeneous, Non-Fibrous, Floor Tile **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-8.1 8	111111359-23.2 **Location:** Break Room; 12" VFT - Light Grey & Blue	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Tan/Gray, Heterogeneous, Non-Fibrous, Mastic/Backing **Asbestos Types:** **Other Material:** Cellulose 4 %, Non-fibrous 96 %			
AS-8.2 8	111111359-24.1 **Location:** Break Room	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Blue/Gray, Heterogeneous, Non-Fibrous, Floor Tile **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-8.2 8	111111359-24.2 **Location:** Break Room	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Tan/Gray, Heterogeneous, Non-Fibrous, Mastic/Backing **Asbestos Types:** **Other Material:** Cellulose 4 %, Non-fibrous 96 %			
AS-8.3 8	111111359-25.1 **Location:** Break Room	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Blue/Gray, Heterogeneous, Non-Fibrous, Floor Tile **Asbestos Types:** **Other Material:** Non-fibrous 100 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

P2814; P2814; 21 Water St.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
AS-8.3 8	111111359-25.2 **Location:** Break Room	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Tan, Heterogeneous, Non-Fibrous, Mastic/Backing **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %			
AS-9.1 9	111111359-26 **Location:** 1st To 2nd Floor Office Staircase; Stair Tread - Black	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-9.2 9	111111359-27 **Location:** 1st To 2nd Floor Office Staircase; Stair Tread - Black	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-9.3 9	111111359-28 **Location:** 1st To 2nd Floor Office Staircase; Stair Tread - Black	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-10.1 10	111111359-29.1 **Location:** Rear Hallway; 9" VFT, Grey	***Yes***	3 % (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** Chrysotile 3.0 % **Other Material:** Non-fibrous 97 %			
AS-10.1 10	111111359-29.2 **Location:** Rear Hallway; 9" VFT, Grey	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Black, Heterogeneous, Non-Fibrous, Mastic **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

P2814; P2814; 21 Water St.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
AS-10.2 10	111111359-30.1 **Location:** Rear Hallway; 9" VFT, Grey **Analyst Description:** Floor Tile **Asbestos Types:** **Other Material:**		NA/PS
AS-10.2 10	111111359-30.2 **Location:** Rear Hallway; 9" VFT, Grey **Analyst Description:** Black, Heterogeneous, Non-Fibrous, Mastic **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
AS-10.3 10	111111359-31.1 **Location:** Rear Hallway; 9" VFT, Grey **Analyst Description:** Floor Tile **Asbestos Types:** **Other Material:**		NA/PS
AS-10.3 10	111111359-31.2 **Location:** Rear Hallway; 9" VFT, Grey **Analyst Description:** Black, Heterogeneous, Non-Fibrous, Mastic **Asbestos Types:** **Other Material:** Cellulose Trace, Non-fibrous 100 %	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
AS-11.1 11	111111359-32.1 **Location:** Ladies Bathroom - 2nd Floor; 1" Ceramic Tile & Caulking **Analyst Description:** Gray, Heterogeneous, Non-Fibrous, Ceramic Tile **Asbestos Types:** **Other Material:** Non-fibrous 100 % **Comment:** Insufficient caulk for analysis.	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11

See Reporting notes on last page

PLM Bulk Asbestos Report

P2814; P2814; 21 Water St.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
AS-11.1 11	111111359-32.2 **Location:** Ladies Bathroom - 2nd Floor; 1" Ceramic Tile & Caulking	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Lt. Gray, Heterogeneous, Non-Fibrous, Grout **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-11.1 11	111111359-32.3 **Location:** Ladies Bathroom - 2nd Floor; 1" Ceramic Tile & Caulking	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Brown/Black, Heterogeneous, Non-Fibrous, Backing **Asbestos Types:** **Other Material:** Cellulose 50 %, Non-fibrous 50 %			
AS-11.2 11	111111359-33.1 **Location:** Ladies Bathroom - 2nd Floor; 1" Ceramic Tile & Caulking	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Ceramic Tile **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-11.2 11	111111359-33.2 **Location:** Ladies Bathroom - 2nd Floor; 1" Ceramic Tile & Caulking	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Lt. Gray, Heterogeneous, Non-Fibrous, Grout **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-11.2 11	111111359-33.3 **Location:** Ladies Bathroom - 2nd Floor; 1" Ceramic Tile & Caulking	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Brown/Black, Heterogeneous, Fibrous, Backing **Asbestos Types:** **Other Material:** Cellulose 50 %, Non-fibrous 50 %			
AS-11.3 11	111111359-34 **Location:** Ladies Bathroom - 2nd Floor; Caulking Around 4" Ceramic Tile	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Beige, Heterogeneous, Non-Fibrous, Grout **Asbestos Types:** **Other Material:** Non-fibrous 100 % **Comment:** Insufficient caulk for analysis.			

See Reporting notes on last page

PLM Bulk Asbestos Report

P2814; P2814; 21 Water St.

Client No. / HGA	Lab No.	Asbestos Present	Total % Asbestos
AS-12.1 12	111111359-35 **Location:** Exterior Window; Window Caulking	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-12.2 12	111111359-36 **Location:** Exterior Window; Window Caulking	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-12.3 12	111111359-37 **Location:** Exterior Window; Window Caulking	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-13.1 13	111111359-38 **Location:** Shop Area; Morter In Concrete Wall	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
AS-13.2 13	111111359-39 **Location:** Shop Area; Morter In Concrete Wall	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Gray, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Non-fibrous 100 %			
Roof-1	111111359-40 **Location:** Roof; Gravel, Tar, Paper, Membrane	***No***	NAD (by CVES) by David W. Ralbovsky on 11/10/11
Analyst Description: Black, Heterogeneous, Non-Fibrous, Bulk Material **Asbestos Types:** **Other Material:** Cellulose 5 %, Fibrous glass Trace, Synthetic fibers 2 %, Non-fibrous 93 %			

See Reporting notes on last page

PLM Bulk Asbestos Report

P2814; P2814; 21 Water St.

Reporting Notes:

Analyzed by: David W. Ralbovsky _____ Date 4/10/11

*NAD = no asbestos detected, Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Pt Ct = 0.25%, 1000 Pt Ct = 0.1%; "Present" or NVA = "No Visible Asbestos" are observations made during a qualitative analysis; NA = not analyzed; NA/PS = not analyzed / positive stop; PLM Bulk Asbestos Analysis by EPA 600/M4-82-020 per 40 CFR 763 (NVLAP Lab Code 101904-0) and ELAP PLM Analysis Protocol 198.1 for New York friable samples (198.6 for NOB samples)(NYSDOH ELAP Lab # 10984); CA ELAP Lab # 2508; Note: PLM is not consistently reliable in detecting asbestos in floor coverings and similar NOB materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos-containing in New York State (also see EPA Advisory for floor tile, FR 59, 146, 38970, 8/1/94). NIST Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the laboratory. This PLM report relates ONLY to the items tested.

Reviewed By:_____

Relinquished By: Marylou Armstrong Date/Time: 11/4/2011 @ 9:00 AM
Received By: Date/Time:
Relinquished By: Date/Time:
Received By: Date/Time:

AMERISCI BOSTON

BULK CHAIN OF CUSTODY FOR

8 SCHOOL STREET ~ WEYMOUTH, MA 0218
PHONE (781) 337-9334 / FAX (781) 337-764
TOLL FREE (888) 724-522
www.amerisci.co

Company: Nover-Armstrong Associates, Inc.
Street Address: 124 Main St, Unit 2GG
City: Carver State: MA Zip: 02330
Phone: 508-866-8383 Fax: 508-866-9898
Cell/Page #: Verbal Results: Y / (N)
Results to: Marylou Armstrong

Project: P2814 AMERISCI #: 111111359
Project Address: 21 Water St. Project #: P2814
Project Manger: M. Armstrong PO #: P2814
Analysis: X PLM X Positive Stop __ Qualitative __ Point Count __ NOB (Prep) __ TEM
Turnaround Time: 4 days. ~~Fax~~ Email Copy By: 11/11/2011
Sampled By: M. Armstrong Date: 11/2/2011

Special Instructions or Comments:

Lab ID	Field ID	Location	Sample Description	Homogenous Area
	AS-1.1	shop area	concrete block wall	
	AS-1.2	utility room	"	
	AS-1.3	exterior corner of bldg.	"	
	AS-1.4	exterior wall of bldg	"	
	AS-2.1	utility room	4" pipe insulation & wrap	
	AS-2.2	" "	" "	
	AS-2.3	" "	" "	
	AS-3.1	storage room	dry wall	
	AS-3.2	"	"	
	AS-3.3	"	"	
	AS-4.1	shop area	caulking / hose hair plaster?	
	AS-4.2	shop area	" "	
	AS-5.1	break room	dry wall	
	AS-5.2	"	"	
	AS-5.3	"	"	
	AS-6.1	"	black cove base	
	AS-6.2	"	"	
	AS-6.3	"	"	

RECEIVED NOV 08 2011 By

NVLAP: 102079-0, CT: PH-0119, HI: L-01-030, ME: LA0060 / LB0059, MA: AA000162, RI: AAL095T3

Relinquished By: Tyler Armstrong Date/Time: 11/4/2011 @9:00AM
Received By: Date/Time:
Relinquished By: Date/Time:
Received By: Date/Time:

AMERISCI BOSTON

BULK CHAIN OF CUSTODY FOR

8 SCHOOL STREET ~ WEYMOUTH, MA 0218
PHONE (781) 337-9334 / FAX (781) 337-764
TOLL FREE (888) 724-522
www.amerisci.co

Company: Nower-Armstrong Associates
Street Address: 124 main St, Unit 2GG
City: Carver State: MA Zip: 02330
Phone: 508-866-8383 Fax: 508-866-9878
Cell/Page #: Verbal Results: Y / N
Results to: Marylou Armstrong

Project: P2814 AMERISCI #: 111111359
Project Address: 21 Water St. Project #: P2814
Project Manger: M. Armstrong PO #: P2814
Analysis: X PLM X Positive Stop __Qualitative __Point Count __NOB (Prep) __TEM
Turnaround Time: 4 days ~~Fax~~ EMAIL Copy By: 11-11-2011
Sampled By: M. Armstrong Date: 11-2-2011

Special Instructions or Comments:

Lab ID	Field ID	Location	Sample Description	Homogenous Area
	AS-7.1	break room	24" x 48" suspended ceiling tile	
	AS-7.2	break room	"	
	AS-7.3	1st floor offices	"	
	AS-7.4	2nd floor hallway	"	
	AS-8.1	breakroom	12" VFT-light grey & blue	
	AS-8.2	"		
	AS-8.3	"		
	AS-9.1	1st to 2nd floor office staircase	stair tread-black	
	AS-9.2	"	"	
	AS-9.3	"	"	
	AS-10.1	rear hallway	9" VFT, grey	
	AS-10.2	"	"	
	AS-10.3	"	"	
	AS-11.1	ladies bathroom-2nd floor	1" ceramic tile & caulking	
	AS-11.2	"	"	
	AS-11.3	"	caulking around 4" ceramic tile	
	AS-12.1	exterior windows	window caulking	
	AS-12.2	"	"	
	AS-12.3	"	"	

RECEIVED NOV 08 2011 By AW

NVLAP: 102079-0, CT: PH-0119, HI: L-01-030, ME: LA0060 / LB0059, MA: AA000162, RI: AAL095T3

Relinquished By: Tylan Armstrong Date/Time: 11/4/2011-9:00am
Received By: Date/Time:
Relinquished By: Date/Time:
Received By: Date/Time:

AMERISCI BOSTON

BULK CHAIN OF CUSTODY FOR

8 SCHOOL STREET ~ WEYMOUTH, MA 0218
PHONE (781) 337-9334 / FAX (781) 337-764
TOLL FREE (888) 724-522
www.amerisci.co

AMERISCI #: 111111359

Company: Nover-Armstrong Associates, Inc.
Street Address: 124 Main St. Unit 2G
City: Carver State: MA Zip: 02330
Phone: 508.866.8383 Fax: 508.866.8598
Cell/Page #: Verbal Results: Y (N)
Results to: Marylou Armstrong

Project: P2814
Project Address: 21 Water St.
Project #: P2814
Project Manger: M. Armstrong
PO #: P2814
Analysis: X PLM X Positive Stop __Qualitative __Point Count __NOB (Prep) __TEM
Turnaround Time: 4 Days Fax Copy By: 11-11-2011
Sampled By: M. Armstrong Date: 11-2-2011

Special Instructions or Comments:

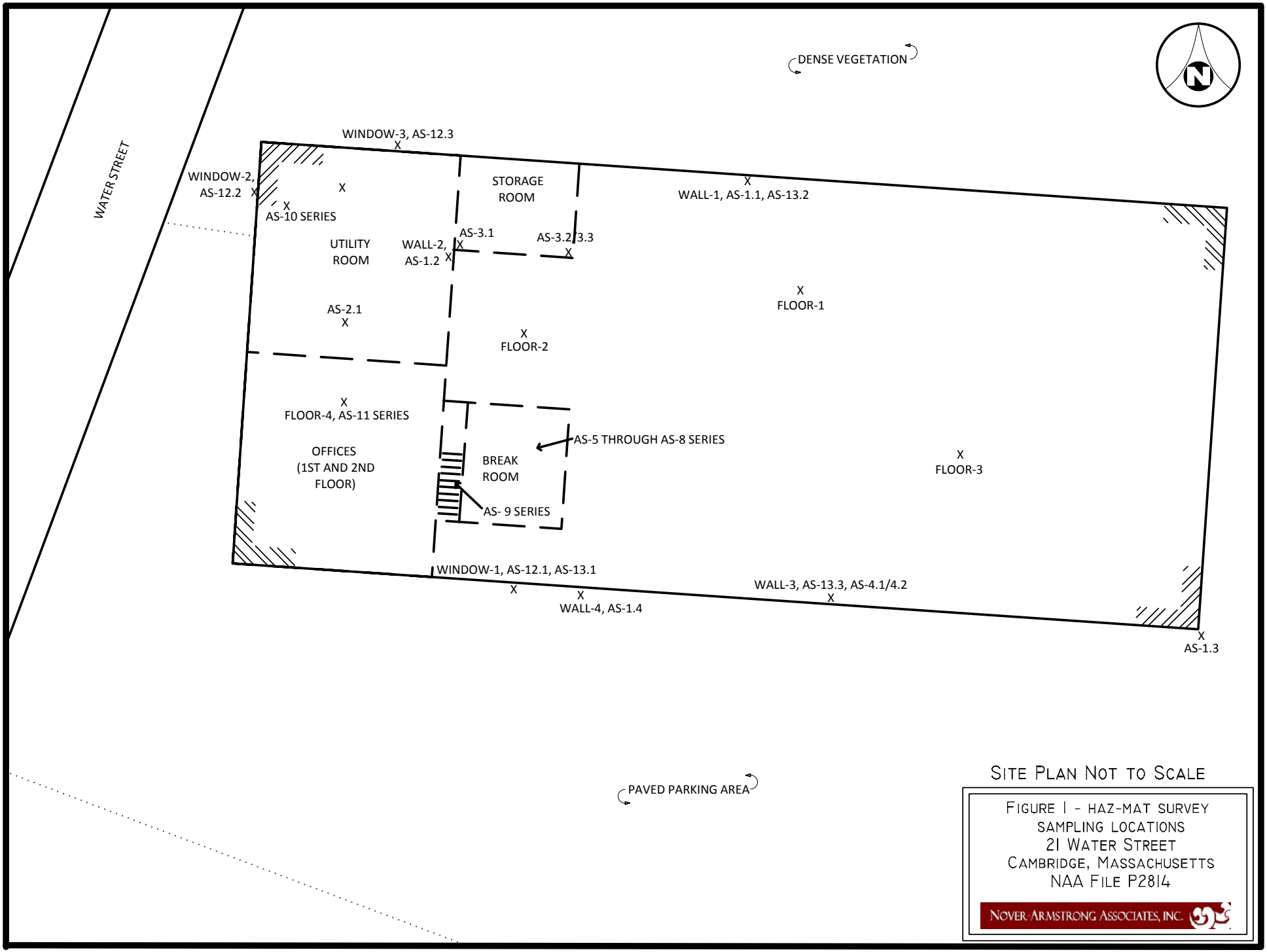
Lab ID	Field ID	Location	Sample Description	Homogenous Area
	AS-13.1	shop area	mortar in concrete wall	
	AS-13.1	" "	" "	
	ROOF-1	roof	gravel, tar, paper, membrane	

RECEIVED
NOV 08 2011
By: AL

PAGE 3 OF

Attachment D

Asbestos Inspector Certification, Photographs & Notes



SITE PLAN NOT TO SCALE

FIGURE 1 - HAZ-MAT SURVEY
SAMPLING LOCATIONS
21 WATER STREET
CAMBRIDGE, MASSACHUSETTS
NAA FILE P2814

NOVER-ARMSTRONG ASSOCIATES, INC.

Photo 1

Photograph depicts the southern side of the MBTA Tire Maintenance Facility.

Photo 2

Photograph depicts the Tire Shop entrance door and overhead door (leading into the main shop area) along the southern side of the Facility structure.

PHOTOGRAPHIC DOCUMENTATION

21 Water Street

Cambridge, Massachusetts

Photographs Documented 11-02-2011

NAA File P2814

Photo 3

Photograph depicts the main shop area.

Photo 4

Photograph depicts FLOOR-2 caulking sample that tested positive for PCBs.

PHOTOGRAPHIC DOCUMENTATION

21 Water Street

Cambridge, Massachusetts

Photographs Documented 11-02-2011

NAA File P2814

Photo 5

Photograph depicts the AS-10 series that tested positive for asbestos.

Photo 6

Photograph depicts the WINDOW-2 and AS-12.2 sampling locations (along the western side of the facility). This caulking sample tested positive for PCBs.

PHOTOGRAPHIC DOCUMENTATION

21 Water Street

Cambridge, Massachusetts

Photographs Documented 11-02-2011

NAA File P2814

INSTITUTE FOR ENVIRONMENTAL EDUCATION, INC.

16 Upton Drive Wilmington, MA 01887
PHONE (978) 658-5272

IEE

IEE

This is to certify that

Marylou Armstrong

has completed the requisite training, and has passed an examination for reaccreditation as:

Asbestos Inspector Refresher

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

January 26, 2011
Course Dates

January 26, 2011
Examination Date

Course Location
Institute for Environmental Education, Inc.
16 Upton Drive
Wilmington, MA 01887

January 26, 2012
Expiration Date

11-6128-106-200965
Certificate Number

Training Director

Commonwealth of Massachusetts

Division of Occupational Safety

Heather E. Rowe, Acting Commissioner

Asbestos Inspector

MARYLOU ARMSTRONG

Eff. Date 01/27/11

Exp. Date 01/26/12

AI041371

Member of C.O.N.E.S.

NB

12

NB-RENEWAL

Attachment E

Alpha Analytical Report (PCBs), dated November 11, 2011

ANALYTICAL REPORT

Lab Number:	L1118311
Client:	Nover-Armstrong Associates 124 Main Street Unit 2GG Carver, MA 02330
ATTN:	Marylou Armstrong
Phone:	(508) 866-8383
Project Name:	P2814
Project Number:	P2814
Report Date:	11/17/11

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: P2814
Project Number: P2814

Lab Number: L1118311
Report Date: 11/17/11

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1118311-01	WALL-1	CAMBRIDGE	11/02/11 00:00
L1118311-02	WALL-2	CAMBRIDGE	11/02/11 00:00
L1118311-03	WALL-3	CAMBRIDGE	11/02/11 00:00
L1118311-04	WALL-4	CAMBRIDGE	11/02/11 00:00
L1118311-05	WINDOW-1	CAMBRIDGE	11/02/11 00:00
L1118311-06	WINDOW-2	CAMBRIDGE	11/02/11 00:00
L1118311-07	WINDOW-3	CAMBRIDGE	11/02/11 00:00
L1118311-08	FLOOR-1	CAMBRIDGE	11/02/11 00:00
L1118311-09	FLOOR-2	CAMBRIDGE	11/02/11 00:00
L1118311-10	FLOOR-3	CAMBRIDGE	11/02/11 00:00
L1118311-11	FLOOR-4	CAMBRIDGE	11/02/11 00:00

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is 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
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	NO
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name: P2814 **Lab Number:** L1118311
Project Number: P2814 **Report Date:** 11/17/11

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

Report Submission

This report replaces the report issued November 11, 2011. At the client's request, the project location was changed.

MCP Related Narratives

PCBs

L1118311-01 and -04 have elevated detection limits due to the dilutions required by matrix interferences encountered during the concentrations of the samples and limited sample volumes available for analyses.
L1118311-02 has elevated detection limits due to the dilution required by matrix interferences encountered during the concentration of the sample and limited sample volume available for analysis.
L1118311-03, -05, -06, and -07 have elevated detection limits due to the dilutions required by the matrix interferences encountered during the concentrations of the samples, the limited sample volumes available for

Case Narrative (continued)

analyses, and the analytical dilutions required by the target compounds present in the samples.
L1118311-08 and -11 have elevated detection limits due to limited sample volumes available for analyses.
L1118311-09 has elevated detection limits due to the dilutions required by the elevated concentrations of target compounds in the samples and limited sample volumes available for analyses.
In reference to question G:
L1118311-01 through -09 and -11: One or more of the target analytes did not achieve the requested CAM reporting limits.
In reference to question H:
The surrogate recoveries for L1118311-03, -05, -06, -07, and -09 are below the acceptance criteria for 2,4,5,6-Tetrachloro-m-xylene (0%) and Decachlorobiphenyl (0%) due to the dilutions required to quantitate the samples. Re-extractions were not required; therefore, the results of the original analyses are reported.
The surrogate recoveries for L1118311-11 were outside the acceptance criteria for Decachlorobiphenyl (22%/28%); however, re-extraction could not be performed due to lack of additional sample. The results of the original analysis are reported; however, all associated compounds are considered to have a potential bias.
The WG500555-1 Method Blank, associated with L1118311-01 through -11, has a hit of Aroclor 1260 that exceeded the calibration. The result should be considered estimated, and is qualified with an E flag.
The WG500555-1 Method Blank, associated with L1118311-01 through -11, has a concentration above the reporting limit for Aroclor 1260; re-extraction could not be performed due to lack of additional volume for the associated samples. The results of the original analysis are reported and are qualified with a "B" for any associated sample concentrations that are less than 10x the Method Blank concentration for this analyte.
The WG500555-3 LCSD recoveries, associated with L1118311-01 through -11, were outside the acceptance criteria for Aroclor 1016 (31%) and Aroclor 1260 (32%); however, re-extraction could not be performed due to lack of additional sample. The results of the original analyses are reported; however, all results are considered to have a potentially low bias.
The WG500555-2/-3 LCS/LCSD RPDs, associated with L1118311-01 through -11, are above the acceptance criteria for Aroclor 1016 (87%) and Aroclor 1260 (102%).
The surrogate recoveries for the WG500555-3 LCSD, associated with L1118311-01 through -11, were outside the acceptance criteria for 2,4,5,6-Tetrachloro-m-xylene (20%/19%) and Decachlorobiphenyl

Project Name: P2814 **Lab Number:** L1118311
Project Number: P2814 **Report Date:** 11/17/11

Case Narrative (continued)

(26%/25%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Elizabeth Simmons

Title: Technical Director/Representative Date: 11/17/11

ORGANICS

PCBS

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-01	Date Collected:	11/02/11 00:00
Client ID:	WALL-1	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 09:09	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	739	--	5
Aroclor 1221	ND		ug/kg	739	--	5
Aroclor 1232	ND		ug/kg	739	--	5
Aroclor 1242	ND		ug/kg	739	--	5
Aroclor 1248	ND		ug/kg	493	--	5
Aroclor 1254	ND		ug/kg	739	--	5
Aroclor 1262	ND		ug/kg	246	--	5
Aroclor 1268	ND		ug/kg	246	--	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	69		30-150
2,4,5,6-Tetrachloro-m-xylene	126		30-150
Decachlorobiphenyl	105		30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-01	Date Collected:	11/02/11 00:00
Client ID:	WALL-1	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 09:09	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	1240	B	ug/kg	493	--	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	69		30-150
2,4,5,6-Tetrachloro-m-xylene	126		30-150
Decachlorobiphenyl	105		30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-02	Date Collected:	11/02/11 00:00
Client ID:	WALL-2	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 09:22	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	528	--	5
Aroclor 1221	ND		ug/kg	528	--	5
Aroclor 1232	ND		ug/kg	528	--	5
Aroclor 1242	ND		ug/kg	528	--	5
Aroclor 1248	ND		ug/kg	352	--	5
Aroclor 1254	ND		ug/kg	528	--	5
Aroclor 1260	ND		ug/kg	352	--	5
Aroclor 1262	ND		ug/kg	176	--	5
Aroclor 1268	ND		ug/kg	176	--	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	65		30-150
Decachlorobiphenyl	53		30-150
2,4,5,6-Tetrachloro-m-xylene	65		30-150
Decachlorobiphenyl	57		30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-03	D	Date Collected:	11/02/11 00:00
Client ID:	WALL-3		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/11/11 07:34		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	19300000	--	250000
Aroclor 1221	ND		ug/kg	19300000	--	250000
Aroclor 1232	ND		ug/kg	19300000	--	250000
Aroclor 1242	ND		ug/kg	19300000	--	250000
Aroclor 1248	ND		ug/kg	12900000	--	250000
Aroclor 1254	ND		ug/kg	19300000	--	250000
Aroclor 1262	ND		ug/kg	6440000	--	250000
Aroclor 1268	ND		ug/kg	6440000	--	250000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-03	D	Date Collected:	11/02/11 00:00
Client ID:	WALL-3		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/11/11 07:34		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	191000000		ug/kg	12900000	--	250000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-04	Date Collected:	11/02/11 00:00
Client ID:	WALL-4	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 17:32	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	708	--	5
Aroclor 1221	ND		ug/kg	708	--	5
Aroclor 1232	ND		ug/kg	708	--	5
Aroclor 1242	ND		ug/kg	708	--	5
Aroclor 1248	ND		ug/kg	472	--	5
Aroclor 1254	ND		ug/kg	708	--	5
Aroclor 1262	ND		ug/kg	236	--	5
Aroclor 1268	ND		ug/kg	236	--	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	68		30-150
Decachlorobiphenyl	62		30-150
2,4,5,6-Tetrachloro-m-xylene	73		30-150
Decachlorobiphenyl	68		30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-04	Date Collected:	11/02/11 00:00
Client ID:	WALL-4	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 17:32	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	11400	B	ug/kg	472	--	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	68		30-150
Decachlorobiphenyl	62		30-150
2,4,5,6-Tetrachloro-m-xylene	73		30-150
Decachlorobiphenyl	68		30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-05	D	Date Collected:	11/02/11 00:00
Client ID:	WINDOW-1		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/11/11 07:21		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56000000	--	125000
Aroclor 1221	ND		ug/kg	56000000	--	125000
Aroclor 1232	ND		ug/kg	56000000	--	125000
Aroclor 1242	ND		ug/kg	56000000	--	125000
Aroclor 1248	ND		ug/kg	37300000	--	125000
Aroclor 1254	ND		ug/kg	56000000	--	125000
Aroclor 1262	ND		ug/kg	18600000	--	125000
Aroclor 1268	ND		ug/kg	18600000	--	125000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-05	D	Date Collected:	11/02/11 00:00
Client ID:	WINDOW-1		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/11/11 07:21		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	993000000		ug/kg	37300000	--	125000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-06	D	Date Collected:	11/02/11 00:00
Client ID:	WINDOW-2		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/11/11 07:08		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	12500000	--	12500
Aroclor 1221	ND		ug/kg	12500000	--	12500
Aroclor 1232	ND		ug/kg	12500000	--	12500
Aroclor 1242	ND		ug/kg	12500000	--	12500
Aroclor 1248	ND		ug/kg	8330000	--	12500
Aroclor 1254	ND		ug/kg	12500000	--	12500
Aroclor 1262	ND		ug/kg	4170000	--	12500
Aroclor 1268	ND		ug/kg	4170000	--	12500

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-06	D	Date Collected:	11/02/11 00:00
Client ID:	WINDOW-2		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/11/11 07:08		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	110000000		ug/kg	8330000	--	12500

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-07	D	Date Collected:	11/02/11 00:00
Client ID:	WINDOW-3		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/11/11 06:54		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	48400000	--	50000
Aroclor 1221	ND		ug/kg	48400000	--	50000
Aroclor 1232	ND		ug/kg	48400000	--	50000
Aroclor 1242	ND		ug/kg	48400000	--	50000
Aroclor 1248	ND		ug/kg	32200000	--	50000
Aroclor 1254	ND		ug/kg	48400000	--	50000
Aroclor 1262	ND		ug/kg	16100000	--	50000
Aroclor 1268	ND		ug/kg	16100000	--	50000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-07	D	Date Collected:	11/02/11 00:00
Client ID:	WINDOW-3		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/11/11 06:54		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/09/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/09/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	620000000		ug/kg	32200000	--	50000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-08	Date Collected:	11/02/11 00:00
Client ID:	FLOOR-1	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 01:55	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/08/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/08/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	104	--	1
Aroclor 1221	ND		ug/kg	104	--	1
Aroclor 1232	ND		ug/kg	104	--	1
Aroclor 1242	ND		ug/kg	104	--	1
Aroclor 1248	ND		ug/kg	69.4	--	1
Aroclor 1262	ND		ug/kg	34.7	--	1
Aroclor 1268	ND		ug/kg	34.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	69		30-150
Decachlorobiphenyl	44		30-150
2,4,5,6-Tetrachloro-m-xylene	68		30-150
Decachlorobiphenyl	52		30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-08	Date Collected:	11/02/11 00:00
Client ID:	FLOOR-1	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 01:55	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/08/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/08/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1254	313		ug/kg	104	--	1
Aroclor 1260	394	B	ug/kg	69.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	69		30-150
Decachlorobiphenyl	44		30-150
2,4,5,6-Tetrachloro-m-xylene	68		30-150
Decachlorobiphenyl	52		30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-09	D	Date Collected:	11/02/11 00:00
Client ID:	FLOOR-2		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 17:18		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/08/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/08/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	1420	--	10
Aroclor 1221	ND		ug/kg	1420	--	10
Aroclor 1232	ND		ug/kg	1420	--	10
Aroclor 1242	ND		ug/kg	1420	--	10
Aroclor 1248	ND		ug/kg	943	--	10
Aroclor 1254	ND		ug/kg	1420	--	10
Aroclor 1262	ND		ug/kg	472	--	10
Aroclor 1268	ND		ug/kg	472	--	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-09	D	Date Collected:	11/02/11 00:00
Client ID:	FLOOR-2		Date Received:	11/04/11
Sample Location:	CAMBRIDGE		Field Prep:	Not Specified
Matrix:	Solid		Extraction Method:	EPA 3540C
Analytical Method:	97,8082		Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 17:18		Cleanup Method1:	EPA 3665A
Analyst:	GT		Cleanup Date1:	11/08/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.		Cleanup Method2:	EPA 3660B
			Cleanup Date2:	11/08/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	40400	B	ug/kg	943	--	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-10	Date Collected:	11/02/11 00:00
Client ID:	FLOOR-3	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 02:22	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/08/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/08/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	62.1	--	1
Aroclor 1221	ND		ug/kg	62.1	--	1
Aroclor 1232	ND		ug/kg	62.1	--	1
Aroclor 1242	ND		ug/kg	62.1	--	1
Aroclor 1248	ND		ug/kg	41.4	--	1
Aroclor 1262	ND		ug/kg	20.7	--	1
Aroclor 1268	ND		ug/kg	20.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	48		30-150
Decachlorobiphenyl	34		30-150
2,4,5,6-Tetrachloro-m-xylene	55		30-150
Decachlorobiphenyl	46		30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-10	Date Collected:	11/02/11 00:00
Client ID:	FLOOR-3	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 02:22	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/08/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/08/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1254	172		ug/kg	62.1	--	1
Aroclor 1260	265	B	ug/kg	41.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	48		30-150
Decachlorobiphenyl	34		30-150
2,4,5,6-Tetrachloro-m-xylene	55		30-150
Decachlorobiphenyl	46		30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-11	Date Collected:	11/02/11 00:00
Client ID:	FLOOR-4	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 02:35	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/08/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/08/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	140	--	1
Aroclor 1221	ND		ug/kg	140	--	1
Aroclor 1232	ND		ug/kg	140	--	1
Aroclor 1242	ND		ug/kg	140	--	1
Aroclor 1248	ND		ug/kg	93.4	--	1
Aroclor 1262	ND		ug/kg	46.7	--	1
Aroclor 1268	ND		ug/kg	46.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	35		30-150
Decachlorobiphenyl	**22**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	36		30-150
Decachlorobiphenyl	**28**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

SAMPLE RESULTS

Lab ID:	L1118311-11	Date Collected:	11/02/11 00:00
Client ID:	FLOOR-4	Date Received:	11/04/11
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	11/07/11 11:30
Analytical Date:	11/09/11 02:35	Cleanup Method1:	EPA 3665A
Analyst:	GT	Cleanup Date1:	11/08/11
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	11/08/11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1254	665		ug/kg	140	--	1
Aroclor 1260	336	B	ug/kg	93.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	35		30-150
Decachlorobiphenyl	**22**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	36		30-150
Decachlorobiphenyl	**28**	Q	30-150

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 11/09/11 11:18
Analyst: GT

Extraction Method: EPA 3540C
Extraction Date: 11/07/11 11:30
Cleanup Method1: EPA 3665A
Cleanup Date1: 11/09/11
Cleanup Method2: EPA 3660B
Cleanup Date2: 11/09/11

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 01-11 Batch: WG500555-1					
Aroclor 1016	ND		ug/kg	56.2	--
Aroclor 1221	ND		ug/kg	56.2	--
Aroclor 1232	ND		ug/kg	56.2	--
Aroclor 1242	ND		ug/kg	56.2	--
Aroclor 1248	ND		ug/kg	37.4	--
Aroclor 1254	ND		ug/kg	56.2	--
Aroclor 1260	16200	E	ug/kg	37.4	--
Aroclor 1262	ND		ug/kg	18.7	--
Aroclor 1268	ND		ug/kg	18.7	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	77		30-150
Decachlorobiphenyl	75		30-150
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	101		30-150

Lab Control Sample Analysis

Batch Quality Control

Project Name: P2814

Project Number: P2814

Lab Number: L1118311

Report Date: 11/17/11

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 01-11 Batch: WG500555-2 WG500555-3								
Aroclor 1016	79		**31**	Q	40-140	**87**	Q	30
Aroclor 1260	98		**32**	Q	40-140	**102**	Q	30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	88		20	Q	30-150
Decachlorobiphenyl	78		26	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	90		19	Q	30-150
Decachlorobiphenyl	124		25	Q	30-150

Project Name: P2814
Project Number: P2814

Lab Number: L1118311
Report Date: 11/17/11

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1118311-01A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-02A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-03A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-04A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-05A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-06A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-07A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-08A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-09A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-10A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)
L1118311-11A	Glass 100ml unpreserved	A	N/A	3	Y	Absent	MCP-8082LL-10-3540C(365)

*Values in parentheses indicate holding time in days

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

GLOSSARY

Acronyms

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

Report Format: Data Usability Report

Project Name: P2814 **Lab Number:** L1118311

Project Number: P2814 **Report Date:** 11/17/11

Data Qualifiers

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: P2814 **Lab Number:** L1118311
Project Number: P2814 **Report Date:** 11/17/11

REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised September 19, 2011 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. ***NELAP Accredited Solid Waste/Soil.***

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP), Ethylene Dibromide (EDB), 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223 P/A), E. Coli. – Colilert (SM9223 P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D))

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E).)

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Volatile Organics, Acid Extractables (Phenols), 3.3'-Dichlorobenzidine, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2130B, 2320B, 2540C, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, SM2320B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-G, 4500NH3-H, 4500NO3-F, 4500P-B, 4500P-E, 5210B, 5220D, 5310C, 9010B, 9040B, 9030B, 7470A, 7196A, 2340B, EPA 200.7, 6010, 200.8, 6020, 245.1, 1311, 1312, 3005A, Enterolert, 9223D, 9222D. Organic Parameters: 608, 8081, 8082, 8330, 8151A, 624, 8260, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Inorganic Parameters: 9010B, 9012A, 9014A, 9040B, 9045C, 6010B, 7471A, 7196A, 9050A, 1010, 1030, 9065, 1311, 1312, 3005A, 3050B. Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH, 8260B, 8270C, 8330, 8151A, 8081A, 8082, 3540C, 3546, 3580A, 3630C, 5030B, 5035.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
*Drinking Water (*Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

*Non-Potable Water (*Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl, V,Zn); 245.1, SM4500H,B, EPA 120.1,

SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.
Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B;Enterolert-QT: SM9222D-MF.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 245.2, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6020, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 350.2, 351.1, 353.2, 410.4, 420.1, 1664A, SW-846 9010, 9030, 9040B, SM426C, SM2120B, 2310B, 2320B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3510C, 3630C, 5030B, 8260B, 8270C, 8330, EPA 624, 625, 608, SW-846 8082, 8081A, 8151A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 7196A, 7471A, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040B, 9045C, 9050C, 9065,1311, 1312, 3005A, 3050B. Organic Parameters: SW-846 3540C, 3546, 3550B, 3580A, 3630C, 5030B, 5035, 8260B, 8270C, 8330, 8151A, 8015B, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.2, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-E, EPA 300.0, SM2120B, SM4500F-BC, EPA 200.7, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM510ABC, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, SM15 426C, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, 350.2, SW-846 1312, 6020, 6020A, 7470A, 5540C, 4500H-B, EPA 200.8, SM3500Cr-D, 4500CN-CE, EPA 245.1, 245.2, SW-846 9040B, 3005A, 3015, EPA 6010B, 6010C, 7196A, 3060A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 8081A, 8081B, 8082, 8082A, 8151A, 8330, NJ OQA-QAM-025 Rev.7, NJ EPH.)

Solid & Chemical Materials (Inorganic Parameters: SW-846, 6010B, 6010C, 7196A, 3060A, 9010B, 9030B, 1010, 1030, 1311, 1312, 3005A, 3050B, 7471A, 7471B, 9014, 9012A, 9040B, 9045C, 9050A, 9065. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3545, 3546, 3550B, 3580A, 3630C, 5030B, 5035L, 5035H, NJ OQA-QAM-025 Rev.7, NJ EPH.)

New York Department of Health Certificate/Lab ID: 11148. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500H-B, 4500NO3-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH3-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, LACHAT 10-107-04-1-C, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6020, EPA 7196A, SM3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, LACHAT 10-204-00-1-A, EPA 9040B, SM4500-HB, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 9010B, 9030B.. Organic Parameters: EPA 624, 8260B, 8270C, 625, 608, 8081A, 8151A, 8330, 8082, EPA 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: 1010, 1030, EPA 6010B, 7196A, 7471A, 9012A, 9014, 9040B, 9045C, 9065, 9050, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8015B, 8081A, 8151A, 8330, 8082, 3540C, 3545, 3546, 3580, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666. Organic Parameters: MA-EPH, MA-VPH.

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-03671. ***NELAP Accredited.***
Drinking Water (Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 1312, 200.7, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE. Organic Parameters: EPA 3510C, 3005A, 3630C, 5030B, 625, 624, 608, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3050B, 6010B, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065, SM 4500NH3-H. Organic Parameters: 3540C, 3545, 3546, 3550B**,** 3580A, 3630C, 5035, 8015B, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. ***NELAP Accredited via NY-DOH.***
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 376.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2¯D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Department of Defense Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6020, 245.1, 245.2, 7470A, 9040B, 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 5220D, 5310C, 2320B, 2540C, 3005A, 3015, 9010B, 9056. Organic Parameters: EPA 8260B, 8270C, 8330A, 625, 8082, 8081A, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 7471A, 9010, 9012A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8270C, 8330A/B-prep, 8082, 8081A, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

The following analytes are not included in our current NELAP/TNI Scope of Accreditation:
EPA 8260B: Freon-113, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625:** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, Chloride in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix, SO4 in a soil matrix.

CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193

MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 11/4/11

ALPHA Job #: L1118311

Client Information

Client: NOVER-ARMSTRONG ASSOCIATES

Address: 124 MAIN STREET UNIT 2G6

Phone: 508-866-8383

Fax: 508-866-9898

Email: mla@noverarmstrong.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: P2814

Project Location: SOMERVILLE

Project #: P2814

Project Manager: MLA

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: 11/11/11 Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL

☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTO

☒ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)

☐ Yes ☒ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

If MS is required , indicate in Sample Specific Comments which samples and what tests MS to be performed.
(Note: All ***CAM*** methods for inorganic analyses require MS every 20 soil samples)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PCBs (3540C Soxhlet method)	Sample Specific Comments	TOTAL # BOTTLES
18311 1	WALL-1	11/2	AM		MLA	X		
2	WALL-2	11/2	AM		MLA	X		
3	WALL-3	11/2	AM		MLA	X		
4	WALL-4	11/2	AM		MLA	X		
5	WINDOW-1	11/2	AM		MLA	X		
6	WINDOW-2	11/2	AM		MLA	X		
7	WINDOW-3	11/2	AM		MLA	X		
8	FLOOR-1	11/2	AM		MLA	X		
9	FLOOR-2	11/2	AM		MLA	X		
10	FLOOR-3	11/2	AM		MLA	X		

SAMPLE HANDLING

Filtration
☐ Done
☐ Not needed
☐ Lab to do

Preservation
☐ Lab to do
(Please specify below)

Container Type	Glass
Preservative	None

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/4/11 12:30	P. Gillett	11/4/11 1230
P. Gillett	11/4/11 1550	[signature]	11/4/11 1550

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 18-Jan-2010)

Serial_No:11171114:42

CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 11/4/11

ALPHA Job #: L1118311

Client Information

Client: NOVER-ARMSTRONG ASSOCIATES
Address: 124 MAIN STREE UNIT 2G6
Phone: 508-866-8383
Fax: 508-866-9898
Email: mla@novearmstrong.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: P2814
Project Location: SOMERVILLE
Project #: P2814
Project Manager: MLA
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: 11/11/11 Time:

Report Information - Data Deliverables

☐ FAX ☑ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTO

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)
☐ Yes ☒ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

If MS is required , indicate in Sample Specific Comments which samples and what tests MS to be performed.
(Note: All ***CAM*** methods for inorganic analyses require MS every 20 soil samples)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: PCBs (3540C) soxhlet method	Sample Specific Comments	TOTAL # BOTTLES
18311.11	FLOOR-4	11/2	AM		MLA	X		

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Container Type: Glass
Preservative: None

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT (MA MCP) or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
P. Gilbert	11/4/11 1230	P. Gilbert	11/4/11 1230
P. Gilbert	11/4/11 1550	Jan Chuang	11/4/11 1550

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 18-Jan-2010)

Serial No:11171114:42

CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 11/4/11

ALPHA Job #: L1118311

Client Information

Client: NOVER-ARMSTRONG ASSOCIATES
Address: 124 MAIN STREET UNIT 2G6
Phone: 508-866-8383
Fax: 508-866-9898
Email: mla@noverarmstrong.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: P2814
Project Location: SOMERVILLE CAMBRIDGE
Project #: P2814
Project Manager: MLA
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: 11/11/11 Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTO

☒ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)
☐ Yes ☒ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

If MS is required, indicate in Sample Specific Comments which samples and what tests MS to be performed.
(Note: All *CAM* methods for inorganic analyses require MS every 20 soil samples)

ANALYSIS: PCBs (3540 Soxhlet method)

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PCBs (3540 Soxhlet method)	Sample Specific Comments	Total # Bottles
18311 1	WALL-1	11/2	AM		MLA	X		
2	WALL-2	11/2	AM		MLA	X		
3	WALL-3	11/2	AM		MLA	X		
4	WALL-4	11/2	AM		MLA	X		
5	WINDOW-1	11/2	AM		MLA	X		
6	WINDOW-2	11/2	AM		MLA	X		
7	WINDOW-3	11/2	AM		MLA	X		
8	FLOOR-1	11/2	AM		MLA	X		
9	FLOOR-2	11/2	AM		MLA	X		
10	FLOOR-3	11/2	AM		MLA	X		

Container Type: Glass
Preservative: None

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	11/4/11 12:30	P. Gillet	11/4/11 1230
P. Gillet	11/4/11 1550	[illegible]	11/4/11 1550

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 18-Jan-2010)

Serial No:1111116:43

Page 38 of 39

CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL

WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193

MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 11/9/11

ALPHA Job #: L1118311

Client Information

Client: NOVER-ARMSTRONG ASSOCIATES

Address: 124 MAIN STREE UNIT 2G6

Phone: 508-866-8383

Fax: 508-866-9898

Email: mla@novearmstrong.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: P2814

Project Location: ~~SOMERVILLE~~ CAMBRIDGE

Project #: P2814

Project Manager: MLA

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: 11/11/11 Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL

☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTO

☐ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)

☐ Yes ☒ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

If MS is required , indicate in Sample Specific Comments which samples and what tests MS to be performed.
(Note: All *CAM* methods for inorganic analyses require MS every 20 soil samples)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	PCBs (3540C) soxlet method	Sample Specific Comments	TOTAL # BOTTLES
18311 11	FLOOR-4	11/2	AM		MLA	X		

SAMPLE HANDLING

Filtration
☐ Done
☐ Not needed
☐ Lab to do

Preservation
☐ Lab to do
(Please specify below)

Container Type	Glass
Preservative	None

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT (MA MCP) or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/4/11 1230	P. Gilbert	11/4/11 1230
P. Gilbert	11/4/11 1550	[signature]	11/4/11 1550

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 18-Jan-2010)

Serial No:11111116:43

APPENDIX B

SITE SPECIFIC QAPP ADDENDUM A-1

NOVER-ARMSTRONG ASSOCIATES, INC.

124 Main Street, Unit 2GG
Carver, Massachusetts 02330
Telephone 508.866.8383
Facsimile 508.866.9898

SDO-certified DBE & WBE
www.noverarmstrong.com

environmental consultants & engineers

SITE-SPECIFIC QAPP ADDENDUM A2

for

Analysis of PCBs in Soil and Pavement
MBTA Tire Maintenance Facility
21 Water Street / 183 Monsignor O'Brien Highway
Cambridge, Massachusetts

EPA QA RFA 11102

Prepared by: Nover-Armstrong Associates, Inc. (Nover-Armstrong)
124 Main Street, Unit 2GG, Carver, MA 02330
Matthew Alger, Nover-Armstrong Quality Assurance Coordinator

Date Prepared: July 2013 (Revision 1.2)

Contents

Section 1 – Project Management
1.1 Introduction 6
1.2 Project Organization and Responsibility 6
1.3 Problem Definition 8
1.4 Project Description and Timeline 9

Section 2 – Measurement Data Acquisition
2.1 Sampling Design and Site Figures 11
2.2 Sampling and Analytical Methods Requirements 12
2.3 Method and SOP Reference Table 13
2.4 Field Equipment Calibration and Corrective Action 13
2.5 Laboratory Equipment Calibration and Corrective Action 14
2.6 Sample Handling and Custody Requirements 14
2.7 Analytical Sensitivity and Project Criteria 16
2.8 Field Quality Control Requirements 16
2.9 Laboratory Quality Control Requirements 17
2.10 Data Management and Documentation 17

Section 3 – Assessment and Oversight
3.1 Assessments and Response Actions 18
3.2 Project Reports 19

Section 4 – Data Evaluation
4.1 Field Data Evaluation 20
4.2 Laboratory Data Evaluation 20
4.3 Data Usability and Project Evaluation 23

Section 5 – References

Figures

Figure 1-1: Project Organizational Chart
Figure 1-2: Site Location
Figure 2-1: Proposed Exploration Plan
Figure 4-1: MassDEP Presumptive Certainty and REDUA Concept

Tables

Table 2-1: Sampling and Analytical Methods Requirements Table
Table 2-2: Site-Specific Method and SOP Reference Table
Table 2-3: Field Equipment List
Table 2-4: Field Quality Control Requirements Table

Appendices

Appendix A - Site-Specific Standard Operating Procedures
Appendix B - Analytical Method Sensitivity and Project Criteria Table
Appendix C - QAPP Project Personnel Log Sheet

List of Acronyms

ASTM	American Society for Testing Materials
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGI	Combustible Gas and Oxygen Detector
COC	Chain of Custody
COPC	Contaminant of Potential Concern
DEP	Department of Environmental Protection
DOD	Department of Defense
DQO	Data Quality Objectives
EHP	Environmental Health Program
ELAP	Environmental Laboratory Accreditation Program
EMD	Environmental Monitoring Database
EPA	Environmental Protection Agency
FID	Flame ionization detector
FSS	Federal Sites Section of the Hazardous Waste Remediation Bureau
HASP	Health and Safety Plan
ID	Inside Diameter
LFS	Low Flow Sampling
MCL	Massachusetts Certified Lab
MCP	Massachusetts Contingency Plan
MDL	Method Detection Limits
NAPL	Non-Aqueous Phase Liquid
NCP	National Contingency Plan
NIST	National Institute of Standard & Technology
NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NPL	National Priorities List
NTU	Nephelometric Turbidity Units
OD	Outside Diameter
ORCB	Oil Remediation & Compliance Bureau
ORP	Oxygen Reduction Potential
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PEHB	Permitting & Environmental Health Bureau
PIC	Public Information Center
PID	Photoionization Detector
PM	Project Manager
POE	Point of Entry
PQO	Project Quality Objectives
PRP	Potentially Responsible Party
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAC	Quality Assurance Coordinator
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	Quality Control

List of Acronyms - Continued

QMP	Quality Management Plan
QSM	Quality Systems Manual
RDL	Reporting Detection Limits
RI/FS	Remedial Investigation and Feasibility Study
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SOP	Standard Operation Procedure
SRP	Site Remediation Program
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WMD	Waste Management Division

Section 1 – Project Management

1.1 Introduction

The Brownfields Revitalization and Environmental Restoration Act of 2001 authorizes federal funding for the assessment and cleanup of contaminated properties through the USEPA's Brownfields grant program. The USEPA requires that a Quality Assurance Project Plan (QAPP) is prepared and approved by the USEPA prior to the commencement of federally funded projects involving the collection and use of environmental data.

This Site-Specific QAPP Addendum has been prepared in accordance the USEPA's Brownfields program. Assessment activities will be completed consistent with USEPA requirements and processes described in Massachusetts General Laws Chapter 21E (MGL Ch. 21E) and 310 Code of Massachusetts Regulations (CMR) 40.0000 – Massachusetts Contingency Plan (MCP).

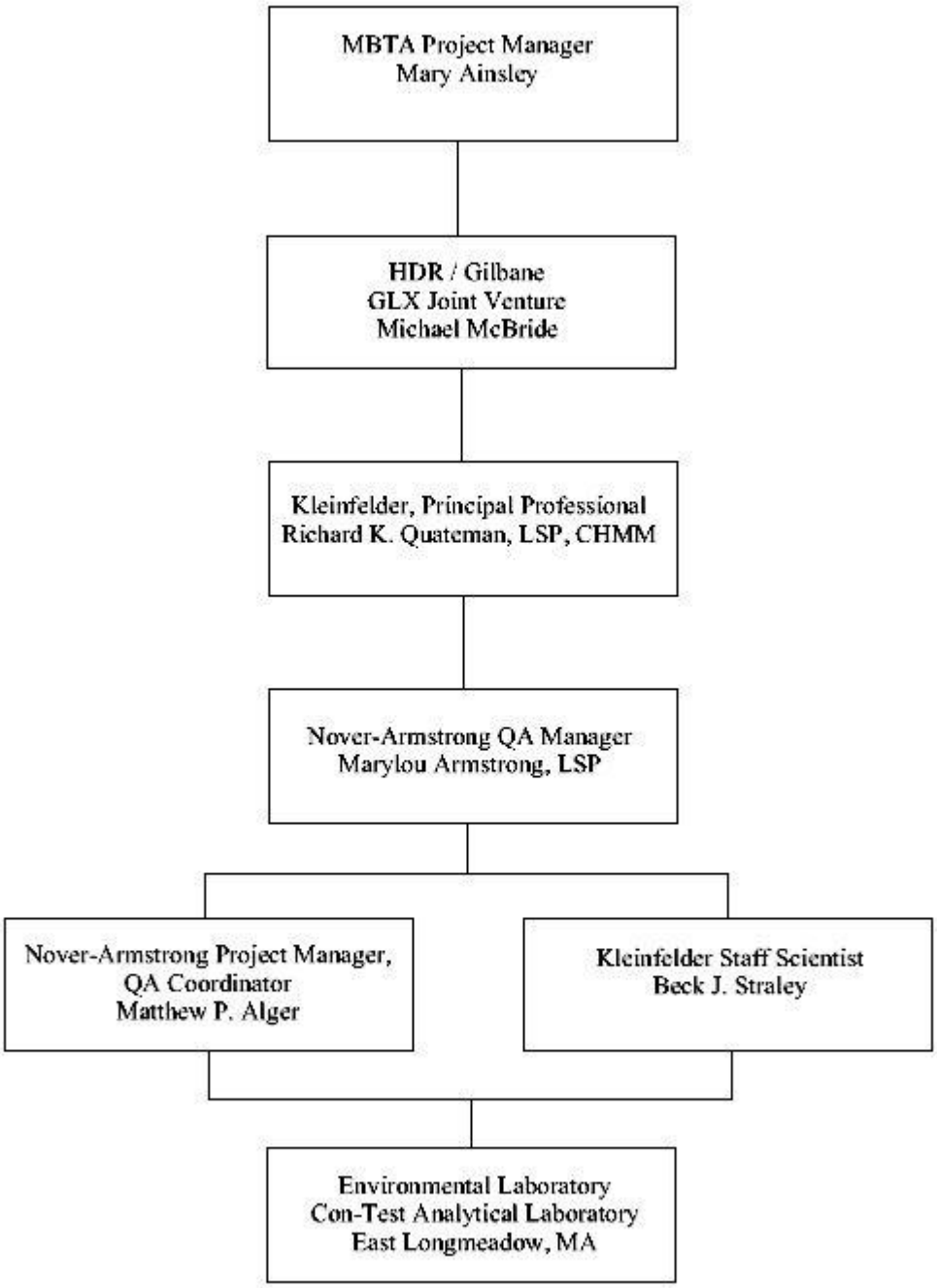
Site-Specific QAPP Addendum A2, Revision 1.2 (July 2013) for the MBTA Tire Maintenance Facility has been prepared in association with the *Generic Quality Assurance Project Plan for Nover-Armstrong Associates, Inc., Revision 3.1 (July 2013)*, RFA 11102, which was approved by the USEPA. The work described in this Site-Specific QAPP Addendum will be performed in accordance with the processes and procedures described in the Generic QAPP.

This Site-Specific QAPP Addendum has been prepared to ensure that all sample collection and data generation activities associated with the current project yield data that are of adequate quality for their intended use.

1.2 Project Organization and Responsibility

Figure 1-1 represents a graphic illustration of the project organization and communication pathways. These are considered to be general pathways of communication and do not restrict communication between all parties, as necessary.

Figure 1-1: Project Organizational Chart



- The Quality Assurance Manager (QAM) is the key Nover-Armstrong individual responsible for quality assurance (QA). The QAM is a company Principal and communicates directly with the QA Coordinator (QAC).

- The QA Coordinator reports to the QA Manager and is the liaison between the QA Manager and all other Nover-Armstrong and Kleinfelder personnel. The QA Coordinator reviews analytical reports received from state-certified laboratories for quality control.
- The Nover-Armstrong Principals interact directly with the Project Managers, the QA Coordinator, the QA Manager, and the Kleinfelder Project Manager.
- The Project Managers report to the Principals and coordinate activities with the QA Coordinator and QA Manager.
- The analytical laboratory sends reports to the QA Coordinator, after having audited the results in accordance with their Standard Operation Procedures (SOPs).

Kleinfelder and Nover-Armstrong field sampling personnel shall have received training in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 (e) including annual refresher courses. All training shall be documented. Training records shall be maintained by the employer of the staff and be available upon request. Standard safety practices shall be employed, and appropriate protective clothing shall be worn during all site visits.

Appropriate and effective health and safety practices shall be integrated into all daily operations to promote safe and healthful working conditions. At minimum, procedures shall comply with OSHA and other applicable local, State, and federal laws and regulations.

1.3 Problem Definition

The Green Line Extension Project (GLX) will provide light rail service from the relocated Lechmere Station using a two-branch operation. The building located at 21 Water Street / 183 Monsignor O'Brien Highway in Cambridge, the current location of the MBTA Tire Maintenance Facility (the site) will be demolished as part of the project and the property utilized for construction staging. Refer to Figure 1-2: Site Location.

Nover-Armstrong completed an Initial Hazardous Materials Survey at the site in November 2011. The MBTA Tire Maintenance Facility consists of an approximate 11,914 square foot CMU block building that is scheduled to be demolished as part of the GLX project. The site is currently owned by the Massachusetts Bay Transportation Authority (MBTA). As part of the Initial Hazardous Materials Survey, building materials were inspected for potential presence of polychlorinated biphenyls (PCBs). Visual inspection revealed window caulking, floor caulking, wall caulking, and wall mortar that were considered potential PCB sources; wall mortar was later determined not to be a PCB source or a manufactured product. There are forty (40) windows throughout the facility. Building materials were observed to be in poor to good condition, with areas of isolated damage. Caulking was found to be in generally sound condition. The building material samples were submitted to Alpha Analytical, Inc. (Alpha) and analyzed for PCBs via EPA Method 3540C/8082 (Soxhlet Extraction Method).

Concentrations of PCBs were detected in all window caulking samples, all floor caulking samples, one wall caulking sample, and two of three wall mortar samples. PCB concentrations ranged from 110,000 parts per million (ppm) to 993,000 ppm in the window and wall caulking samples. Lower PCB concentrations ranging from 0.172 ppm to 40.4 ppm were detected in floor caulking, and wall mortar samples.

Review of the analytical laboratory report revealed that 16.2 ppm PCBs was also detected in the Method Blank sample. Nover-Armstrong contacted Glen Breland of Alpha relative to the detection of PCBs in the Method Blank. Mr. Breland stated that the Method Blank was run as part of the sample batch. During the

Soxhlet extraction and/or blow down process, the Method Blank (and potentially some of the building material samples) was contaminated from the window caulking samples containing very high PCB concentrations run at the beginning of the batch. Therefore, samples containing less than 16 ppm PCBs may not contain PCBs or may have concentrations less than the concentrations reported by Alpha in their laboratory report.

Analytical results revealed window caulking, expansion joint caulking, floor caulking, and wall caulking containing detectable PCB concentrations. Nover-Armstrong recommended additional assessment of building materials and ground surfaces surrounding the windows and surrounding impacted floor and wall samples, per TCSA requirements. Additional assessment of building materials was conducted subsequent to the initial findings to evaluate surrounding substrate materials for the presence of PCBs. Due to the detection of PCBs within the Method Blank sample, Nover-Armstrong recommended re-sampling and analysis of the building materials with PCB concentrations between 1 and 50 ppm to determine / confirm the presence or absence of PCBs.

Site-Specific QAPP Addendum A2 is being implemented for the analysis of PCBs in soil and pavement located beneath the windows and building expansion joints of the building. The goal of this project is to identify potential PCB impacts from window and expansion joint caulking to areas of soil and pavement beneath and surrounding the exterior of the windows and wall joints and to assess the limits of PCB contamination, if identified. Additional assessment and/or remediation work may be required based on the outcome of this project. One or more QAPP Addenda will be prepared for any such additional work (if required).

1.4 Project Description and Timeline

<u>Project Description</u>

In accordance with EPA Protocols, Kleinfelder will conduct soil and pavement sampling & analysis to identify potential PCB impacts from window caulking to areas of soil and pavement beneath and surrounding the exterior of the windows and to assess the limits of PCB contamination, if identified.

- Up to 60 soil samples and 80 asphalt pavement samples will be obtained using USEPA and/or MassDEP Sampling Protocols (including Level C PPE, which is anticipated to be downgraded to Level D based on the low potential for dust generation). Soil samples will be obtained at the base of selected windows, expansion joints, and other areas of the building, and at varying horizontal distances and vertical depths from the building. Asphalt pavement samples will be obtained at the base of selected windows, expansion joints, and other areas of the building and at varying horizontal distances from the building.
- Initially, 6 soil samples and 4 pavement samples will be analyzed for PCBs (Soxhlet Method – SW846 3540C/8082A). No field screening will be performed.
- Based on the results for the initial soil and asphalt samples, additional samples collected from greater horizontal distances and/or greater vertical depths will be analyzed for PCBs.
- Analytical results will be compared against applicable USEPA regulatory standards.
- Sampling equipment will be decontaminated between sample collections. Some equipment items may be dedicated to individual sampling locations and discarded after use.
- Up to 7 Duplicate Samples (frequency of 1 duplicate per 20 samples per sample matrix) & 7 Equipment Blanks (frequency of 1 blank per 20 samples per sample matrix or 1 blank per day, whichever is more frequent) will be collected for QA/QC purposes.
- Estimated 8 days of labor, 2 personnel.

Timeline

Iterative Soil & Pavement Sampling / Analysis for PCBs (Field Activities)	July - December 2013
Laboratory Analytical Results Available for Review	July - December 2013
Written Deliverable with Results & Findings	December 2013 – February 2014

Section 2 – Measurement Data Acquisition

2.1 Sampling Design and Site Figures

As outlined in Section 1.4, Kleinfelder will collect soil and pavement samples from beneath selected windows, wall expansion joints, and other locations at the site. The soil samples will be obtained following Nover-Armstrong's standard operating procedure (SOP) for soil sample collection (SOP.NAA_A.01.1), which references USEPA and MassDEP guidance documents, where applicable. The pavement samples will obtained generally following the guidance provided in the USEPA Region 1 *Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), Revision 4 (May 2011), EIASOP_POROUSSAMPLING* and in accordance with the Code of Federal Regulations (CFR) 40 CFR 761. Refer to Appendix A – Standard Operating Procedures. Level D Personal Protective Equipment (PPE) will be utilized during sampling activities as the potential for exposure to potential PCB-containing dust is considered minimal.

Twenty-four (24) soil samples will be initially collected to the north of the site structure beneath three window groupings identified as "NW Window," "Center Window," and "NE Window," and a building expansion joint identified as "NW Expansion Joint," as depicted in Figure 2-1. Multiple sampling points will be associated with each of the three window groupings. Samples will be collected at horizontal distances of 6", 12", 24", 36", and/or 48" away from the exterior wall of the structure beneath the windows. Samples will be collected vertically from each sampling location at various depths: 0-6", 6-12", and/or 12-18" below the ground surface. The soil samples will be collected using a hand auger and/or trowel, which will be decontaminated between sample locations.

The sample collected from the shallowest depth at the 6" and 12" horizontal sampling points will be initially submitted for laboratory analysis of PCBs (Soxhlet Method – SW846 3540C/8082). These shallow samples are likely to be more susceptible to potential PCB impacts from window caulking than those samples collected from greater depths. A total of six soil samples will be initially submitted for laboratory analysis of PCBs. The remainder of the samples collected will be held for potential future analysis. Based on analytical results indicating significant concentrations of PCBs in the first six samples, additional samples collected from greater vertical depths will then be analyzed for PCBs. Up to 18 additional samples on hold at the laboratory will be analyzed as needed to assess the horizontal and vertical extent of PCB impacts beneath the windows. If it is determined that additional soil sampling and analysis is still required to clearly define the limits of soil impacts to the north of the site building, up to 36 additional samples will be collected for laboratory analysis at various horizontal distances and vertical depths, as deemed appropriate based on soil analytical data.

Asphalt surface pavement samples will be collected using a chisel to break up small pieces of asphalt, which will be placed into laboratory sampling jars. Three asphalt pieces, approximately ½" deep x 1" x 1" in size, will be collected at each sampling location to provide adequate sample volume for laboratory analysis. A rotary impact hammer will not be used to generate a fine powder sample, as prescribed in the USEPA guidance. The asphalt pieces will be ground into a fine powder upon submittal to the analytical laboratory, prior to analysis. To avoid cross-contamination, either one separate chisel will be dedicated for each sampling location or the chisel will be decontaminated between sampling locations.

Asphalt pavement samples will be collected from five general locations identified as "SW Asphalt," "Center Asphalt," "SE Asphalt," "W Asphalt," and "E Asphalt," as depicted in Figure 2-1. Initially, asphalt pavement samples will be obtained at the base of two windows on the southern side of the

building, one wall expansion joint on the southern side of the building, and one control point on the eastern side of the building located relatively distant from the identified PCB caulking locations. Samples will be collected at a distance of 6" away from the exterior wall of the structure. A total of 4 samples will initially be submitted for laboratory analysis of PCBs (Soxhlet Method – SW846 3540C/8082). Based on initial analytical data, additional samples will be obtained at varying horizontal distances away from the foundation of the east, west, and south sides of the building. Samples will be collected at distances of 6 inches, 1 foot, 2 feet, 5 feet, 10 feet, 20 feet and/or 40 feet away from the exterior wall of the structure and at the property fence line. A total of up to 80 samples will be collected during four iterative sampling rounds and submitted for laboratory analysis of PCBs (Soxhlet Method – SW846 3540C/8082).

A total of up to 60 soil samples and 80 asphalt grab samples, not including field quality control samples, will be submitted for laboratory analysis of PCBs (Soxhlet Extraction Method – SW846 3540C/8082).

2.2 Sampling and Analytical Methods Requirements

Table 2-1 lists the Sampling and Analytical Methods Requirements table that will be used for this site-specific QAPP addendum. The table is designed to provide a detailed summary of samples being collected for the project. Refer to Appendix A – Standard Operating Procedures.

Table 2-1: Sampling and Analytical Methods Requirements Table

Sample Description			QA/QC		SOPs			Container			Preservation	
Parameter	**Matrix**	**Samples**	**Dupl.**	**Equip. Blank**	**Field Sampling SOP**	**Method**	**Lab SOP**	**#**	**Size**	**Type**	**Sample Preservation**	**Hold Time**
Polychlorin-ated Biphenyls (PCBs)	Soil	60	3	3	SOP.NAA_A.01.1	Soxhlet Method – SW846 3540C/8082	SOP3540 Crev1KFA; Method 8082A	1	120 mL	Glass Jar w/ Teflon-lined cap	4° C	14 days to extraction
Polychlorin-ated Biphenyls (PCBs)	Asphalt Concrete	80	4	4	EIA SOP_POROUS SAMPLING	Soxhlet Method – SW846 3540C/8082	SOP3540 Crev1KFA; Method 8082A	1	120 mL	Glass Jar w/ Teflon-lined cap	4° C	14 days to extraction

2.3 Method and SOP Reference Table

Table 2-2: Site-Specific Method and SOP Reference Table

SOP Number	Procedure Name	Revision Number	Revision Date	SOP Author	Analytical Method Name	Analytical Method Number	Method Revision Number	Method Revision Date
EIASOP_POROUSSAMPLING	Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs)	4	05.2011	USEPA	N/A	N/A	N/A	N/A
SOP.NAA_A.01.1	Soil Sample Collection	1	07.2011	Nover-Armstrong Assoc., Inc.	N/A	N/A	N/A	N/A
SOP.NAA_C.01.1	Field Documentation	1	07.2011	Nover-Armstrong Assoc., Inc.	N/A	N/A	N/A	N/A
SOP.NAA_C.05.1	Equipment Decontamination	1	07.2011	Nover-Armstrong Assoc., Inc.	N/A	N/A	N/A	N/A
SOP.NAA_C.07.1	Chain of Custody Sample Handling & Shipping	1	07.2011	Nover-Armstrong Assoc., Inc.	N/A	N/A	N/A	N/A
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	1	02.2007	Con-Test Analytical Laboratory	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	USEPA SW-846 Method 8082	Update III	1997
SOP3540Crev1KFA	Method 3540c Soxhlet Extraction Procedure for Polychlorinated Biphenyls	1	3.06.2013	Con-Test Analytical Laboratory	Soxhlet Extraction	USEPA SW-846 Method 3540C	Update III	1997

Notes: N/A - Not Applicable

2.4 Field Equipment Calibration and Corrective Action

Table 2-3 lists the equipment needed for Site-Specific QAPP Addendum A2. The field equipment that will be used for the soil and pavement sampling does not require calibration. The equipment will be checked on a daily basis to ensure proper function. The PPE will be inspected before and after each use to ensure its integrity and effectiveness. Sampling equipment shall be cleaned (decontaminated) before use to minimize the potential for cross-contamination and whenever possible, new/unused sampling equipment shall be utilized.

Table 2-3: Field Equipment List

Equipment Type	Model
Hand Auger	N/A
Trowel	N/A
Chisel (1 dedicated chisel per asphalt sampling location)	385080
Decontamination supplies	Refer to SOP.NAA_C.05.1
Nitrile Gloves	N/A

All pertinent manufacturers' equipment manuals and any manufacturer-provided repair kits will be on-site at all times during the sampling event. All instrumentation necessary for health and safety purposes shall be maintained, tested and inspected according to the manufacturer's instructions.

See Appendix A for the Nover-Armstrong Decontamination SOP (SOP.NAA_C.05.1) and the guidelines for decontamination provided in the USEPA SOP (EIASOP_POROUSSAMPLING). Disposable sampling equipment shall be discarded after completing the sampling task and not reused. Decontamination of equipment will generate potentially contaminated rinse liquids that will need to be containerized on-site until proper disposal arrangements are made. The rinse liquids will be stored at the site in an industrial-type 55-gallon DOT-approved steel drum secured with a locking bolt ring. The rinse liquids will be tested prior to off-site disposal to determine if they must be transported to a hazardous waste facility. If it is determined that the rinse liquids are not contaminated, they will be disposed of on-site.

The rinse liquids will be tested at the conclusion of the sampling event (approximate three day duration). Analytical turnaround time for the rinse liquid sample will be ten business days. Following receipt of analytical results, the rinse liquids will either be disposed on-site or approval will be obtained for acceptance at a disposal facility. A licensed waste disposal contractor will be hired to transport the rinse liquids to the disposal facility. Therefore, the rinse liquids could remain on-site for up to one month from generation to disposal.

2.5 Laboratory Equipment Calibration and Corrective Action

The SOPs provided in Appendix A contain the laboratory equipment calibration QA/QC information.

2.6 Sample Handling and Custody Requirements

The USEPA Region 1 *Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), Revision 4 (May 2011), EIASOP_POROUSSAMPLING*, which is provided in Appendix A contains detailed sample handling instructions for the pavement samples that will be collected for PCB analysis. The soil samples will be obtained following Nover-Armstrong's standard

operating procedure (SOP) for soil sample collection (SOP.NAA_A.01.1), which references USEPA and MassDEP guidance documents, where applicable.

Analytical services shall be provided by Con-Test Analytical Laboratory (Con-Test) of East Longmeadow, MA. Con-Test is currently accredited under the National Environmental Laboratory Accreditation Conference (NELAC) standards and has its own quality assurance manual and standard operating procedures (SOPs) that meet the NELAC standards. Con-Test is accredited for the specific matrix / method / analyte for which testing is required and maintains its own separate quality assurance manual.

The soil and pavement samples will be collected into 120 mL amber jars with Teflon-lined caps. Containers shall be obtained from the analytical lab and shall be clean and free of contamination. The jars will not contain chemical preservatives. Care shall be taken during sampling to ensure that material is not spilled onto the outer surface of containers, and that lids are placed on tightly after sampling. At least 50 grams of sample material will be collected, in accordance with laboratory requirements. Containers shall be labeled with the date and time sampled, sample location, collectors initials, sample number, project name or number, preservative and any other pertinent information. Information shall be documented in field notebooks/worksheets and chain of custody forms. Con-Test does not require sample preservation or a specific holding time for samples being analyzed for PCBs; however, the laboratory does require samples to be cooled to 4°C using ice prior to delivery. EPA recommends that samples being analyzed for PCBs are extracted within 14 days of sample collection. Refer to Section 2.2, Table 2-1 Sampling and Analytical Methods Requirements Table.

See Appendix A for the Nover-Armstrong Chain of Custody Sample Handling & Shipping SOP (SOP.NAA_C.07.1). Samples and empty sample containers shall remain in the sample collector's view at all times, unless locked in a vehicle or other secure place. It is the sampler's responsibility to ensure that the samples are not tampered with prior to their delivery to the analytical lab. The Chain of Custody (COC) form shall be completed to provide documentation tracing sample possession and handling from the time of collection through delivery to the analytical lab, and shall accompany the samples at all times. The COC is a legal document that may be used for litigation purposes. The current COC used by Con-Test is attached within the Chain of Custody Sample Handling & Shipping SOP in Appendix A. The completed original COC shall be attached to the analytical report and becomes part of the permanent project record.

Samples shall be properly packaged in a cooler for shipment to maintain sample integrity and delivered to the analytical laboratory along with a separate signed COC form enclosed in each sample cooler. As noted, samples will be cooled to approximately 4°C using ice prior to delivery to the analytical laboratory.

Lab personnel shall log the samples into their computer in accordance with their standard operating procedure. The samples shall be inspected by qualified laboratory personnel. A Sample Receipt Checklist shall be used to document the receipt of the samples and shall include checks for breakage, correct container, temperature of the cooler, holding times, and for other factors that may affect quality. The samples shall be compared to their description on the COC form, and discrepancies in the number or the designations of the samples shall be noted on the form and shall be brought to the attention of the person who relinquished the samples to the lab. If necessary, the contact person on the chain of custody may be contacted for further instruction. Since samples may be held in the lab untouched until discrepancies are resolved, there could be an impact on sample holding times.

The COC form shall be signed and the date and time shall be recorded to formally accept the samples into laboratory custody. The analytical laboratory shall assign laboratory numbers to the samples, and these numbers shall be recorded on the chain of custody forms.

2.7 Analytical Sensitivity and Project Criteria

Refer to Appendix B for an Analytical Method Sensitivity and Project Criteria Table for analytical methods that are routinely performed by Con-Test, including the methods that will be utilized for this project. The table includes routine analytes, RDLs, regulatory standards, etc. *As of the date of this site-specific QAPP addendum, the current state and/or federal standards have been incorporated into this table and the reporting limits and standards have been reviewed for accuracy*.

2.8 Field Quality Control Requirements

The following are field quality control samples that will be utilized for this project:

- Equipment Blanks

  Equipment blanks consist of a sample of distilled/deionized (analyte-free) water which has been poured around and through sample collection equipment to determine if contamination has occurred due to improper cleaning and/or contamination of equipment. They shall be handled like any other sample and submitted with the other samples for analysis. The frequency shall be one equipment blank per 20 samples collected or one equipment blank per day sampling, whichever is more frequent.

- Duplicate samples

  Duplicate samples shall be collected for each batch of samples collected per matrix, per analysis. A batch is a sample delivery group that is analyzed together (a batch may not exceed 20 samples). The duplicates shall be collected at the same time, in the same manner as their corresponding routine samples and shall be identified in the field notes and logged on the chain of custody forms.

Table 2-4: Field Quality Control Requirements Table

QC Sample	Frequency	Acceptance Criteria	Corrective Action
Field Duplicate	1 duplicate per batch 20 samples	Duplicate concentrations are within +/- 50% for solid samples	Flag in project report
Equipment Blank	1 equipment blank per batch 20 samples or 1 equipment blank per day sampling, whichever is more frequent	No contaminants are detected	Flag in project report

Notes:

- Duplicate samples are not intended to be blind duplicate samples. They will be designated with a "DUP" after the sample designation (i.e. CMU-1_DUP).
- Equipment blank samples will be designated as "EQUIP BLANK". Note that a comment is required on the chain of custody indicating what the equipment blank is for (i.e. impact hammer drill bit).

2.9 Laboratory Quality Control Requirements

The SOPs provided in Appendix A contain the laboratory quality control procedures routinely performed for each parameter and matrix. A screening process may be used by Con-Test for samples collected as part of this Site-Specific QAPP Addendum to identify samples with high PCB concentrations prior to Soxhlet extraction in order prevent cross-contamination.

2.10 Data Management and Documentation

All Nover-Armstrong Project Managers will be required to review this site specific QAPP addendum and sign the "QAPP Project Personnel Log Sheet" which documents that they have reviewed this QAPP and will follow the procedures as described. The "QAPP Project Personnel Log Sheet" is found in Appendix C.

Field personnel shall use field logbooks and/or pre-printed work sheets to accurately document all field activities: on-site conditions; field measurements; sample collection information; field instrument and calibration information; and other pertinent site-related information during monitoring activities. Refer to Appendix A for Nover-Armstrong's Field Documentation SOP (SOP.NAA_C.01.1). The field notes shall include a description of field conditions that includes, as a minimum:

- Site location;
- Date, start, and finish times of the work and weather conditions;
- Name and initials of person making entry;
- Names of other personnel present, if any;
- Names of visitors, if any;
- Purpose and summary of proposed work effort;
- Details of any deviation from the field operations plan or standard operating procedures, including who authorized the deviation;
- Field observations;

- Sampling equipment used (including make model and serial number);
- Fixed laboratory sample identification number, sample type (grab), time of sampling, sample analysis, and sample locations shown on a near-scale map relative to a fixed landmark;
- Sample handling, packaging, labeling, and shipping information (including destination);
- Location, description and unique identifier for all photographs taken in association with the field activity; and
- Any other pertinent information.

Information recorded in other site documents, *e.g.*, sampling logs, will not be repeated in logbooks except in summary form. Any corrections to the logbook or other written documentation shall be initialed and dated. All corrections shall be shown as a single line through the original. The unused bottom portion of each page shall be lined-out, initialed, and dated.

All site related reports and project plans including QAPPs, laboratory reports, site sampling reports, and annual reports shall be submitted and maintained in electronic project files and reviewed by the appropriate Project Manager to evaluate the usability of the data and assure compliance with the elements of this QAPP.

All electronic copies of company files are saved on the Kleinfelder server as they are generated. The data on the server is backed up daily and retained indefinitely.

Section 3 – Assessment and Oversight

3.1 Assessments and Response Actions

Data Assessment

All data generated shall be reviewed by the contractor and the Project Manager to ensure that the data has met the objectives and requirements of this QAPP and that the results are technically valid, reliable, and usable. Sampling and analytical results shall be reviewed to determine if:

- Corrective action is necessary;
- The sampling plan should be revised; or
- The site should be re-sampled.

In order to ensure that the data has met the objectives and requirements of this QAPP and that the results are technically valid, reliable and usable, data shall be reviewed and compared with relevant documentation such as:

- Available Historical data;
- Laboratory MDL and RDL;
- Standards established by the MassDEP and EPA;
- Current MassDEP and EPA policies; and
- Other pertinent documents as needed.

If data of questionable quality is reported or other quality control issues are uncovered, the Project Manager shall report the issues to the QA Coordinator and/or QA Manager. The Project Manager, with input from quality assurance personnel, shall determine the usefulness of data in question and at minimum shall summarize that data concerns in the report for which the data was generated.

The need for corrective action, including the collection of new or additional samples, shall be determined based on the data quality objectives for the project and with input from quality assurance and other appropriate personnel.

The laboratories provide the necessary Analytical Method Report Certification Forms, case narratives, and QA/QC data reporting. The lab certifies that the required QA/QC procedures were followed, and all performance/acceptance standards for the required QA/QC procedures were achieved or discussed.

It is the Project Manager's responsibility to ensure that all sampling procedures and techniques are conducted in accordance with the QAPP and any site specific QAPPs. This can best be assured by the use of field audits.

Nover-Armstrong quality assurance personnel shall periodically conduct separate field audits, review field methods, analytical procedures and/or document tracking and record keeping practices, to assure compliance with the elements of this QAPP.

Corrective Action

Corrective actions must be taken as soon as possible when data or field procedures are found to be of questionable quality. Any suspected problems shall be brought to the attention of the Kleinfelder and Nover-Armstrong Project Managers and the QA Coordinator.

The need for corrective action may be identified in many ways. The corrective action steps are:

- Identification and definition of the problem;
- Investigation of the problem;
- Determination of the cause of the problem and appropriate corrective action (this may include the need for additional training);
- Implementation of the corrective action;
- Verification that the problem has been corrected;
- Modification of procedures, as necessary, to prevent recurrence; and document the events.

3.2 Project Reports

Technical reports documenting the findings of site sampling work shall be generated by Kleinfelder and/or Nover-Armstrong. Technical reports detailing the analytical results for PCBs in soil and pavement beneath the windows of the facility will be generated for Site-Specific QAPP Addendum A2.

The report will include the following information:

- Summary of sampling activities;
- A copy of the complete laboratory report, including the chain of custody forms and applicable data validation reports;
- A list of equipment used;
- A copy of all field sampling logs;
- Site map;
- Data summary tables of the compounds of concern detected at each sampling location during the current sampling event;

- A Quality Assurance/Quality Control Section;
- Recommendations for any remedial action; and
- Recommendations for future modifications to the current monitoring program or to the site-specific QAPP, if appropriate.

Section 4 – Data Evaluation

4.1 Field Data Evaluation

The primary QA objective for all projects is to assure that all measurements are representative of actual site conditions and that all data resulting from field, sampling, and analytical activities be comparable and generated in a scientifically valid and legally defensible manner. It is important that the data collected are of known and documented quality. Any party generating data under this program has the responsibility to implement minimum procedures to assure that the precision, accuracy, completeness, and representativeness of its data are known and documented. The use of accepted, published sampling and analysis methods, as well as the use of standardized units, aid in ensuring the comparability of the data. The Standard Operating Procedures (SOPs), as included in Appendix A of this project plan, have been developed to meet this objective.

4.2 Laboratory Data Evaluation

Data quality objectives (DQOs) are qualitative or quantitative statements developed by the data user to specify the quality of the data needed from a particular activity to support specific decisions. The DQOs are the starting point in designing a sampling program. The DQO development process matches sampling and analytical capabilities to the data targeted for specific uses and ensures that the quality of the data meets project requirements. The DQOs for this project are to identify potential PCB impacts from window caulking leaching or transport by atmospheric deposition into soil and pavement beneath the previously-identified PCB-impacted areas and to assess the limits of PCB contamination, if identified. Additional assessment and/or remediation work may be required based on the outcome of this project. One or more QAPP Addenda will be prepared for any such additional work (if required). Potential additional assessment of ground surfaces surrounding the windows will be addressed in a separate Site-Specific QAPP Addendum, if required.

Kleinfelder and Nover-Armstrong will accept the limits of precision and accuracy for analytes that have been established by the QA Office of the state-certified laboratory. The laboratories provide the necessary Analytical Method Report Certification Forms, case narratives, and QA/QC data reporting. In an effort to verify that the data collected were suitable for use in Site Characterization, the Project Manager and QA Coordinator will review the laboratory analytical reports generated as part of the assessment activities. This review will include the report narratives, surrogate recovery results, and the Analytical Method Report Certification Forms included in the data package.

Kleinfelder and Nover-Armstrong will accept the Method Detection Limits (MDL) and the Reportable Detection Limits (RDL) established by the state-certified laboratory. It is the Kleinfelder and Nover-Armstrong Project Managers' responsibility to ensure that the laboratory's quality assurance program, including the MDL's, RDL's and limits of precision and accuracy for any quality control sample, support their DQOs and PQOs. Refer to Appendix B for a summary table of analytical test methods, laboratory RDLs/MDLs and regulatory action limits for all compounds tested on site.

The MassDEP *Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols* (CAM) (Policy #WSC-10-320) provides a series of required protocols for the acquisition, analysis, and reporting of analytical data in support of MCP decisions (a) to satisfy the broad quality assurance (QA) and quality control (QC) requirements of 310 CMR 40.0017 and 40.0191 regarding the scientific defensibility, precision and accuracy, and reporting of analytical data and (b) to meet the requirements and specifications for those parties who wish to obtain "Presumptive Certainty" for analytical data that may be used in a data usability and representativeness assessment, as required in 310 CMR 40.1056(2)(k) for Response Action Outcome (RAO) submittals, consistent with the guidance described in MassDEP Policy #WSC-07-350, *MCP Representativeness Evaluations and Data Usability Assessments*.

Kleinfelder and Nover-Armstrong's laboratory data evaluation standards and protocols will adhere to the MassDEP CAM and other MassDEP policies. The following paragraphs consist of MassDEP's definition of "Presumptive Certainty," the procedures required to obtain "Presumptive Certainty," and the role of "Presumptive Certainty" in a data usability and representativeness assessment.

The term "Presumptive Certainty" as used in Sections I through IX of the CAM describes a particular status for analytical or environmental monitoring data used in support of MCP Response Action submittals. Obtaining "Presumptive Certainty" status is just one of a number of options available to satisfy the data quality requirements for MCP submittals described in 310 CMR 40.0017, 40.0191 and 40.1056(2)(k). It should be clearly understood that exercising the "Presumptive Certainty" option is discretionary. However, *parties who elect not to utilize the "Presumptive Certainty" option have an obligation, pursuant to 310 CMR 40.0017 and 40.0191(2)(c), to demonstrate and <u>document</u> an overall level of QA/QC (laboratory and field), data usability, and data representativeness adequate for the intended use of the data.*

In order to achieve "Presumptive Certainty" for analytical data, parties must:

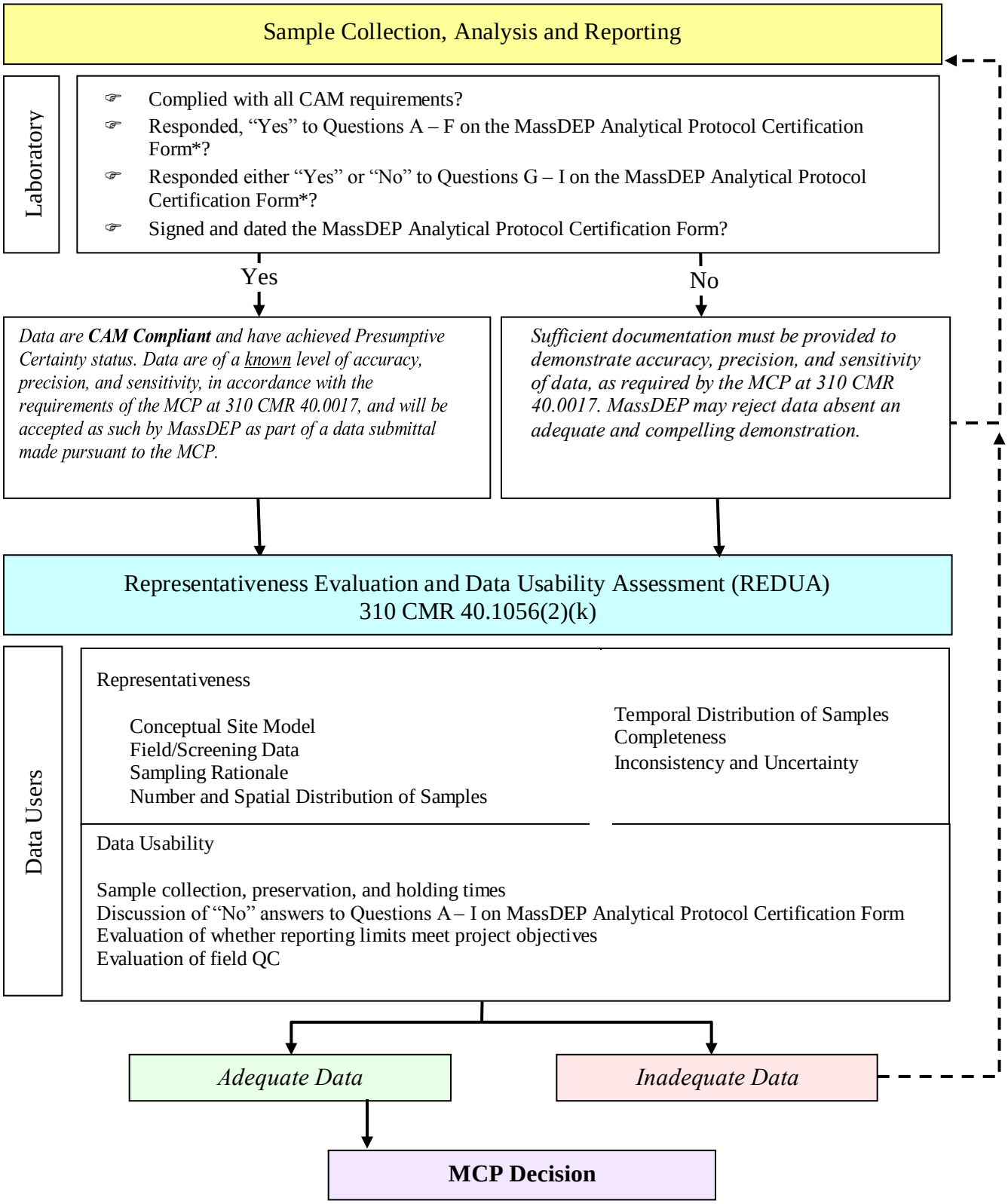
(a) Use the analytical method specified for the selected CAM protocol;
(b) Incorporate **all** required analytical QC elements specified for the selected CAM protocol;
(c) Implement, as necessary, required corrective actions and analytical response actions for **all** non-conforming analytical performance standards;
(d) Evaluate and narrate, as necessary, **all** identified CAM protocol non-compliances; and
(e) Comply with **all** the reporting requirements specified in WSC-CAM-VII A, including retention of reported and unreported analytical data and information for a period of ten (10) years.

In achieving "Presumptive Certainty" status, parties will be assured that analytical data sets:

- ✓ Satisfy the broad QA/QC requirements of 310 CMR 40.0017 and 40.0191 regarding the scientific defensibility, precision and accuracy, and reporting of analytical data; and
- ✓ May be used in a data usability and representativeness assessment, as required in 310 CMR 40.1056(2)(k) for RAO submittals, consistent with the guidance described in MassDEP Policy #WSC-07-350, *MCP Representativeness Evaluations and Data Usability Assessments*.

A logic diagram detailing the "Presumptive Certainty" approach is presented in Figure 4-1 (from MassDEP Policy #WSC-10-320).

Figure 4-1: MassDEP Presumptive Certainty and REDUA Concept



As indicated in Figure 4-1, use of the CAM and achievement of a "Presumptive Certainty" status will produce an analytical data set that will be accepted by agency reviewers for subsequent evaluation of data usability and representativeness.

It is stressed that "Presumptive Certainty" requirements are to be considered minimum requirements. Efforts that go beyond these minimum requirements (e.g., including additional points in a calibration curve) are considered compliant with the "Presumptive Certainty" concept and provisions, and need not be identified and discussed as an "exception."

The most recent version of the CAM is posted on the MassDEP's web site at http://www.mass.gov/dep/cleanup/laws/qaqcdocs.htm#I.

4.3 Data Usability and Project Evaluation

Data usability refers to the extent to which a data set can adequately meet specific site characterization needs and data quality objectives. For parties who elect to follow the specifications in the CAM, data will be considered usable for all subsequent data usability evaluations if all provisions and standards of the MCP Analytical Methods are met, including percent recovery limits for (any) method surrogate spikes and achievement of necessary (site-specific) Reporting Limits.

The overall project will be evaluated by the Kleinfelder and Nover-Armstrong Project Managers and the QA Coordinator, at a minimum. The evaluation will include tabulation of data, comparison of data to state and/or federal standards, graphical representations of data and sampling locations, data usability and representativeness evaluation, interpretation of trends and anomalies, and formulation of conclusions. The evaluation will include a determination as to whether or not the project objectives were achieved and what additional actions may be required at the site.

Section 5 – References

United States Environmental Protection Agency (USEPA). 2001. *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5).

United States Environmental Protection Agency (USEPA). 2002. *EPA Guidance for Quality Assurance Project Plans* (EPA QA/G-5).

United States Environmental Protection Agency (USEPA). 2007. *Guidance for Preparing Standard Operating Procedures (SOPs)* (EPA QA/G-6).

United States Environmental Protection Agency (USEPA). 2000. *Guidance for Data Quality Assessment: Practical Methods for Data Analysis* (EPA QA/G-9).

United States Environmental Protection Agency (USEPA) Region 1. 2010. *Quality Assurance Project Plan Program Guidance*.

United States Environmental Protection Agency (USEPA) Region 1. 2009. *Planning and Documenting Brownfields Projects, Generic Quality Assurance Project Plans, and Site-specific QAPP Addenda.*

United States Environmental Protection Agency (USEPA). 2005. *Polychlorinated Biphenyl (PCB) Site Revitalization Guidance Under the Toxic Substances Control Act (TSCA)*.

Code of Federal Regulations (CFR) 40 CFR 761

United States Environmental Protection Agency (USEPA). 2008. *Revitalizing Contaminated Sites: Addressing Liability Concerns (The Revitalization Handbook)*.

Massachusetts Department of Environmental Protection (MassDEP). 2010. *Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols* (WSC-10-320).

Massachusetts Department of Environmental Protection (MassDEP). 2007. *MCP Representativeness Evaluations and Data Usability Assessments* (WSC-07-350).

FIGURES

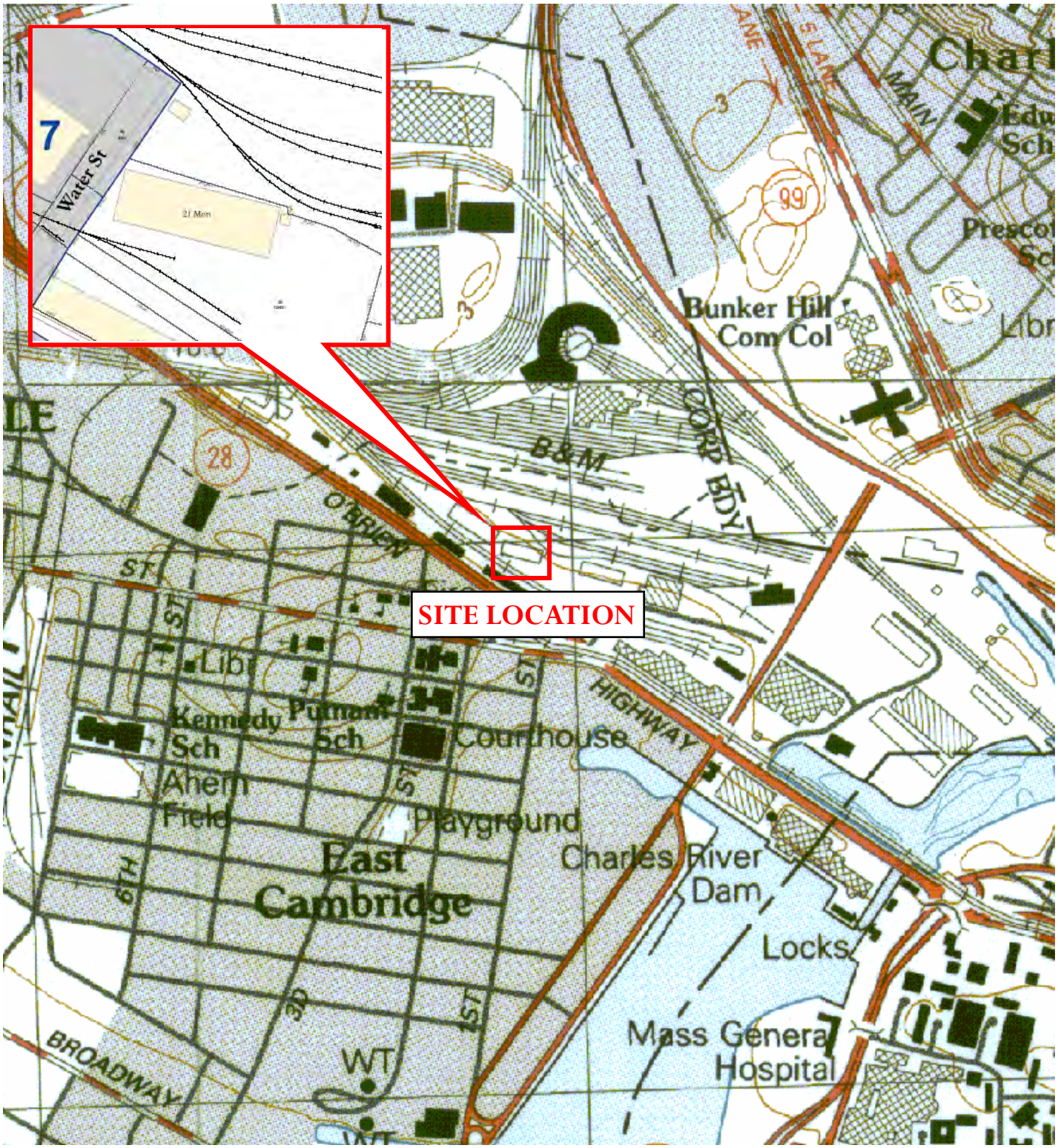


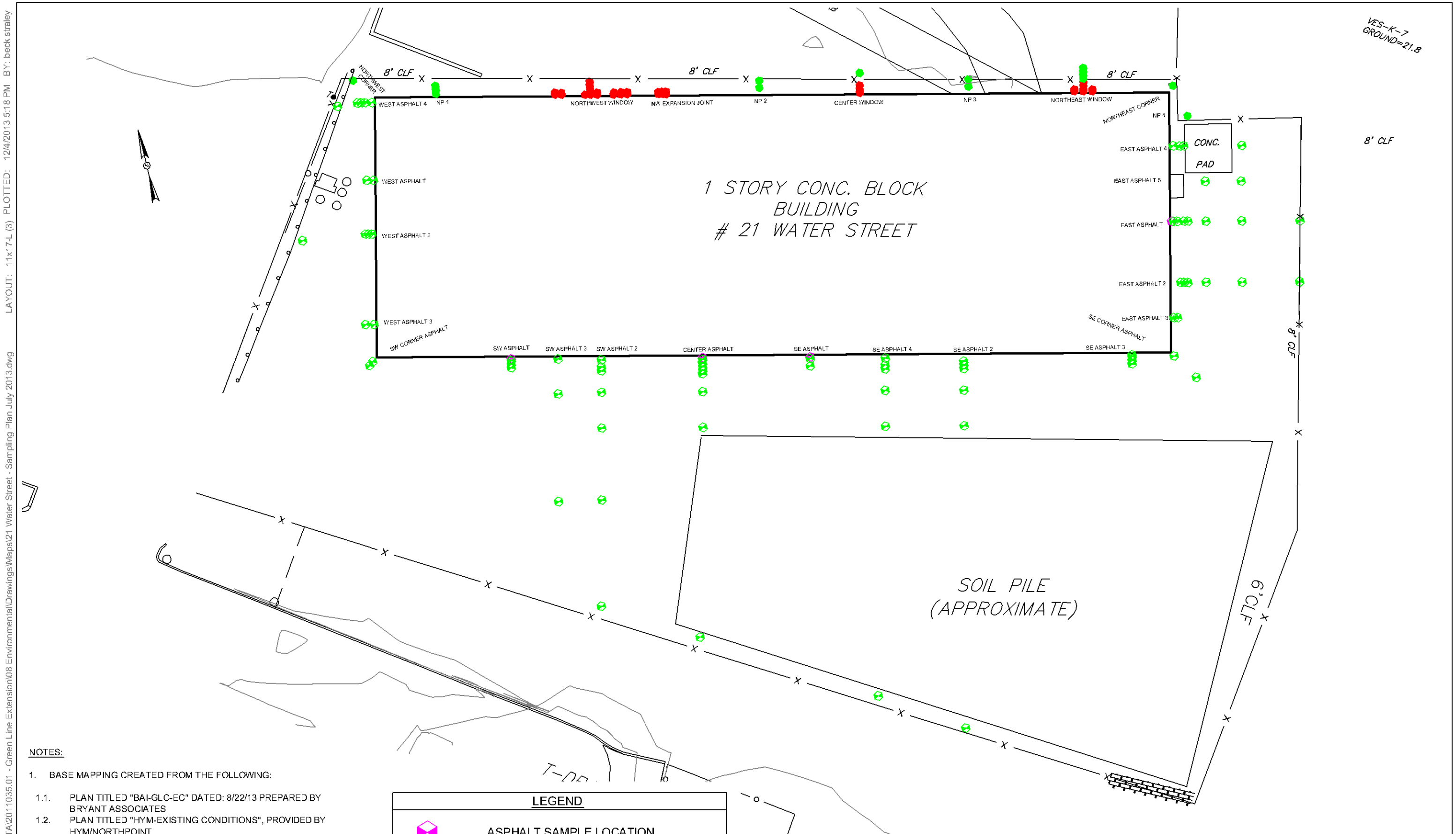
Figure 1-2: Site Location

MBTA Tire Maintenance Facility

21 Water Street, Cambridge, Massachusetts

Project File P2814

CAD FILE: G:_clients\MBTA\2011035.01 - Green Line Extension\08 Environmental\Drawings\Maps\21 Water Street - Sampling Plan July 2013.dwg LAYOUT: 11x17-L (3) PLOTTED: 12/4/2013 5:18 PM BY: beck siraley



NOTES:

1. BASE MAPPING CREATED FROM THE FOLLOWING:

1.1. PLAN TITLED "BAI-GLC-EC" DATED: 8/22/13 PREPARED BY BRYANT ASSOCIATES

1.2. PLAN TITLED "HYM-EXISTING CONDITIONS", PROVIDED BY HYM/NORTHPOINT

0 25 50 Feet

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.

LEGEND

- ASPHALT SAMPLE LOCATION
- ASPHALT SAMPLE LOCATION - PROPOSED
- SOIL SAMPLE LOCATION
- SOIL SAMPLE LOCATION - PROPOSED

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.	20120096
DRAWN BY	BJS
CHECKED BY	RKQ
DATE:	7/25/2013
REVISED:	

21 WATER STREET
PROPOSED EXPLORATION PLAN

GREEN LINE EXTENSION
21 WATER STREET

PLATE
2-1

APPENDIX A

STANDARD OPERATING PROCEDURES (SOPs)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

STANDARD OPERATING PROCEDURE FOR SAMPLING POROUS SURFACES FOR POLYCHLORINATED BIPHENYLS (PCBs)

May 2011

SDMS DocID 484692

STANDARD OPERATING PROCEDURE FOR SAMPLING POROUS SURFACES FOR POLYCHLORINATED BIPHENYLS (PCBs)

The Office of Environmental Measurement and Evaluation
EPA New England – Region 1
11 Technology Dr.
North Chelmsford, MA 01863

Prepared by: Dan Granz, Environmental Engineer — Date: 5/5/11

Reviewed by: Kim Tisa, TSCA PCB Coordinator — Date: 5/5/11

Reviewed by: Jerry Keefe – EIA Team Leader — Date: 05/23/11

Approved by: Dan Boudreau, EIA Chemistry Team Leader — Date: 5/23/11

Disclaimer: The controlled version of this document is the electronic version viewed on-line only. If this is a printed copy of the document, it is an uncontrolled version and may or may not be the version.

This document contains direction developed solely to provide internal guidance to U.S. Environmental Protection Agency (EPA) personnel. EPA retains the discretion to adopt approaches that differ from these procedures on a case by case basis. The procedures set forth do not create any rights, substantive or procedural, enforceable at law by a party to litigation with EPA or the United States.

Revision Page

Date	Rev#	Summary of Changes	Sections
12/97	1	Initial Approval, draft	
3/20/08	2	Major update, only for PCBs, added TSCA sampling	All sections
7/17/08	3	Disposal of dust filter and decon of vac hose	11.0 and 14.0
5/04/11	4	Vacuum Trap Design and Clean-out	9.4

Table of Contents

1.0 Scope and Application 4

2.0 Summary of Method 4

3.0 Definitions 4

4.0 Health and Safety Warnings 5

5.0 Interferences 6

6.0 Personnel Qualifications 6

7.0 Equipment and Supplies 6

8.0 Sampling Design 7

9.0 Sample Collection 7

10.0 Sample Handling, Preservation, and Storage 10

11.0 Decontamination 11

12.0 Data and Record Management 11

13.0 Quality Control and Quality Assurance 11

14.0 Waste Management and Pollution Prevention 12

15.0 References 12

Attachments:

Example of Custody Seal and Sample Label
Example of Chain of Custody Form

1.0 Scope and Application

1.1 This Standard Operating Procedure (SOP) is suitable for collection of a porous matrix sample for analysis of Polychlorinated Biphenyls (PCBs).

1.2 This SOP describes sampling techniques for both hard and soft porous surfaces.

1.2.1 Hard surfaces, and most soft surfaces, can be sampled using an impact hammer drill to generate a uniform, finely ground, powder to be extracted and analyzed for PCBs. This procedure is primarily geared at providing enough sample quantity for two analyses. Hard porous surfaces include concrete, brick, asphalt, cement, sandstone, limestone, unglazed ceramics, and other possible PCB suspected material. This procedure may also be used on other softer porous surfaces, such as wood.

1.2.2 Soft surfaces can be sampled using a chisel or sharp knife to generate a representative sample to be extracted and analyzed for PCBs. Soft porous surfaces include wood, wall plasterboard, low density plastics, rubber, caulking, and other PCB suspected material.

1.3 This SOP provides for collection of surface samples (0 – 0.5 inches) and delineation of PCB contamination throughout the core of the porous surface. The procedure can be used to sample the porous surface at distinctly different depth zones.

2.0 Method Summary

A one-inch or other sized diameter carbide drill bit is used in a rotary impact hammer drill to generate a fine powder, or other representative sample, suitable for extraction and analysis of PCBs from porous surfaces. This method also allows the use of chisels or knives for the collection of samples from soft porous surfaces for PCB analysis.

3.0 Definitions

3.1 Field/Bottle Blank: A sample container of the same lot as the containers used for the environmental samples. This evaluates PCB contamination introduced from the sample container(s) from a common lot.

3.2 Equipment/Rinse/Rinsate Blanks: A sample that is collected by pouring hexane over the sample collection equipment after decontamination and before sample collection. The sample is collected in the appropriate sample container identical to the sample containers. This represents background contamination resulting from the field equipment, sampling procedure, sample container, and shipment.

3.3 Field Replicates/Duplicates: Two or more samples collected at the same sampling location. Field replicates should be samples collected side by side. Field replicates represent the precision of the whole method, site heterogeneity, field sampling, and the laboratory analysis.

3.4 Field Split Samples: Two or more representative subsamples taken from one environmental sample in the field. Prior to splitting, the environmental sample is homogenized to correct for sample heterogeneity that would adversely impact data comparability. Field split samples are usually analyzed by different laboratories (interlaboratory comparison) or by the same laboratory (intralaboratory comparison). Field splits are used to assess sample handling procedures from field to laboratory and laboratory comparability.

3.5 Laboratory Quality Samples: Additional samples that will be collected for the laboratory's quality control program: matrix spike, matrix spike duplicate, laboratory duplicates, etc.

3.6 Proficiency Testing (PT)/Performance Evaluation (PE) Sample: A sample, the composition of which is unknown to the laboratory or analyst, provided to the analyst or laboratory to assess the capability to produce results within acceptable criteria. This is optional depending on the data quality objectives. If possible, it is recommended that the PE sample be of similar matrix as the porous surface(s) being sampled.

3.7 Porous Surface: Any surface that allows PCBs to penetrate or pass into itself including, but not limited to, paint or coating on metal; corroded metal; fibrous glass or glass wool; unglazed ceramics; ceramics with porous glaze; porous building stone such as sandstone, travertine, limestone, or coral rock; low density plastics such as Styrofoam and low density polyethylene; coated (varnished or painted) or uncoated wood; painted or unpainted concrete or cement; plaster; plasterboard; wallboard; rubber; caulking; fiberboard; chipboard; asphalt; or tar paper.

3.8 Shipping Container Temperature Blank: A water sample that is transported to the laboratory to measure the temperature of the samples in the cooler.

4.0 Health and Safety

4.1 Eye, respiratory, and hearing protection are required at all times during sample drilling. A properly fitted respirator is required for hard porous surface sampling. A respirator is recommended whenever there is a risk of inhalation of either particulate or volatilized PCBs during sampling.

4.2 All proper personal protection clothing and equipment must be worn.

4.3 When working with potentially hazardous materials or situations, follow EPA, OSHA, and specific health or safety procedures.

4.4 Care must be exercised when using an electrical drill and sharp cutting objects.

5.0 Interferences and Potential Problems

5.1 This sampling technique produces a finely ground uniform powder, which minimizes the physical matrix effects from variations in the sample consistency (i.e., particle size, uniformity, homogeneity, and surface condition). Matrix spike analysis of a sample is highly recommended to monitor for any matrix related interferences.

5.2 Nitrile gloves are recommended. Latex gloves must not be used due to possible phthalate contamination.

5.3 Interferences may result from using contaminated equipment, solvents, reagents, sample containers, or sampling in a disturbed area. The drill bit must be decontaminated between samples. (see Section 11.0.)

5.4 Cross contamination problems can be eliminated or minimized through the use of dedicated sampling equipment.

6.0 Personnel Qualifications

6.1 All field samplers working at hazardous materials/waste sites are required to take a 40 hour health and safety training course prior to engaging in any field activities. Subsequently, an 8 hour refresher health and safety course is required annually.

6.2 The field sampler should be trained by an experienced sampler before initiating this procedure.

6.3 All personnel shall be responsible for complying with all quality assurance/quality control requirements that pertain to their organizational/technical function.

7.0 Equipment and Supplies

7.1 This list varies with the matrix and if depth profiling is required

Rotary impact hammer variable speed drill
1-inch or other suitable (1/2, 3/4, etc.) diameter carbide tip drill bits
Steel chisel or sharp cutting knife, and hammer
Brush and cloths to clean area
Stainless steel scoopulas

Aluminum foil to collect the powder sample
1 quart Cubitainer with the top cut out to collect the powder sample
Aluminum weighing pans to collect the powder sample
Cleaned glass container (2 oz or 40 mL) with Teflon lined cap
Decontamination supplies: hexane, two small buckets, a scrub brush, detergent, deionized water, hexane squirt bottle, and paper towels
Dedicated vacuum cleaner with a disposable filter or a vacuum pump with a dust filter
Polyethylene tubing and Pasteur pipettes
Sample tags/labels, custody seals, and Chain-of-Custody form

8.0 Sampling Design

8.1 A sufficient number of samples must be collected to meet the data quality objectives of the project. If the source of the PCB contamination is regulated under the federal TSCA PCB Regulations at 40 CFR Part 761, the sampler should insure that the sampling design is sufficient to meet any investigation or verification sampling requirements. At a minimum, the following is recommended:

8.1.1 Suspected stained area (s) should be sampled.

8.1.2 At each separate location, collect at least 3 samples of each type of porous surface, regardless of the amount of each type of porous surface present.

8.1.3 In areas where PCB equipment was used or where PCBs were stored, samples should be collected at a frequency of 1 sample/100 square feet (ft^2).

9.0 Sample Collection

9.1 Hard Porous Surfaces

9.1.1 Lock a 1-inch or another size diameter carbide drill bit into the impact hammer drill and plug the drill into an appropriate power source. For easy identification, sample locations may be pre-marked using a marker or paint. (Note: the actual drilling point must not be marked.) Remove any debris with a clean brush or cloth prior to drilling. All sampling decisions of this nature should be noted in the sampling logbook.

9.1.2 Use a Cubitainer with the top cut off or aluminum foil to contain the powdered sample. Begin drilling in the designated location. Apply steady even pressure and let the drill do the work. Applying too much pressure will generate excessive heat and dull the drill bit prematurely. The drill will provide a finely ground powder that can be easily collected.

9.1.3 Samples should be collected at ½-inch depth intervals. Thus, the initial surface sample should be collected from 0 – 0.5 inches. A ½-inch deep hole generates about 10 grams (20 mL) of powder. Multiple holes located closely adjacent to each other, may be needed to generate sufficient sample volumes for a PCB determination. It is strongly recommended that the analytical laboratory be consulted on the minimum sample size needed for PCB extraction and analysis.

9.1.4 Wall and Ceiling Sampling: A team of two samplers will be required for wall and ceiling sampling. The second person will hold a clean catch surface (e.g. an aluminum pan) below the drill to collect the falling powder. Alternatively, use the chuck-end of the drill bit and punch a hole through the center of the collection pan. The drill bit is then mounted through the pan and into the drill. For ceilings, the drill may be held at an angle to collect the powder. Thus the driller can be drilling at an angle while the assistant steadies the pan to catch the falling powder. As a precaution, it may be advantageous to tape a piece of plastic around the drill, just below the chuck, to avoid dust contaminating the body of the drill and entering the drill's cooling vents. Caution must be taken to prevent obstruction of the drill's cooling vents.

9.2 Soft Porous Surfaces

9.2.1 The procedure for the hard porous surface may be used for certain soft porous surfaces, such as wood.

9.2.2 Samples should be collected at no more than ½-inch depth intervals using a metal chisel or sharp cutting knife. Thus, the initial surface sample should be collected from 0 – 0.5 inches. It is important to collect at least 10 grams for analysis.

9.2.3 For soft porous surfaces, such as caulking and rubber, a representative sample can be collected using a metal chisel or sharp cutting knife.

9.3 Multiple Depth Sampling

9.3.1 Multiple Depth Sampling may not be applicable to certain porous surfaces, such as caulking.

9.3.2 Collect the surface sample as outlined in Section 9.1 or 9.2.

9.3.3 Use the vacuum pump or cleaner to clean out the hole.

9.3.4 To collect multiple depths there are two options.

9.3.4.1 Option one: drill sequentially ½-inch increments with the 1 inch drill.

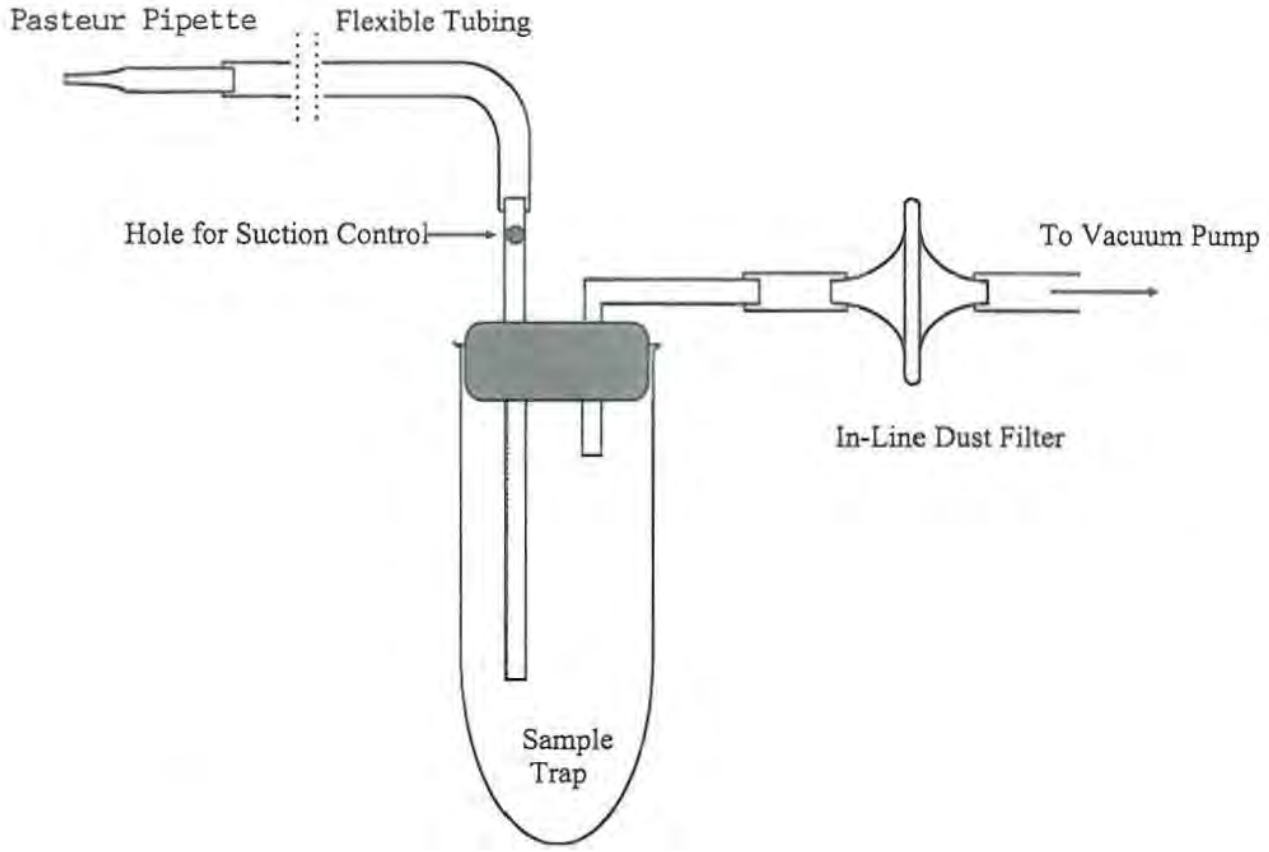
9.3.4.2 Option two: drill with the 1 inch bit and either make the hole larger or use a smaller bit to take the next ½- inch sample.

9.3.5 A stainless steel scoopula will make it easier to collect the sample from the bottom of the hole.

9.4 Vacuum Trap Design and Clean-out

The trap presented in Figure 1 is a convenient and thorough way for collecting and removing concrete powder from drilled holes. The trap system is designed to allow for control of the suction from the vacuum pump and easy trap clean-out between samples. Note, by placing a hole in the inlet tube (see Figure 1), a finger on the hand holding the trap can be used to control the suction at the sampling tip. Thus, when this hole is left completely open, there will be no suction, and the sampler can have complete control over where and what to sample. To change-out between samples the following steps should be taken: 1) the Pasteur pipette and piece of polyethylene tubing at the sample inlet should be replaced with new materials, 2) the portion of the rubber stopper and glass tubing that was in the trap should be wiped down with a clean damp paper towel (wetted with deionized water) and then dried with a fresh paper towel, 3) a clean pipe cleaner should be drawn through the glass inlet tube to remove any concrete dust present, and 4) the glass tube or flask used to collect the sample should swapped out with a clean decontaminated sample trap. Having several clean tubes or flasks on hand will facilitate change-out between samples.

Figure 1



Note: the holes should be vacuumed thoroughly to minimize any cross-contamination between sample depths and the bits should be decontaminated between samples. (See Section 11.0)

10.0 Sample Handling, Preservation, and Storage

10.1 Samples must be collected in glass containers for PCB analyses. In general, a 2-ounce sample container with a Teflon-lined cap (wide-mouth jars are preferred) will hold sufficient mass for most analyses. A 2-ounce jar can hold roughly 90 grams of sample.

10.2 Samples are to be shipped refrigerated and maintained at $\leq$ 6°C until the time of extraction and analysis.

10.3 The suggested holding time for PCB samples is 14 days to extraction.

11.0 Decontamination

11.1 Assemble two decontamination buckets. The first bucket contains a detergent and potable water solution, and the second bucket is for rinsate. Place all used drill bits, hose for the vacuum cleaner, and utensils in the detergent and water bucket. Scrub each piece thoroughly using the scrub brush. Note, the powder does cling to the metal surfaces, so care should be taken during this step, especially with the twists and curves of the drill bits. Next, rinse each piece with water and hexane. Place the rinsed pieces on clean paper towels and individually dry and inspect each piece. Note: all pieces should be dry prior to reuse.

11.2 Lightly contaminated drill bits and utensils may be wiped with a hexane soaked cloth and hexane rinsed for decontamination.

12.0 Data and Record Management

12.1 All data and information collection should follow a Field Data Management SOP or Quality Assurance Project Plan (QAPP).

12.2 Follow the chain of custody procedures to release the samples to the laboratory. A copy is kept with the sampling records.

12.3 The field data is stored for at least 3 years.

13.0 Quality Control and Quality Assurance

13.1 Representative samples are required. The sampler will evaluate the site specific conditions to assure the sample will be representative.

13.2 All sampling equipment must be decontaminated prior to use and between each discrete sample.

13.3 All field Quality Control (QC) sample requirements in a Sample and Analysis Plan (SAP) or QAPP must be followed. The SAP or QAPP may involve field blanks, equipment blanks, field duplicates and/or the collection of extra samples for the laboratory's quality control program.

13.4 Field duplicates should be collected at a minimum frequency of 1 per 20 samples or 1 per non-related porous matrix, whichever is greater.

14.0 Waste Management and Pollution Prevention

14.1 During field sampling events there may be PCB and/or hazardous waste produced from the sample collection. The waste must be handled and disposed of in accordance with federal, state, and local regulations. The dust filter, and tubing if a vacuum pump is used, is disposed after each site investigation. This waste will be treated as PCB waste if the samples are positive for PCBs. It may be possible to manage or dispose of the waste produced at the site where the work was performed. If the site does not meet regulatory requirements for these types of activities, the waste must be transported to a facility permitted to manage and/or dispose of the waste.

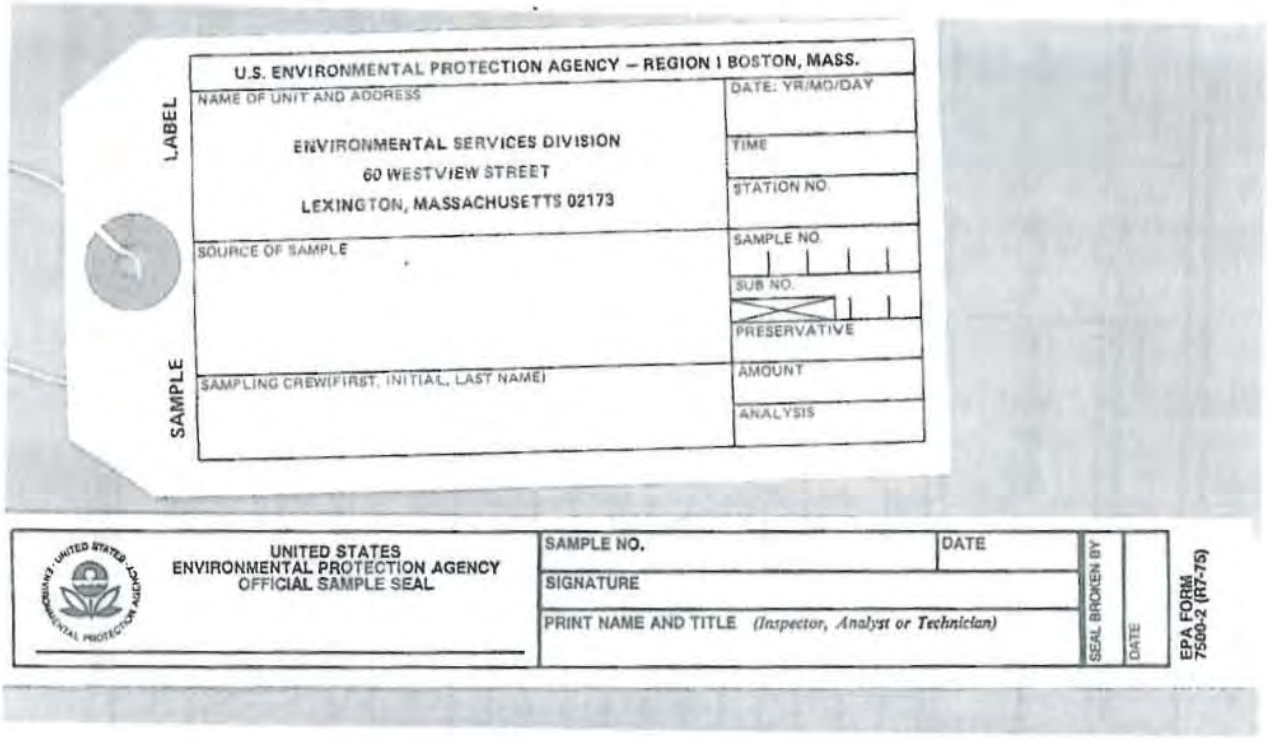
15.0 References

1. Guidance for the Preparation of Standard Operating Procedures for Quality-Related Operations, QA/G-6, EPA/600/R-96/027, November 1995.

2. 40 CFR Part 761 – Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, and Use Prohibitions

3. Sample Container and Holding Time: RCRA SW 846, Chapter 4, Table 4.1, Revision 4, February, 2007.

Example of Sample Label and Custody Seal



U.S. ENVIRONMENTAL PROTECTION AGENCY – REGION I BOSTON, MASS.

LABEL

NAME OF UNIT AND ADDRESS

ENVIRONMENTAL SERVICES DIVISION
60 WESTVIEW STREET
LEXINGTON, MASSACHUSETTS 02173

DATE: YR/MO/DAY

TIME

STATION NO.

SAMPLE

SOURCE OF SAMPLE

SAMPLE NO.

SUB NO.

PRESERVATIVE

SAMPLING CREW(FIRST, INITIAL, LAST NAME)

AMOUNT

ANALYSIS

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
OFFICIAL SAMPLE SEAL

SAMPLE NO.

DATE

SIGNATURE

PRINT NAME AND TITLE *(Inspector, Analyst or Technician)*

SEAL BROKEN BY

DATE

EPA FORM 7500-2 (R7-75)

Example of Chain of Custody Form

ENVIRONMENTAL PROTECTION AGENCY

REGION 1

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME	NO. OF CON-TAINERS							REMARKS
SAMPLERS: *(Signature)*									

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CON-TAINERS							REMARKS

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

1-16940

☆ U.S. GOVERNMENT PRINTING OFFICE: 2004—750-505

Soil Sample Collection for Laboratory Analysis

Standard Operating Procedure SOP.NAA_A.01.1

July 2011

APPROVED BY:

Marylou Armstrong, LSP _____ Date: 7.15.11
Nover-Armstrong Principal; Quality Assurance Manager
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mla@noverarmstrong.com

Marta J. Nover _____ Date: 7.15.11
Nover-Armstrong Principal
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mnover@noverarmstrong.com

Matthew Alger _____ Date: 7.15.11
Nover-Armstrong Quality Assurance Coordinator
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: malger@noverarmstrong.com

TABLE OF CONTENTS

A. PURPOSE AND APPLICABILITY 3
B. SUMMARY OF METHOD 3
C. DEFINITIONS 3
D. HEALTH AND SAFETY WARNINGS 3
E. CAUTIONS 3
F. INTERFERENCES 4
G. PERSONNEL QUALIFICATIONS 4
H. EQUIPMENT AND SUPPLIES 4
I. PROCEDURE 4
J. DATA AND RECORDS MANAGEMENT 5
K. QUALITY CONTROL AND QUALITY ASSURANCE 5
L. REFERENCES 7

A. PURPOSE AND APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to establish a uniform procedure for collecting soil samples in the field for laboratory analysis. The procedures outlined in this SOP are applicable to all Nover-Armstrong Associates, Inc. (Nover-Armstrong) field personnel who collect soil samples for laboratory analysis at MCP and non-MCP project sites.

B. SUMMARY OF METHOD

Soil samples are collected in the field using grab or composite sampling techniques. Samples are collected into designated pre-cleaned laboratory sample containers with appropriate preservatives, as needed. Sample Chain of Custody, preservation procedures, and holding times are observed. Soil samples are submitted to a state-certified analytical laboratory for VOC analysis.

C. DEFINITIONS

EPH	Extractable Petroleum Compound
VPH	Volatile Petroleum Compound
VOC	Volatile Organic Compound
SVOC	Semi-Volatile Organic Compound
PCB	Polychlorinated Biphenyl
PAH	Polycyclic Aromatic Hydrocarbon
VOA	Volatile Organic Analysis
MCP	Massachusetts Contingency Plan (310 CMR 40.0000)
OSHA	Occupational Health and Safety Administration
HAZWOPER	Hazardous Waste Operations and Emergency Response
PID	Photoionization Detector
TOV	Total Organic Vapor
HCl	Hydrochloric Acid
MeOH	Methanol

D. HEALTH AND SAFETY WARNINGS

Field sampling personnel should use caution when handling soil samples with potentially elevated concentrations of hazardous chemical compounds. The sampler should wear protective gloves and safety glasses to avoid direct contact with the soil. The sampler should also wear clothing and protective gear that is appropriate for the type of site, field conditions, and weather conditions in which they are collecting the soil samples. Gloves and other articles of clothing that come in contact with potentially contaminated soil should be cleaned or disposed of after each sampling event. Food and drink should not be brought onto sites at which elevated concentrations of hazardous materials are potentially present. Laboratory containers containing corrosive, caustic, and/or toxic chemical preservatives must be handled with care.

E. CAUTIONS

Care must be taken to collect the correct volume of soil prescribed for the laboratory sample container being used in order to yield usable laboratory results. Care must also be given to following appropriate sample preservation techniques in order to avoid degradation of the sample.

F. INTERFERENCES

Avoid inadvertently introducing materials into the sample being collected that are not representative of the target soil. Such materials may interfere with the accuracy of the analytical results.

G. PERSONNEL QUALIFICATIONS

Field sampling personnel using this SOP should have completed OSHA's 40-hour HAZWOPER training and annual 8-hour refresher training.

H. EQUIPMENT AND SUPPLIES

The following equipment and supplies are required for this SOP:

- Laboratory containers with labels
  - for VOCs: (1) 40mL VOA vial with Teflon-lined silicon septum containing 15mL Purge and Trap Grade methanol preservative; (2) 40mL VOA vials with Teflon-lined silicon septa containing 5mL either sodium bisulfate or reagent water preservative and a magnetic stirring bar; and (1) 4oz glass or plastic jar for percent moisture calculation
  - for VPH: (1) 40mL VOA vial with Teflon-lined silicon septum containing 15mL Purge and Trap Grade methanol preservative and (1) 4oz glass or plastic jar for percent moisture calculation
  - for EPH, SVOCs, PCBs, and Total Metals: (1) 4oz glass jar (no preservative)
- Disposable graduated plastic syringes for soil coring
- Plastic gloves
- Safety glasses
- Cooler with ice
- Chain of Custody form
- Pen or marker for labels
- Field book for notes
- Garbage bag for disposal of used field supplies
- Photoionization Detector (PID) (for optional jar headspace field screening)
- 4oz glass or plastic jar (for optional jar headspace field screening)
- aluminum foil (for optional jar headspace field screening)

I. PROCEDURE[1]

1. For VOCs and VPH: Using disposable plastic syringe, core and compact approximately 15 grams of soil from target area. Insert syringe into (1) 40mL glass screw-cap vial with Teflon-lined silicon septum (VOA vial) containing methanol preservative[1] and expel contents. Return cap to vial and tighten. Fill out individual sample label and adhere it to sample container. Place sample container into cooler with ice. Dispose of plastic syringe.

---

[1] Nover-Armstrong's Standard Operating Procedure (SOP) for collecting soil samples in the field for laboratory analysis of VOCs follows the sample preservation procedures described in MassDEP Policy WSC-99-415 *Preservation Techniques for Volatile Organic Compound (VOC) Soil Sample Analyses.*

2. For VOCs: Using disposable plastic syringe, core and compact approximately 5 grams of soil from target area. Insert syringe into (1) 40mL VOA vial with sodium bisulfate or reagent water preservative and expel contents. Return cap to vial and tighten. Fill out individual sample label and adhere it to sample container. Place sample container into cooler with ice. Repeat for a second vial. Dispose of plastic syringe.

3. For VOCs and VPH: Using plastic gloves for skin protection, manually place soil into 4oz glass or plastic jar (for percent moisture calculation). Fill to near top of container. Return cap to jar and tighten. Fill out individual sample label and adhere it to sample container. Place sample container into cooler with ice.

4. For EPH, SVOCs, PCBs, and Total Metals: Using plastic gloves for skin protection, manually place soil into 4oz glass jar. Fill to near top of container. Return cap to jar and tighten. Fill out individual sample label and adhere it to sample container. Place sample container into cooler with ice.

5. [Optional field screening]. Using plastic gloves for skin protection, manually place soil into a 4oz glass or plastic jar. Cover jar tightly with aluminum foil and screw on cap. Shake container to loosen soil and release soil vapors. Place container in a warm location and allow soil vapor headspace to develop for approximately five minutes. Remove container cap and insert tip of calibrated PID through aluminum foil and into the jar headspace. Read and record the Total Organic Vapor (TOV) measurement in field book. Dispose of used container and aluminum foil. Return soil to its collection location. Refer to SOP.NAA_C.02.1 for Nover-Armstrong's Soil Headspace Analysis SOP.

6. Record all appropriate sampling notes in field book, including but not limited to: sampling time, weather conditions, and soil description. Refer to SOP.NAA_C.01.1 for Nover-Armstrong's Field Documentation SOP.

7. Fill out Chain of Custody form with applicable information for delivery to certified laboratory. Refer to SOP.NAA_C.07.1 for Nover-Armstrong's Chain of Custody Sample Handling & Shipping SOP.

J. DATA AND RECORDS MANAGEMENT

Hard copies of recorded field sampling notes will be kept in individual project folders at the Nover-Armstrong office location in Carver, MA. Additionally, the field sampling notes will be scanned and stored electronically on the company's computer system. Laboratory analytical results will be received as electronic .pdf files and stored electronically on Nover-Armstrong's computer system. Archived files of analytical results are also maintained by the analytical laboratories.

K. QUALITY CONTROL AND QUALITY ASSURANCE

Sampling equipment shall be cleaned (decontaminated) before use to minimize the potential for cross-contamination and whenever possible, new/unused sampling equipment shall be utilized. Refer to SOP.NAA_C.05.1 for Nover-Armstrong's Equipment Decontamination SOP.

All instrumentation necessary for field sampling purposes shall be maintained, calibrated, tested and inspected according to the manufacturer's instructions. All of these instruments shall be calibrated at the beginning of each sampling day at the site. The calibration shall then be checked to ensure the instrument was calibrated properly. The calibration shall be checked again at the end of the day of use to ensure that the instruments have remained in calibration throughout the day. In addition, should any erratic or illogical readings occur between calibrations, the instrument shall be recalibrated in order to ensure that representative measurements are obtained. All calibration, check values and maintenance activities shall be documented on a calibration log in a manner that is traceable to the equipment. Refer to SOP.NAA_C.06.1 for Nover-Armstrong's Equipment Calibration SOP.

The following are routine field quality control samples and may be utilized at the discretion of the Nover-Armstrong Project Manager, depending upon the site-specific data objectives.

- Trip Blanks

  Trip blanks for volatile organic compound (VOC) samples shall be prepared by the laboratory prior to the sampling event using analyte-free water. The trip blanks shall accompany the sample containers to the field, during collection and transportation and shall be submitted with the other samples for analysis. There shall be one set of trip blanks per VOC sample cooler. The analysis of this blank will provide a baseline measurement of VOC contamination that the samples may have been exposed to in the field and during transport.

  Note: Separate Trip Blanks may be required for VOCs and 1,4-Dioxane. Consult with the specific laboratory for their requirements.

- Equipment Blanks

  Equipment blanks consist of a sample of distilled/deionized (analyte-free) water which has been poured around and through sample collection equipment to determine if contamination has occurred due to improper cleaning and/or contamination of equipment. They shall be handled like any other sample (*e.g.* preserved), and submitted with the other samples for analysis. The frequency shall be determined based on the type of sampling that occurs and additional equipment blanks shall be required for change in sample matrix or equipment type as specified in the site specific SAP. Equipment blanks shall not be required where disposable or dedicated sampling equipment is used.

- Duplicate samples

  Duplicate samples shall be collected for each batch of samples (a batch may not exceed 20 samples) collected per matrix, per analysis. The duplicates shall be collected at the same time, in the same manner as their corresponding routine samples and shall be identified in the field notes and logged on the chain of custody forms.

- Background samples

  Upgradient samples may be taken to determine the local naturally occurring conditions. The background samples shall be used as control samples and taken outside the area of contamination. These results shall be compared against actual contaminated sample results. The use of background samples shall be specified in the site specific QAPP.

- Split samples

  Split samples may be collected to compare the analytical results from one laboratory to another using the same techniques or methods, or to compare the analytical results of different laboratory techniques or methods to determine whether they are generally equivalent. Split samples are identical samples that are collected for one analyte, for a group of analytes, or for all analytes that are being quantified. The number of split samples to be collected shall be determined by the Project Manager.

  Split samples cannot always be placed in identical sample containers due to the differing quantity or container requirements of various analytical laboratories. It is difficult to accurately split a heterogeneous sample, such as a soil sample, and the sampling team should distribute the sample as uniformly as possible and fill split containers for one analyte at a time. If the sample collection device contains insufficient sample, an equal portion of the sample should be placed in each of the split sample containers and additional sample should be collected and split to fill the containers.

L. REFERENCES

1. United States Environmental Protection Agency (USEPA). 2007. *Guidance for Preparing Standard Operating Procedures (SOPs)* (EPA QA/G-6).

2. United States Environmental Protection Agency (USEPA) Region 1. 2010. *Quality Assurance Project Plan Program Guidance*.

3. MassDEP Policy WSC-99-415 *Preservation Techniques for Volatile Organic Compound (VOC) Soil Sample Analyses*

4. MassDEP Policy WSC-02-411 *Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of the MADEP VPH/EPH Approach* (2002)

5. SOP.NAA_C.01.1 Field Documentation

6. SOP.NAA_C.02.1 Soil Headspace Analysis

7. SOP.NAA_C.05.1 Equipment Decontamination

8. SOP.NAA_C.06.1 Equipment Calibration

9. SOP.NAA_C.07.1 Chain of Custody Sample Handling & Shipping

Equipment Decontamination

Standard Operating Procedure SOP.NAA_C.05.1

July 2011

APPROVED BY:

Marylou Armstrong, LSP _____ Date: 7.15.11
Nover-Armstrong Principal; Quality Assurance Manager
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mla@noverarmstrong.com

Marta J. Nover _____ Date: 7.15.11
Nover-Armstrong Principal
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mnover@noverarmstrong.com

Matthew Alger _____ Date: 7.15.11
Nover-Armstrong Quality Assurance Coordinator
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: malger@noverarmstrong.com

TABLE OF CONTENTS

A. PURPOSE AND APPLICABILITY 3
B. SUMMARY OF METHOD 3
C. DEFINITIONS 3
D. HEALTH AND SAFETY WARNINGS 3
E. CAUTIONS 3
F. INTERFERENCES 3
G. PERSONNEL QUALIFICATIONS 4
H. EQUIPMENT AND SUPPLIES 4
I. PROCEDURE 4
J. DATA AND RECORDS MANAGEMENT 5
K. QUALITY CONTROL AND QUALITY ASSURANCE 5
L. REFERENCES 5

A. PURPOSE AND APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to establish a uniform procedure for the decontamination of sampling equipment when the use of single use disposable equipment is not possible. The procedures outlined in this SOP are applicable to all Nover-Armstrong Associates, Inc. (Nover-Armstrong) field personnel who decontaminate reusable equipment prior to use in the field.

B. SUMMARY OF METHOD

Equipment is cleaned and decontaminated before its use in every different location. Appropriate methods, determined by the function of the equipment and what compounds the equipment is used to measure, are observed.

C. DEFINITIONS

VOC	Volatile Organic Compound
SVOC	Semi-Volatile Organic Compound
PCB	Polychlorinated Biphenyl
VOA	Volatile Organic Analysis
MCP	Massachusetts Contingency Plan (310 CMR 40.0000)
OSHA	Occupational Health and Safety Administration
HAZWOPER	Hazardous Waste Operations and Emergency Response
TPH	Total Petroleum Hydrocarbon
MeOH	Methanol

D. HEALTH AND SAFETY WARNINGS

Field sampling personnel should use caution when handling soil samples with potentially elevated concentrations of hazardous chemical compounds. The sampler should wear protective gloves and safety glasses to avoid direct contact with the soil. The sampler should also wear clothing and protective gear that is appropriate for the type of site, field conditions, and weather conditions in which they are collecting the soil samples. Gloves and other articles of clothing that come in contact with potentially contaminated soil should be cleaned or disposed of after each sampling event. Food and drink should not be brought onto sites at which elevated concentrations of hazardous materials are potentially present. Laboratory containers containing corrosive, caustic, and/or toxic chemical preservatives must be handled with care.

E. CAUTIONS

It is important to note the source of rinse water, for it is often from nearby public sources. The source should be noted and a sample collected.

F. INTERFERENCES

Avoid using distilled water stored in plastic bottles for the plastic contains too many contaminants. Bring deionized water in either nalgene bottles or teflon bottles if possible.

G. PERSONNEL QUALIFICATIONS

Field sampling personnel using this SOP should have completed OSHA's 40-hour HAZWOPER training and annual 8-hour refresher training.

H. EQUIPMENT AND SUPPLIES

The following equipment and supplies are required for this SOP:

- Plastic gloves
- Safety glasses
- Garbage bag for disposal of used field supplies
- Non-phosphate detergent-solution (e.g. Alconox)
- Brush
- Tap water
- Deionized water (either ASTM type I or II)
- Decontamination of metals analysis equipment additionally requires:
    - 1:1 nitric acid
- Decontamination of SVOC collection equipment additionally requires:
    - Technical grade acetone
    - Pesticide grade hexane
- Decontamination of VOC collection equipment OR of oil or grease analysis equipment additionally requires:
    - Reagent grade methanol (MeOH)

I. PROCEDURE[1]

1. Equipment to be utilized in the collection of samples for metals analysis should be cleaned by the following steps:
    a. Wash equipment with a non-phosphate detergent-solution and a brush.
    b. Rinse thoroughly with tap water.
    c. Rinse with 1:1 nitric acid.
    d. Rinse the equipment thoroughly with deionized water.
    e. For water samples, rinse the equipment two to three times with the media being sampled before collecting a sample.
    f. Repeat this procedure at each location.

2. Equipment to be used for collection of samples for oil identification, oil and grease analyses, and TPH should be cleaned by the following steps:
    a. Wash equipment with a non-phosphate detergent-solution and a brush.
    b. Rinse with tap water.
    c. Rinse with reagent grade MeOH
    d. Rinse thoroughly with deionized water.
    e. For water samples, rinse the equipment two to three times with the media being sampled prior to collecting a sample.

[1] Nover-Armstrong's Standard Operating Procedure (SOP) for decontamination of sampling equipment follows the procedures described in MassDEP Policy WSC-91-310 *Standard References for Monitoring Wells.*

f. Repeat at each location.

3. Equipment to be used for collection of SVOCs (including base-neutral extractables, PCBs, herbicides, and pesticides) should be cleaned by the following steps:
   a. Wash equipment with a non-phosphate detergent-solution and a brush
   b. Rinse with tap water.
   c. Rinse with technical grade acetone.
   d. Rinse with pesticide grade hexane.
   e. Rinse thoroughly with deionized water.
   f. For water samples, rinse the equipment two to three times with the media being sampled prior to collecting a sample.
   g. Repeat at each location.

4. Equipment used for collection of samples for VOA should be cleaned by the following steps:
   a. Wash equipment with a non-phosphate detergent solution and a brush.
   b. Rinse with tap water.
   c. Rinse with reagent grade MeOH.
   d. Rinse thoroughly with deionized water.
   e. For water samples, rinse the equipment two to three times with the media being sampled prior to collecting a sample.
   f. Repeat at each location.

5. Steam Cleaning is another acceptable technique for field decontamination.

J. DATA AND RECORDS MANAGEMENT

Hard copies of recorded field sampling notes will be kept in individual project folders at the Nover-Armstrong office location in Carver, MA. Additionally, the field sampling notes will be scanned and stored electronically on the company's computer system. Laboratory analytical results will be received as electronic .pdf files and stored electronically on Nover-Armstrong's computer system. Archived files of analytical results are also maintained by the analytical laboratories.

K. QUALITY CONTROL AND QUALITY ASSURANCE

Instrumentation shall be checked intermittently by the Project Manager to ensure that the proper procedures for equipment decontamination are being followed at all project sites.

L. REFERENCES

1. United States Environmental Protection Agency (USEPA). 2007. *Guidance for Preparing Standard Operating Procedures (SOPs)* (EPA QA/G-6).

2. United States Environmental Protection Agency (USEPA) Region 1. 2010. *Quality Assurance Project Plan Program Guidance*.

3. MassDEP Policy WSC-91-310 *Standard References for Monitoring Wells*

4. SOP.NAA_C.01.1 Field Documentation

Chain of Custody Sample Handling & Shipping

Standard Operating Procedure SOP.NAA_C.07.1

July 2011

APPROVED BY:

Marylou Armstrong, LSP _____ Date: 7.15.11
Nover-Armstrong Principal; Quality Assurance Manager
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mla@noverarmstrong.com

Marta J. Nover _____ Date: 7.15.11
Nover-Armstrong Principal
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mnover@noverarmstrong.com

Matthew Alger _____ Date: 7.15.11
Nover-Armstrong Quality Assurance Coordinator
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: malger@noverarmstrong.com

TABLE OF CONTENTS

A. PURPOSE AND APPLICABILITY 3
B. SUMMARY OF METHOD 3
C. DEFINITIONS 3
D. HEALTH AND SAFETY WARNINGS 3
E. CAUTIONS 3
F. INTERFERENCES 3
G. PERSONNEL QUALIFICATIONS 3
H. EQUIPMENT AND SUPPLIES 4
I. PROCEDURE 4
J. DATA AND RECORDS MANAGEMENT 5
K. QUALITY CONTROL AND QUALITY ASSURANCE 5
L. REFERENCES 6

A. PURPOSE AND APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to establish a uniform procedure for documenting the chain of custody associated with any field sample to ensure that the sample is accounted for at all times. The procedures outlined in this SOP are applicable to all Nover-Armstrong Associates, Inc. (Nover-Armstrong) field personnel who collect or handle field samples.

B. SUMMARY OF METHOD

Chain of custody records are created and maintained in order to document the identity of a sample and its handling from its creation as a sample until analysis and data reduction are completed.

C. DEFINITIONS

COC	Chain of Custody
MCP	Massachusetts Contingency Plan (310 CMR 40.0000)
OSHA	Occupational Health and Safety Administration
HAZWOPER	Hazardous Waste Operations and Emergency Response
VOC	Volatile Organic Compound

D. HEALTH AND SAFETY WARNINGS

Field sampling personnel should use caution when handling soil samples with potentially elevated concentrations of hazardous chemical compounds. The sampler should wear protective gloves and safety glasses to avoid direct contact with the soil. The sampler should also wear clothing and protective gear that is appropriate for the type of site, field conditions, and weather conditions in which they are collecting the soil samples. Gloves and other articles of clothing that come in contact with potentially contaminated soil should be cleaned or disposed of after each sampling event. Food and drink should not be brought onto sites at which elevated concentrations of hazardous materials are potentially present. Laboratory containers containing corrosive, caustic, and/or toxic chemical preservatives must be handled with care.

E. CAUTIONS

Care must be taken to uniquely identify all samples, samples are protected from loss or damage, any processing of samples is documented, and client confidentiality is maintained. A sample is considered to be under a chain of custody if it is in your custody, it is in your view after being in your possession, it is in your possession and locked up to prevent tampering, and it is in a designated, secured area.

F. INTERFERENCES

Avoid leaving samples unattended, unlocked, or in locations where they could be tampered with or vandalized.

G. PERSONNEL QUALIFICATIONS

Field sampling personnel using this SOP should have completed OSHA's 40-hour HAZWOPER training and annual 8-hour refresher training.

H. EQUIPMENT AND SUPPLIES

The following equipment and supplies are required for this SOP:

- Plastic gloves
- Safety glasses
- Chain of Custody form
- Chain of Custody records
- Field data sheets
- Sample labels
- Pen or marker for labels
- Field book for notes

I. PROCEDURE[1]

1. Pre-prepare labels for each sample that includes identification, date and time of collection, sample parameters to be analyzed, any preservatives added, and the name of the sample collector.

2. Record the procedures and amounts of reagents or supplies necessary for each sample including sample preparation and preservation.

3. Record date and time of sampling, sampling locations, sample bottle identification, and specific sample acquisition measures on the chain of custody forms.

4. The COC description section requires:
    a. A unique identification of each sample
    b. The name(s), address(es), and telephone number(s) of the sampler(s) and the person shipping the samples and all subsequent transfers of custody
    c. The type and method of analysis requested (sometimes this can be put on the field data sheet that accompanies the COC form)
    d. The date and time that the samples were taken and delivered for shipping
    e. The names of those responsible for receiving the samples at the laboratory

5. Complete standard field data record forms to establish sample custody in the field before sample shipment.

6. At least four copies of the COC record are needed:
    a. The original COC record and one copy are sent to the laboratory with the samples
    b. One copy is retained by the sampling crew chief
    c. One copy is placed in the project file
7. The signed copy of the original COC record is retained by the laboratory, but copies of the original record, signed by the receiving laboratory are returned to the sampling crew chief and to the project file.

---

[1] Nover-Armstrong's Standard Operating Procedure (SOP) for chain of custody documentation follows the procedures described in MassDEP Policy WSC-91-310 *Standard References for Monitoring Wells.*

J. DATA AND RECORDS MANAGEMENT

Hard copies of COCs will be kept in individual project folders at the Nover-Armstrong office location in Carver, MA. Additionally, the COCs will be scanned and stored electronically on the company's computer system. Laboratory analytical results will be received as electronic .pdf files and stored electronically on Nover-Armstrong's computer system. Archived files of analytical results are also maintained by the analytical laboratories.

K. QUALITY CONTROL AND QUALITY ASSURANCE

Chains of Custody will be reviewed by the Project Manager to ensure proper documentation procedures. Nover-Armstrong field personnel will be trained to properly complete COCs prior to using them in the field. Special instructions on COCs will be verbally conveyed to laboratory personnel to ensure that the proper instructions are being followed.

L. REFERENCES

1. United States Environmental Protection Agency (USEPA). 2007. *Guidance for Preparing Standard Operating Procedures (SOPs)* (EPA QA/G-6).

2. United States Environmental Protection Agency (USEPA) Region 1. 2010. *Quality Assurance Project Plan Program Guidance*.

3. MassDEP Policy WSC-91-310 *Standard References for Monitoring Wells*

4. SOP.NAA_C.01.1 Field Documentation

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Submit Form

Rev 04.05.12

Company Name: _____ Telephone: _____

Address: _____ Project # _____

Client PO# _____

Attention: _____

DATA DELIVERY (check all that apply)
○ **FAX** ○ **EMAIL** ○ **WEBSITE**

Project Location: _____ Fax # _____

Sampled By: _____ Email: _____

Format: ○ PDF ○ EXCEL ○ GIS
○ OTHER_____
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	# of Containers	** Preservation	***Container Code	ANALYSIS REQUESTED									

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other_____

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Turnaround ††
❒ 7-Day
◉ 10-Day
❒ Other ____

RUSH †
❒ †24-Hr ❒ †48-Hr
❒ †72-Hr ❒ †4-Day
† **Require lab approval**

Detection Limit Requirements
Massachusetts: _____
_____
_____
Connecticut: _____
_____
_____
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited

WBE/DBE Certified

†† **TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.**

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Field Documentation

Standard Operating Procedure SOP.NAA_C.01.1

July 2011

APPROVED BY:

Marylou Armstrong, LSP _____ Date: 7.15.11
Nover-Armstrong Principal; Quality Assurance Manager
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mla@noverarmstrong.com

Marta J. Nover _____ Date: 7.15.11
Nover-Armstrong Principal
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mnover@noverarmstrong.com

Matthew Alger _____ Date: 7.15.11
Nover-Armstrong Quality Assurance Coordinator
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: malger@noverarmstrong.com

TABLE OF CONTENTS

A. PURPOSE AND APPLICABILITY 3
B. SUMMARY OF METHOD 3
C. DEFINITIONS 3
D. HEALTH AND SAFETY WARNINGS 3
E. CAUTIONS 3
F. INTERFERENCES 3
G. PERSONNEL QUALIFICATIONS 3
H. EQUIPMENT AND SUPPLIES 4
I. PROCEDURE 4
J. DATA AND RECORDS MANAGEMENT 4
K. QUALITY CONTROL AND QUALITY ASSURANCE 5
L. REFERENCES 6

A. PURPOSE AND APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to establish a uniform procedure for documenting samples collected for analysis. The procedures outlined in this SOP are applicable to all Nover-Armstrong Associates, Inc. (Nover-Armstrong) field personnel who collect samples for laboratory analysis at MCP and non-MCP project sites.

B. SUMMARY OF METHOD

Collected samples are documented to uniquely identify each sample and ensure adequate chain-of-custody procedures.

C. DEFINITIONS

VOC	Volatile Organic Compound
MCP	Massachusetts Contingency Plan (310 CMR 40.0000)
OSHA	Occupational Health and Safety Administration
HAZWOPER	Hazardous Waste Operations and Emergency Response

D. HEALTH AND SAFETY WARNINGS

Field sampling personnel should use caution when handling soil samples with potentially elevated concentrations of hazardous chemical compounds. The sampler should wear protective gloves and safety glasses to avoid direct contact with the soil. The sampler should also wear clothing and protective gear that is appropriate for the type of site, field conditions, and weather conditions in which they are collecting the soil samples. Gloves and other articles of clothing that come in contact with potentially contaminated soil should be cleaned or disposed of after each sampling event. Food and drink should not be brought onto sites at which elevated concentrations of hazardous materials are potentially present. Laboratory containers containing corrosive, caustic, and/or toxic chemical preservatives must be handled with care.

E. CAUTIONS

Take care to note that any samples collected may be used in future litigations. Also take note that if taking samples from privately owned property, samplers should provide the property owner with a receipt for the samples collected.

F. INTERFERENCES

Avoid using multiple transportation carriers in sending samples to the laboratory to avoid confusion.

G. PERSONNEL QUALIFICATIONS

Field sampling personnel using this SOP should have completed OSHA's 40-hour HAZWOPER training and annual 8-hour refresher training.

H. EQUIPMENT AND SUPPLIES

The following equipment and supplies are required for this SOP:

- Plastic gloves
- Safety glasses
- Chain of Custody form
- Sample labels
- Pen or marker for labels
- Field book for notes
- Garbage bag for disposal of used field supplies

I. PROCEDURE

1. Review project plans to determine what types of documentation must be completed for a sampling project and to ensure that the appropriate documentation will be on-hand in the field.

2. Field personnel shall use field logbooks and/or pre-printed work sheets to accurately document all field activities: on-site conditions; field measurements; sample collection information; field instrument and calibration information; and other pertinent site-related information during monitoring activities.

3. The field notes shall include a description of field conditions that includes, as a minimum:

   - Site location
   - Date, start, and finish times of the work and weather conditions;
   - Name and initials of person making entry;
   - Names of other personnel present, if any;
   - Names of visitors, if any;
   - Purpose and summary of proposed work effort;
   - Details of any deviation from the field operations plan or standard operating procedures, including who authorized the deviation;
   - Field observations;
   - Sampling equipment used (including make model and serial number) and equipment calibration documentation;
   - Field screening methods, if used, and a description of screening locations;
   - Field screening results, and identify samples with both field and fixed lab analyses;
   - Fixed laboratory sample identification number, sample type (composite, grab), time of sampling, sample analysis, and sample locations shown on a near-scale map relative to a fixed landmark;
   - Sample handling, packaging, labeling, and shipping information (including destination);
   - Location, description and unique identifier for all photographs taken in association with the field activity; and
   - Any other pertinent information

4. Information recorded in other site documents, *e.g.*, sampling logs, will not be repeated in logbooks except in summary form.

5. Any corrections to the logbook or other written documentation shall be initialed and dated. All corrections shall be shown as a single line through the original. The unused bottom portion of each page shall be lined-out, initialed, and dated.

J. DATA AND RECORDS MANAGEMENT

Hard copies of recorded field sampling notes will be kept in individual project folders at the Nover-Armstrong office location in Carver, MA. Additionally, the field sampling notes will be scanned and stored electronically on the company's computer system. Laboratory analytical results will be received as electronic .pdf files and stored electronically on Nover-Armstrong's computer system. Archived files of analytical results are also maintained by the analytical laboratories.

K. QUALITY CONTROL AND QUALITY ASSURANCE

Copies of field documentation will be reviewed by Project Managers upon completion of field activities to ensure the quality and correctness of the documentation. Any inconsistencies or questionable field notes will be reviewed together with field personnel to achieve clarity and reduce confusion. Nover-Armstrong field sampling personnel will be trained in the field documentation SOP prior to conducting field activities.

L. REFERENCES

1. United States Environmental Protection Agency (USEPA). 2007. *Guidance for Preparing Standard Operating Procedures (SOPs)* (EPA QA/G-6).

2. United States Environmental Protection Agency (USEPA) Region 1. 2010. *Quality Assurance Project Plan Program Guidance*.

3. US EPA *Sampler's Guide: Contract Laboratory Guidance for Field* Sampler*s* (July 2007). EPA 540-R-07-06.

METHOD 3540c
Soxhlet Extraction Procedure for Polychlorinated Biphenyls

Approved: _____ _____

Michael Erickson
Laboratory Director

Katherine F. Allen
QA Officer

Revision Number: 1

NON-CONTROLLED COPY

Controlled Copy Number: _____

Change Record

Revision	Date	Responsible Person	Description of Change
Original	3/30/09	F.Derose	Original SOP
1	3/26/2013	Katherine Allen	Updates from annual SOP review: Sec 1.1, 5.3, and 5.4 (addition of fluted filter paper), Sec 2.3 + 5.10 (100 not 500 ml RBF), added sec 2.23 (fluted folding paper), sec 2.9 (deletion of glass wool), sec 2.11+ 6.0(replace sand with sodium sulfate), Sec. 3.0 (updated glassware washing procedure), Sec 5.1 (add 5g for prod/solid and 0.5g for caulking), sec 5.14 (add 12ml vial), sec 5.2 (record lot of NaSO4), deletion of 6.1.5 (LFB) and sec 9.0 (addition of new MCP).

Distribution/Training List

See Employee Training Record File for signed training statements for trained users.

1.0 SUMMARY OF METHOD

Method 3540C is a procedure for the extraction of organic compounds from soils, clays, sediments, sludge's and solid wastes. The Soxhlet extraction process ensures intimate contact of the sample matrix with the extraction solvent. This method is restricted to use by or under the supervision of trained analyst

1.1 The solid sample is mixed with anhydrous sodium sulfate, placed in fluted filter paper or an extraction thimble, and extracted using an appropriate solvent in a Soxhlet extractor.
1.2 The appropriate surrogate and or matrix spike is added to the Soxhlet extractor.
1.3 The appropriate solvent system is added to the round bottom flask. 1:1 Hexane/Acetone. (PCB,PEST).
1.4 Attach the flask to the extractor and extract the sample for 16-24 hours at 4 – 6 cycles/hour.
1.5 Extract is cooled, dried with anhydrous sodium sulfate, rinsed and is then concentrated and as needed, exchanged into a solvent compatible with its method.

2.0 EQUIPMENT & SUPPLIES

2.1 **Water Cooled Condenser**: AMK 34/45 #EX01A or equivalent

2.2 **Soxhlet Extractor**: AMK 34/45 #EX01B or equivalent

2.3 **125mL Round Bottom Flask:** AMK #EX01C or equivalent

2.4 **Heating Mantle**: Type "VF" laboratory heating mantle or equivalent

2.5 **Heating Mantle Controller**: Glass-Co #PL3122 or equivalent – regulates temperature control of the mantle.

2.6 **Cellulose Extraction Thimble**: Whatman 25mmX100mm or equivalent or glass wool

2.7 **Sodium Sulfate**: ACS Grade, Anhydrous (12-60 mesh)

2.8 **Boiling Chips**: Approximately 10/40 mesh or equivalent

2.9 **Analytical balance**: Capable of weighing to 0.1 g

2.10 **Methylene Chloride**: pesticide quality or equivalent

2.11 **Hexane**: pesticide quality or equivalent

2.12 **Acetone**: pesticide quality or equivalent

2.13 **Turbo-Vap Concentrator**: Caliper Life Sciences / Zymark

2.14 **Turbo-Vap Concentrator Tubes**: Zymark 250 mL

2.15 **Filter paper**: Whatman No. 41 or equivalent

2.18 **Stock Standards**: Purchased as certified solutions from Ultra Scientific("or equivalent")

2.19 **Gas Tight Syringes**

2.20 **Vials** – 2ml crimp top and 4ml screw top vials

2.21 **Pasteur Pipettes**: 9inches

2.22 **Disposable Pour-Boat Weighing Dish:** VWR Cat:12577-055

2.23 **Folded Smooth Fluted Filter Paper –** 15.0 cm Grade 313

3.0 GLASWARE CLEANING

3.1 A Prepare 2-3% soap solution by adding approximately 10 mLs of Liquinox cleaning soap to 500 mL soap dispenser. Bring to volume with deinonzed water.

3.2 Add a sufficient amount of soap to glassware and scrub three times using a glassware cleaning brush.

*Note: If not cleaning glassware immediately, it is good to fill a basin tub with hot soapy water to let glassware soak in until cleaning.

3.3 Thoroughly rinse three times with tap water. Take care to rinse off any soap remaining on glass surface at this time.

3.4 Rinse three times with deionized water.

3.5 Place glassware in oven and bake at 103°C until dry. (Teflon or plastic equipment is left on Versi-Dry soaker to air dry).

3.6 Carefully remove dried glassware using appropriate oven mitts and let cool to room temperature.

3.7 If glassware is to be used immediately after washing, Acetone may be used to dry glassware. If Acetone is used to dry glassware, allow to dry in hood. **Do not place in oven – Explosion may result.**

3.8 Prior to use for extraction, glassware must be rinsed with methylene chloride two times followed by the first solvent mixture specific to that analysis.

4.0 SAFETY

See Material Safety Data Sheets (MSDSs) and Con-Test Chemical Hygiene Plan.

Protective gear must always be worn when handling glassware and samples.

Polychlorinated biphenyls have been tentatively classified as known or suspected carcinogens. Then analyst must review the Material Safety Data Sheets (MSDS) for PCBs and all reagents used in the procedure before handling them.

5.0 PROCEDURE FOR EXTRACTION OF SOIL

5.1 Weigh out 10g of soil, 2g for product/solid or 0.5g caulking sample into disposable pour-boat weighing dish.

5.2 Blend in anhydrous sodium sulfate (make sure sample is free-flowing). Add lot number of sodium sulfate to bench sheet.

5.3 Place sample in fluted filter paper or an extraction thimble. The extraction thimble must drain freely for the duration of the extraction period. A glass wool plug below the sample in the Soxhlet extractor is an acceptable alternative for the thimble.

5.4 Add 100mL of 1:1 mixture of Hexane/Acetone to a 125mL round bottom flask. Add several boiling chips. Place a Soxhlet Extractor on top of the round bottom flask; make sure to slightly twist – to ensure a tight connection.

5.5 Label the round bottom flask with the sample number. Place the corresponding fluted filter paper or thimble into the Soxhlet extractor.

5.6 Add desired amounts of surrogate standard to all samples, spikes and blanks.

5.7 Add desired amounts of spike to all LFB's (lab spikes) and matrix spikes.

5.8 Place the round bottom flask with attached Soxhlet extractor onto a heating mantel and attach condenser unit. Turn on water to cool the condensers.

5.9 Turn corresponding thermostats to a setting to achieve 4-6 cycles per hour (typically a setting of somewhere between 4 and 6). At this time double check Soxhlet for any cracks or chips which may leak solvent. Once the solvent begins to boil, a flushing action of once every two to three minutes should be achieved.

5.10 The samples should be extracted overnight for a minimum of 16 hours. Once the sample has finished extracting, turn the heating mantle off and allow samples to cool to room temperature. Once cool, disengage condenser unit and flush the remaining solvent from the Soxhlet extractor by tipping the Soxhlet. Disengage the Soxhlet extractor from the flask and put aside. Using a pair of long-handled tweezers, pull the thimble out of the Soxhlet place in hood for total solvent evaporation. Repeat for all other samples.

5.11 Prepare a glass funnel lined with filter paper and filter through sodium sulfate by rinsing with hexane. Pass the extract through the funnel into a clean Turbo-Vap tube. Rinse the 125mL Flask with 10-15mLs of fresh solvent and pass it through the funnel. Rinse the funnel with hexane.

5.12 Zymark Turbo-Vap Concentrator Workstation Settings
Endpoint Selection: Sensor
Bath Temperature: 45 C
Nitrogen Gas Pressure: Pressure should be high enough as to keep a constant vortex ripple on the surface of the extract without splashing.

5.13 Open Zymark Turbo-Vap cover and place Turbo-Vap tube with extract in appropriate cell (example: Cells 1 – 6). Start sample concentration by turning on the appropriate cell, a light will turn on indicating cell is on. Note: As a precaution the Turbo-Vap system regulators should be checked to assure that no residual gas pressure remains within the system and that gas pressure regulators is off before placing samples in the apparatus. Residual gas pressure may cause splashing and cross contamination of samples.

5.14 Concentrate the sample to approximately 5.0mL. Remove the samples from the Turbo-Vap and place in the rack. Note: Not all samples will evaporated at the same rate. Samples which stop reducing, should be removed as soon as possible.

5.15 Quantitatively transfer the sample extract with a Pasteur pipette into an appropriate volumetric. Rinse the Turbo-Vap with hexane and transfer to volumetric. Repeat two more times. Bring up to a final volume of 10mL with Hexane. Transfer contents into two pre-labeled 4mL or one 12 mL screw top vials.

6.0 QUALITY CONTROL

6.1 Definitions

For definitions and explanations of quality control measures, refer to the Con-Test Analytical Quality Control Manual.

6.1.1 Method Blank

Analyzed on each working day to demonstrate that no contamination is present. The method blank is matrix specific, and extracted with every batch of 20 samples or less. Sodium Sulfate is used for the solid matrix.

6.1.2 Laboratory Control Sample (LCS) (BS) / Quality Control Check Samples

A matrix-specific LCS is analyzed with every batch of 20 samples or less. Prepared from a different stock than that of the calibration curve. The concentration should be between the low and mid-level standard. Sodium Sulfate is used for the solid matrix.

6.1.3 Matrix Spikes/Matrix Spike Duplicates

A matrix-specific MS/MSD pair is analyzed every batch of 20 samples or less.

6.1.4 **Matrix duplicates**

Analyze a sample duplicate every 20 samples (when enough aliquot is provided) if requested by client.

6.1.5 **Surrogates**

Surrogates are added to all blanks, standards, samples, and spikes.

7.0 POLLUTION PREVENTION

Pollution prevention encompasses any technique that reduces or eliminates the quantity or toxicity of waste at the point of generation. Many opportunities for pollution prevention exist in laboratory operation. EPA has established a preferred hierarchy of environmental management techniques that places pollution prevention as the management option of first choice. Whenever feasible, laboratory personnel should use pollution prevention techniques to address waste generation. When it is not feasible to reduce wastes at the source, the Agency recommends recycling as the next best option.

8.0 WASTE MANAGEMENT

It is the laboratory's responsibility to comply with all federal, state, and local regulations governing the waste management, particularly the hazardous waste identification rules and land disposal restrictions, and to protect the air, water, and land by minimizing and controlling all releases from fume hoods and bench operations. Also, compliance is required with any sewage discharge permits and regulations.

9.0 REFERENCES

7.1 EPA, Method 3540C " Soxhlet Extraction"

7.2 Con-Test Analytical Chemical Hygiene Plan.

7.3 Con-Test Analytical Quality Assurance Manual.

7.5 MA DEP, MCP Data Enhancement Program, "Quality Assurance and Quality Control Requirements for SW-846 Method 8082, Polychlorinated Biphenyl's (PCBs) by Gas Chromatography (GC) for the Massachusetts Contingency Plan (MCP)", Rev. 3, May 2003.

7.6 Con-Test SOP on Procedures for Implementing Corrective Actions

7.7 CT RCP, RCP Recommended Reasonable Confidence Program, "Quality Assurance and Quality Control Requirements Polychlorinated Biphenyls by Method 8082, SW-846", Version 2, July 2006.

7.8 MA DEP. MCP Data Enhancement Program, "Quality Control Requirements and Performance Standards for the Analysis of PCB's by GC in Support of Response Actions under the MCP", Rev 1, July 1, 2010.

METHOD 8082A

POLYCHLORINATED BIPHENYLS (PCBs) BY GAS CHROMATOGRAPHY

SW-846 is not intended to be an analytical training manual. Therefore, method procedures are written based on the assumption that they will be followed by individuals formally trained in at least the basic principles of chemical analysis and in the use of the subject technology.

In addition, SW-846 methods, with the exception of required method use for the analysis of method-defined parameters, are intended to be methods which contain general information on how to perform an analytical procedure or technique which a laboratory can use as a basic starting point for generating its own detailed standard operating procedure (SOP), either for its own general use or for a specific project application. The performance data included in this method are for guidance purposes only, and are not intended to be and must not be used as absolute QC acceptance criteria for purposes of laboratory accreditation.

1.0 SCOPE AND APPLICATION

1.1 This method may be used to determine the concentrations of polychlorinated biphenyls (PCBs) as Aroclors or as individual PCB congeners in extracts from solid, tissue, and aqueous matrices, using open-tubular, capillary columns with electron capture detectors (ECD) or electrolytic conductivity detectors (ELCD). The Aroclors and PCB congeners listed below have been determined by this method, using either a single- or dual column analysis system, and this method may be appropriate for additional congeners and Aroclors (see Sec. 1.4). The method also may be applied to other matrices such as oils and wipe samples, if appropriate sample extraction procedures are employed.

Compound	CAS Registry No.[a]	IUPAC #
Aroclor 1016	12674-11-2	-
Aroclor 1221	11104-28-2	-
Aroclor 1232	11141-16-5	-
Aroclor 1242	53469-21-9	-
Aroclor 1248	12672-29-6	-
Aroclor 1254	11097-69-1	-
Aroclor 1260	11096-82-5	-
2-Chlorobiphenyl	2051-60-7	1
2,3-Dichlorobiphenyl	16605-91-7	5
2,2',5-Trichlorobiphenyl	37680-65-2	18
2,4',5-Trichlorobiphenyl	16606-02-3	31
2,2',3,5'-Tetrachlorobiphenyl	41464-39-5	44
2,2',5,5'-Tetrachlorobiphenyl	35693-99-3	52
2,3',4,4'-Tetrachlorobiphenyl	32598-10-0	66
2,2',3,4,5'-Pentachlorobiphenyl	38380-02-8	87
2,2',4,5,5'-Pentachlorobiphenyl	37680-73-2	101
2,3,3',4',6-Pentachlorobiphenyl	38380-03-9	110
2,2',3,4,4',5'-Hexachlorobiphenyl	35065-28-2	138
2,2',3,4,5,5'-Hexachlorobiphenyl	52712-04-6	141

Compound	CAS Registry No.[a]	IUPAC #
2,2',3,5,5',6-Hexachlorobiphenyl	52663-63-5	151
2,2',4,4',5,5'-Hexachlorobiphenyl	35065-27-1	153
2,2',3,3',4,4',5-Heptachlorobiphenyl	35065-30-6	170
2,2',3,4,4',5,5'-Heptachlorobiphenyl	35065-29-3	180
2,2',3,4,4',5',6-Heptachlorobiphenyl	52663-69-1	183
2,2',3,4',5,5',6-Heptachlorobiphenyl	52663-68-0	187
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	40186-72-9	206

[a]Chemical Abstract Service Registry No.

1.2 Aroclors are multi-component mixtures. When samples contain more than one Aroclor, a higher level of analyst expertise is required to attain acceptable levels of qualitative and quantitative analysis. The same is true of Aroclors that have been subjected to environmental degradation ("weathering") or degradation by treatment technologies. Such weathered multi-component mixtures may have significant differences in peak patterns compared to those of Aroclor standards.

1.3 The seven Aroclors listed in Sec. 1.1 are those that are commonly specified in EPA regulations. The quantitation of PCBs as Aroclors is appropriate for many regulatory compliance determinations, but is particularly difficult when the Aroclors have been weathered by long exposure in the environment. Therefore, this method provides procedures for the determination of a selected group of the 209 possible PCB congeners, as another means to measure the concentrations of weathered Aroclors. The 19 PCB congeners listed above have been tested by this method and were chosen for testing because many of them represent congeners specific to the common Aroclor formulations (see Table 6). These 19 PCB congeners do not represent the co-planar PCBs or the other PCBs of greatest toxicological significance. **The analytical procedures for these 19 congeners may be appropriate for the analysis of other congeners not specifically included in this method and may be used as a template for the development of such a procedure.** However, all 209 PCB congeners cannot be separated using the GC columns and procedures described in this method. If this procedure is expanded to encompass other congeners, then the analyst must either document the resolution of the congeners in question, or establish procedures for reporting the results of coeluting congeners that are appropriate for the intended application.

1.4 The PCB congener approach potentially affords greater quantitative accuracy when PCBs are known to be present. As a result, this method may be used to determine Aroclors, some PCB congeners, or "total PCBs," depending on regulatory requirements and project needs. The congener method is of particular value in determining weathered Aroclors. However, analysts should use caution when using the congener method when regulatory requirements are based on Aroclor concentrations. Also, this method is not appropriate as currently written for the determination of the co-planar PCB congeners at the very low (sub part per trillion) concentrations sometimes needed for risk assessment purposes.

1.5 Compound identification based on single-column analysis should be confirmed on a second column, or should be supported by at least one other qualitative technique. This method describes analytical conditions for a second gas chromatographic column that can be used to confirm the measurements made with the primary column. GC/MS (e.g., Method 8270) is also recommended as a confirmation technique, if sensitivity permits (also see Sec. 11.11 of this method). GC/AED may also be used as a confirmation technique, if sensitivity permits (see Method 8085).

1.6 This method includes a dual-column option that describes a hardware configuration in which two GC columns are connected to a single injection port and to two separate detectors. The option allows one injection to be used for dual-column simultaneous analysis.

1.7 The analyst must select columns, detectors and calibration procedures most appropriate for the specific analytes of interest in a study. Matrix-specific performance data must be established and the stability of the analytical system and instrument calibration must be established for each analytical matrix (e.g., hexane solutions from sample extractions, diluted oil samples, etc.). Example chromatograms and GC conditions are provided as guidance.

1.8 Prior to employing this method, analysts are advised to consult the base method for each type of procedure that may be employed in the overall analysis (e.g., Methods 3500, 3600, and 8000) for additional information on quality control procedures, development of QC acceptance criteria, calculations, and general guidance. Analysts also should consult the disclaimer statement at the front of the manual and the information in Chapter Two for guidance on the intended flexibility in the choice of methods, apparatus, materials, reagents, and supplies, and on the responsibilities of the analyst for demonstrating that the techniques employed are appropriate for the analytes of interest, in the matrix of interest, and at the levels of concern.

In addition, analysts and data users are advised that, except where explicitly specified in a regulation, the use of SW-846 methods is *not* mandatory in response to Federal testing requirements. The information contained in this method is provided by EPA as guidance to be used by the analyst and the regulated community in making judgments necessary to generate results that meet the data quality objectives for the intended application.

1.9 Use of this method is restricted to use by, or under the supervision of, personnel appropriately experienced and trained in the use of gas chromatographs (GCs) and skilled in the interpretation of gas chromatograms. Each analyst must demonstrate the ability to generate acceptable results with this method.

2.0 SUMMARY OF METHOD

2.1 A measured volume or weight of sample is extracted using the appropriate matrix-specific sample extraction technique.

2.1.1 Aqueous samples may be extracted at neutral pH with methylene chloride using either Method 3510 (separatory funnel), Method 3520 (continuous liquid-liquid extractor), Method 3535 (solid-phase extraction), or other appropriate technique or solvents.

2.1.2 Solid samples may be extracted with hexane-acetone (1:1) or methylene chloride-acetone (1:1) using Method 3540 (Soxhlet), Method 3541 (automated Soxhlet), Method 3545 (pressurized fluid extraction), Method 3546 (microwave extraction), Method 3550 (ultrasonic extraction), Method 3562 (supercritical fluid extraction), or other appropriate technique or solvents.

2.1.3 Tissue samples may be extracted using Method 3562 (supercritical fluid extraction), or other appropriate technique. The extraction techniques for other solid matrices (see Sec. 2.1.2) may be appropriate for tissue samples.

2.2 Extracts for PCB analysis may be subjected to a sequential sulfuric acid/potassium permanganate cleanup (Method 3665) designed specifically for these analytes. This cleanup technique will remove (destroy) many single component organochlorine or organophosphorus pesticides. Therefore, this method is not applicable to the analysis of those compounds. Instead, use Method 8081.

2.3 After cleanup, the extract is analyzed by injecting a measured aliquot into a gas chromatograph equipped with either a narrow- or wide-bore fused-silica capillary column and either an electron capture detector (GC/ECD) or an electrolytic conductivity detector (GC/ELCD).

2.4 The chromatographic data may be used to determine the seven Aroclors in Sec. 1.1, selected individual PCB congeners, or total PCBs (see Secs. 11.8 and 11.9).

3.0 DEFINITIONS

Refer to Chapter One and the manufacturer's instructions for definitions that may be relevant to this procedure.

4.0 INTERFERENCES

4.1 Solvents, reagents, glassware, and other sample processing hardware may yield artifacts and/or interferences to sample analysis. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by analyzing method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be necessary. Refer to each method to be used for specific guidance on quality control procedures and to Chapter Four for general guidance on the cleaning of glassware. Also refer to Methods 3500, 3600, and 8000 for a discussion of interferences.

4.2 Interferences co-extracted from the samples will vary considerably from matrix to matrix. While general cleanup techniques are referenced or provided as part of this method, unique samples may require additional cleanup approaches to achieve desired degrees of discrimination and quantitation. Sources of interference in this method can be grouped into four broad categories, as follows:

4.2.1 Contaminated solvents, reagents, or sample processing hardware.

4.2.2 Contaminated GC carrier gas, parts, column surfaces, or detector surfaces.

4.2.3 Compounds extracted from the sample matrix to which the detector will respond, such as single-component chlorinated pesticides, including the DDT analogs (DDT, DDE, and DDD).

<u>NOTE</u>: A standard of the DDT analogs should be injected to determine which of the PCB or Aroclor peaks may be subject to interferences on the analytical columns used. There may be substantial DDT interference with the last major Aroclor 1254 peak in some soil and sediment samples.

4.2.4 Coelution of related analytes -- All 209 PCB congeners cannot be separated using the GC columns and procedures described in this method. If this procedure is expanded to encompass other congeners, then the analyst must either

document the resolution of the congeners in question or establish procedures for reporting the results of coeluting congeners that are appropriate for the intended application.

4.3 Interferences by phthalate esters introduced during sample preparation can pose a major problem in PCB determinations. Interferences from phthalate esters can best be minimized by avoiding contact with any plastic materials and checking all solvents and reagents for phthalate contamination.

4.3.1 Common flexible plastics contain varying amounts of phthalate esters which are easily extracted or leached from such materials during laboratory operations.

4.3.2 Exhaustive cleanup of solvents, reagents and glassware may be required to eliminate background phthalate ester contamination.

4.3.3 These materials can be removed prior to analysis using Method 3665 (sulfuric acid/permanganate cleanup).

4.4 Cross-contamination of clean glassware can routinely occur when plastics are handled during extraction steps, especially when solvent-wetted surfaces are handled. Glassware must be scrupulously cleaned.

4.4.1 Clean all glassware as soon as possible after use by rinsing with the last solvent used. This should be followed by detergent washing with hot water, and rinses with tap water and organic-free reagent water. Drain the glassware, and dry it in an oven at 130 °C for several hours, or rinse with methanol and drain. Store dry glassware in a clean environment.

CAUTION: Oven-drying of glassware used for PCB analysis can increase contamination because PCBs are readily volatilized in the oven and spread to other glassware. Therefore, exercise caution, and do not dry glassware from samples containing high concentrations of PCBs with glassware that may be used for trace analyses.

4.4.2 Other appropriate glassware cleaning procedures may be employed, such as using a muffle furnace at 430 °C for at least 30 min. However, analysts are advised not to place volumetric glassware in a muffle furnace, since the heat will burn off the markings on the glassware and may warp the glassware, changing its volume.

4.5 Sulfur (S_8) is readily extracted from soil samples and may cause chromatographic interferences in the determination of PCBs. Sulfur contamination should be expected with sediment samples. Sulfur can be removed through the use of Method 3660.

5.0 SAFETY

This method does not address all safety issues associated with its use. The laboratory is responsible for maintaining a safe work environment and a current awareness file of OSHA regulations regarding the safe handling of the chemicals listed in this method. A reference file of material safety data sheets (MSDSs) should be available to all personnel involved in these analyses.

6.0 EQUIPMENT AND SUPPLIES

The mention of trade names or commercial products in this manual is for illustrative purposes only, and does not constitute an EPA endorsement or exclusive recommendation for use. The products and instrument settings cited in SW-846 methods represent those products and settings used during method development or subsequently evaluated by the Agency. Glassware, reagents, supplies, equipment, and settings other than those listed in this manual may be employed provided that method performance appropriate for the intended application has been demonstrated and documented.

This section does not list common laboratory glassware (e.g., beakers and flasks).

6.1 Gas chromatograph -- An analytical system complete with gas chromatograph suitable for on-column and split-splitless injection and all necessary accessories including syringes, analytical columns, gases, electron capture detectors (ECD), and recorder/integrator or data system. Electrolytic conductivity detectors (ELCDs) may also be employed if appropriate for project needs. If the dual-column option is employed, the gas chromatograph must be equipped with two separate detectors.

6.2 GC columns

This method describes procedures for both single-column and dual-column analyses. The single-column approach involves one analysis to determine that a compound is present, followed by a second analysis to confirm the identity of the compound (Sec. 11.11 describes how GC/MS confirmation techniques may be employed). The single-column approach may employ either narrow-bore ($\leq$ 0.32-mm ID) columns or wide-bore (0.53-mm ID) columns. The dual-column approach generally employs a single injection that is split between two columns that are mounted in a single gas chromatograph. The dual-column approach generally employs wide-bore (0.53-mm ID) columns, but columns of other diameters may be employed if the analyst can demonstrate and document acceptable performance for the intended application. A third alternative is to employ dual columns mounted in a single GC, but with each column connected to a separate injector and a separate detector.

The columns listed in this section were the columns used in developing the method. The listing of these columns in this method is not intended to exclude the use of other columns that are available or that may be developed. Laboratories may use these columns or other columns provided that the laboratories document method performance data (e.g., chromatographic resolution, analyte breakdown, and sensitivity) that are appropriate for the intended application.

6.2.1 Narrow-bore columns for single-column analysis (use both columns to confirm compound identifications unless another confirmation technique such as GC/MS is employed). Narrow-bore columns should be installed in split/splitless (Grob-type) injectors.

6.2.1.1 30-m x 0.25-mm or 0.32-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5 or equivalent), 1-µm film thickness.

6.2.1.2 30-m x 0.25-mm ID fused-silica capillary column chemically bonded with 35 percent phenyl methylpolysiloxane (DB-608, SPB-608, or equivalent), 2.5 µm coating thickness, 1-µm film thickness.

6.2.2 Wide-bore columns for single-column analysis (use two of the three columns listed to confirm compound identifications unless another confirmation technique

such as GC/MS is employed). Wide-bore columns should be installed in 1/4-inch injectors, with deactivated liners designed specifically for use with these columns.

6.2.2.1 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 35 percent phenyl methylpolysiloxane (DB-608, SPB-608, RTx-35, or equivalent), 0.5-µm or 0.83-µm film thickness.

6.2.2.2 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 14% cyanopropylmethylpolysiloxane (DB-1701, or equivalent), 1.0-µm film thickness.

6.2.2.3 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5, SPB-5, RTx-5, or equivalent), 1.5-µm film thickness.

6.2.3 Wide-bore columns for dual-column analysis -- The three pairs of recommended columns are listed below.

6.2.3.1 Column pair 1

30-m x 0.53-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5, SPB-5, RTx-5, or equivalent), 1.5-µm film thickness.

30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 14% cyanopropylmethylpolysiloxane (DB-1701, or equivalent), 1.0-µm film thickness.

Column pair 1 is mounted in a press-fit Y-shaped glass 3-way union splitter (J&W Scientific, Catalog No. 705-0733) or a Y-shaped fused-silica connector (Restek, Catalog No. 20405), or equivalent.

NOTE: When connecting columns to a press-fit Y-shaped connector, a better seal may be achieved by first soaking the ends of the capillary columns in alcohol for about 10 sec to soften the polyimide coating.

6.2.3.2 Column pair 2

30-m x 0.53-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5, SPB-5, RTx-5, or equivalent), 0.83-µm film thickness.

30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 14% cyanopropylmethylpolysiloxane (DB-1701, or equivalent), 1.0-µm film thickness.

Column pair 2 is mounted in an 8-in. deactivated glass injection tee (Supelco, Catalog No. 2-3665M), or equivalent.

6.2.3.3 Column pair 3

30-m x 0.53-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5, SPB-5, RTx-5, or equivalent), 1.5-µm film thickness.

30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 35 percent phenyl methylpolysiloxane (HP-608, DB-608, SPB-608, RTx-35, or equivalent), 0.5-µm film thickness.

Column pair 3 is mounted in separate injectors and separate detectors.

6.3 Column rinsing kit -- Bonded-phase column rinse kit (J&W Scientific, Catalog No. 430-3000), or equivalent.

6.4 Volumetric flasks -- 10-mL and 25-mL, for preparation of standards.

6.5 Analytical balance, capable of weighing to 0.0001 g.

7.0 REAGENTS AND STANDARDS.

7.1 Reagent-grade or pesticide-grade chemicals must be used in all tests. Unless otherwise indicated, it is intended that all reagents conform to specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination. Reagents should be stored in glass to prevent the leaching of contaminants from plastic containers.

NOTE: Store the standard solutions (stock, composite, calibration, internal, and surrogate) at ≤ 6 °C in polytetrafluoroethylene (PTFE)-sealed containers in the dark. When a lot of standards is prepared, aliquots of that lot should be stored in individual small vials. All stock standard solutions must be replaced after one year, or sooner if routine QC (see Sec. 9.0) indicates a problem. All other standard solutions must be replaced after six months, or sooner if routine QC (see Sec. 9.0) indicates a problem.

7.2 Solvents used in the extraction and cleanup procedures (appropriate 3500 and 3600 series methods) include *n*-hexane, diethyl ether, methylene chloride, acetone, ethyl acetate, and isooctane (2,2,4-trimethylpentane) and the solvents must be exchanged to *n*-hexane or isooctane prior to analysis. Therefore, *n*-hexane and isooctane will be required in this procedure. All solvents should be pesticide grade in quality or equivalent, and each lot of solvent should be determined to be free of phthalates.

7.3 The following solvents may be necessary for the preparation of standards. All solvent lots must be pesticide grade in quality or equivalent and should be determined to be free of phthalates.

7.3.1 Acetone, $(CH_3)_2CO$

7.3.2 Toluene, $C_6H_5CH_3$

7.4 Organic-free reagent water -- All references to water in this method refer to organic-free reagent water as defined in Chapter One.

7.5 Standard solutions

The following sections describe the preparation of stock, intermediate, and working standards for the compounds of interest. This discussion is provided as an example, and other approaches and concentrations of the target compounds may be used, as appropriate for the intended application. See Method 8000 for additional information on the preparation of calibration standards.

7.6 Stock standard solutions (1000 mg/L) -- May be prepared from pure standard materials or can be purchased as certified solutions.

7.6.1 Prepare stock standard solutions by accurately weighing 0.0100 g of pure compound. Dissolve the compound in isooctane or hexane and dilute to volume in a 10-mL volumetric flask. If compound purity is 96 percent or greater, the weight can be used without correction to calculate the concentration of the stock standard solution.

7.6.2 Commercially-prepared stock standard solutions may be used at any concentration if they are certified by the manufacturer or by an independent source.

7.7 Calibration standards for Aroclors

7.7.1 A standard containing a mixture of Aroclor 1016 and Aroclor 1260 will include many of the peaks represented in the other five Aroclor mixtures. As a result, a multi-point initial calibration employing a mixture of Aroclors 1016 and 1260 at five concentrations should be sufficient to demonstrate the linearity of the detector response without the necessity of performing multi-point initial calibrations for each of the seven Aroclors. In addition, such a mixture can be used as a standard to demonstrate that a sample does <u>not</u> contain peaks that represent any one of the Aroclors. This standard can also be used to determine the concentrations of either Aroclor 1016 or Aroclor 1260, should they be present in a sample.

Prepare a minimum of five calibration standards containing equal concentrations of both Aroclor 1016 and Aroclor 1260 by dilution of the stock standard with isooctane or hexane. The concentrations should correspond to the expected range of concentrations found in real samples and should bracket the linear range of the detector. See Method 8000 for additional information regarding the preparation of calibration standards.

7.7.2 Single standards of each of the other five Aroclors are required to aid the analyst in pattern recognition. Assuming that the Aroclor 1016/1260 standards described in Sec. 7.7.1 have been used to demonstrate the linearity of the detector, these single standards of the remaining five Aroclors also may be used to determine the calibration factor for each Aroclor when a linear calibration model through the origin is chosen (see Sec. 11.4). Prepare a standard for each of the other Aroclors. The concentrations should generally correspond to the mid-point of the linear range of the detector, but lower concentrations may be employed at the discretion of the analyst based on project requirements.

7.7.3 Other standards (e.g., other Aroclors) and other calibration approaches (e.g., non-linear calibration for individual Aroclors) may be employed to meet project needs. When the nature of the PCB contamination is already known, use standards of those particular Aroclors. See Method 8000 for information on non-linear calibration approaches.

7.8 Calibration standards for PCB congeners

7.8.1 If results are to be determined for individual PCB congeners, then standards for the pure congeners must be prepared. The table in Sec. 1.1 lists 19 PCB congeners that have been tested by this method along with the IUPAC numbers designating these congeners. This procedure may be appropriate for other congeners as well, but the analyst must either document the resolution of the congeners in question or establish procedures for reporting the results of coeluting congeners that are appropriate for the intended application.

7.8.2 Stock standards may be prepared in a fashion similar to that described for the Aroclor standards, or may be purchased as commercially-prepared solutions. Stock standards should be used to prepare a minimum of five concentrations by dilution of the stock standard with isooctane or hexane. The concentrations should correspond to the expected range of concentrations found in real samples and should bracket the linear range of the detector.

7.9 Internal standard

7.9.1 When PCB congeners are to be determined, the use of an internal standard is highly recommended. Decachlorobiphenyl may be used as an internal standard, added to each sample extract prior to analysis, and included in each of the initial calibration standards.

7.9.2 When PCBs are to be determined as Aroclors, an internal standard is typically not used, and decachlorobiphenyl is employed as a surrogate (see Sec. 7.10).

7.9.3 When decachlorobiphenyl is an analyte of interest, as in some PCB congener analyses, see Sec. 7.10.3.

7.10 Surrogate standards

The performance of the method should be monitored using surrogate compounds. Surrogate standards are added to all samples, method blanks, matrix spikes, and calibration standards. The choice of surrogate compounds will depend on analysis mode chosen, e.g., Aroclors or congeners. The following compounds are recommended as surrogates. Other surrogates may be used, provided that the analyst can demonstrate and document performance appropriate for the data quality needs of the particular application.

7.10.1 When PCBs are to be determined as Aroclors, decachlorobiphenyl may be used as a surrogate, and is added to each sample prior to extraction. Prepare a solution of decachlorobiphenyl in acetone. The recommended spiking solution concentration is 5 mg/L. Tetrachloro-*m*-xylene also may be used as a surrogate for Aroclor analysis. If used, the recommended spiking solution concentration is 5 mg/L in acetone. (Other surrogate concentrations may be used, as appropriate for the intended application.)

7.10.2 When PCB congeners are to be determined, decachlorobiphenyl is recommended for use as an internal standard, and therefore it cannot also be used as a surrogate. Tetrachloro-*m*-xylene may be used as a surrogate for PCB congener analysis. The recommended spiking solution concentration is 5 mg/L in acetone. (Other surrogate concentrations may be used, as appropriate for the intended application.)

7.10.3 If decachlorobiphenyl is a target congener for the analysis, 2,2',4,4',5,5'-hexabromobiphenyl may be used as an internal standard or a surrogate.

7.11 DDT analog standard -- Used to determine if the commonly found DDT analogs (DDT, DDE, and DDD) elute at the same retention times as any of the target analytes (congeners or Aroclors). A single standard containing all three compounds should be sufficient. The concentration of the standard is left to the judgement of the analyst.

8.0 SAMPLE COLLECTION, PRESERVATION, AND STORAGE

8.1 See the introductory material to Chapter Four, "Organic Analytes."

8.2 Extracts should be stored under refrigeration in the dark and should be analyzed within 40 days of extraction.

NOTE: The holding time above is a recommendation. PCBs are very stable in a variety of matrices, and holding times under the conditions listed above may be as long as a year.

9.0 QUALITY CONTROL

9.1 Refer to Chapter One for guidance on quality assurance (QA) and quality control (QC) protocols. When inconsistencies exist between QC guidelines, method-specific QC criteria take precedence over both technique-specific criteria and those criteria given in Chapter One, and technique-specific QC criteria take precedence over the criteria in Chapter One. Any effort involving the collection of analytical data should include development of a structured and systematic planning document, such as a Quality Assurance Project Plan (QAPP) or a Sampling and Analysis Plan (SAP), which translates project objectives and specifications into directions for those that will implement the project and assess the results. Each laboratory should maintain a formal quality assurance program. The laboratory should also maintain records to document the quality of the data generated. All data sheets and quality control data should be maintained for reference or inspection.

9.2 Refer to Method 8000 for specific determinative method QC procedures. Refer to Method 3500 for QC procedures to ensure the proper operation of the various sample preparation techniques. If an extract cleanup procedure is performed, refer to Method 3600 for the appropriate QC procedures. Any more specific QC procedures provided in this method will supersede those noted in Methods 8000, 3500, or 3600.

9.3 Quality control procedures necessary to evaluate the GC system operation are found in Method 8000 and include evaluation of retention time windows, calibration verification and chromatographic analysis of samples.

9.3.1 Include a calibration standard after each group of 20 samples (it is *recommended* that a calibration standard be included after every 10 samples to minimize the number of repeat injections) in the analysis sequence as a calibration check. Thus, injections of method blank extracts, matrix spike samples, and other non-standards are counted in the total. Solvent blanks, injected as a check on cross-contamination, need not be counted in the total. The response factors for the calibration should be within ±20 percent of the initial calibration (see Sec. 11.6.2). When this continuing calibration is out of this acceptance window, the laboratory should stop analyses and take corrective action.

9.3.2 Whenever quantitation is accomplished using an internal standard, internal standards must be evaluated for acceptance. The measured area of the internal standard must be no more than 50 percent different from the average area calculated during initial calibration. When the internal standard peak area is outside the limit, all samples that fall outside the QC criteria must be reanalyzed. The retention times of the internal standards must also be evaluated. A retention time shift of >30 sec necessitates reanalysis of the affected sample.

9.4 Initial demonstration of proficiency

9.4.1 Each laboratory must demonstrate initial proficiency with each sample preparation and determinative method combination it utilizes, by generating data of acceptable accuracy and precision for target analytes in a clean matrix. If an autosampler is used to perform sample dilutions, before using the autosampler to dilute samples, the laboratory should satisfy itself that those dilutions are of equivalent or better accuracy than is achieved by an experienced analyst performing manual dilutions. The laboratory must also repeat the demonstration of proficiency whenever new staff members are trained or significant changes in instrumentation are made. See Method 8000 for information on how to accomplish a demonstration of proficiency.

9.4.2 It is suggested that the QC reference sample concentrate (as discussed in Methods 8000 and Method 3500) contain PCBs as Aroclors at 10-50 mg/L in the concentrate for water samples, or PCBs as congeners at the same concentrations. A 1-mL volume of this concentrate spiked into 1 L of reagent water will result in a sample concentration of 10-50 µg/L. If Aroclors are not expected in samples from a particular source, then prepare the QC reference samples with a mixture of Aroclors 1016 and 1260. However, when specific Aroclors are known to be present or expected in samples, the specific Aroclors should be used for the QC reference sample. See Method 8000 for additional information on how to accomplish this demonstration. Other concentrations may be used, as appropriate for the intended application.

9.4.3 Calculate the average recovery and the standard deviation of the recoveries of the analytes in each of the four QC reference samples. Refer to Method 8000 for procedures for evaluating method performance.

9.5 Initially, before processing any samples, the analyst should demonstrate that all parts of the equipment in contact with the sample and reagents are interference-free. This is accomplished through the analysis of a method blank. As a continuing check, each time samples are extracted, cleaned up, and analyzed, and when there is a change in reagents, a method blank should be prepared and analyzed for the compounds of interest as a safeguard against chronic laboratory contamination. If a peak is observed within the retention time window of any analyte that would prevent the determination of that analyte, determine the source and eliminate it, if possible, before processing the samples. The blanks should be carried through all stages of sample preparation and analysis. When new reagents or chemicals are received, the laboratory should monitor the preparation and/or analysis blanks associated with samples for any signs of contamination. It is not necessary to test every new batch of reagents or chemicals prior to sample preparation if the source shows no prior problems. However, if reagents are changed during a preparation batch, separate blanks need to be prepared for each set of reagents.

9.6 Sample quality control for preparation and analysis

The laboratory must also have procedures for documenting the effect of the matrix on method performance (precision, accuracy, method sensitivity). At a minimum, this should include the analysis of QC samples including a method blank, a matrix spike, a duplicate, and a laboratory control sample (LCS) in each analytical batch and the addition of surrogates to each field sample and QC sample when surrogates are used. Any method blanks, matrix spike samples, and replicate samples should be subjected to the same analytical procedures (Sec. 11.0) as those used on actual samples.

9.6.1 Documenting the effect of the matrix should include the analysis of at least one matrix spike and one duplicate unspiked sample or one matrix spike/matrix spike

duplicate pair. The decision on whether to prepare and analyze duplicate samples or a matrix spike/matrix spike duplicate must be based on a knowledge of the samples in the sample batch. If samples are expected to contain target analytes, then laboratories may use one matrix spike and a duplicate analysis of an unspiked field sample. If samples are not expected to contain target analytes, the laboratories should use a matrix spike and matrix spike duplicate pair, spiked with the Aroclor 1016/1260 mixture. However, when specific Aroclors are known to be present or expected in samples, the specific Aroclors should be used for spiking. Consult Method 8000 for information on developing acceptance criteria for the MS/MSD.

9.6.2 A laboratory control sample (LCS) should be included with each analytical batch. The LCS consists of an aliquot of a clean (control) matrix similar to the sample matrix and of the same weight or volume. The LCS is spiked with the same analytes at the same concentrations as the matrix spike, when appropriate. When the results of the matrix spike analysis indicate a potential problem due to the sample matrix itself, the LCS results are used to verify that the laboratory can perform the analysis in a clean matrix. Consult Method 8000 for information on developing acceptance criteria for the LCS.

9.6.3 Also see Method 8000 for the details on carrying out sample quality control procedures for preparation and analysis. In-house acceptance criteria for evaluating method performance should be developed using the guidance found in Method 8000.

9.7 Surrogate recoveries

If surrogates are used, the laboratory should evaluate surrogate recovery data from individual samples versus the surrogate control limits developed by the laboratory. See Method 8000 for information on evaluating surrogate data and developing and updating surrogate limits. Procedures for evaluating the recoveries of multiple surrogates and the associated corrective actions should be defined in an approved project plan.

9.8 It is recommended that the laboratory adopt additional quality assurance practices for use with this method. The specific practices that are most productive depend upon the needs of the laboratory and the nature of the samples. Whenever possible, the laboratory should analyze standard reference materials and participate in relevant performance evaluation studies.

10.0 CALIBRATION AND STANDARDIZATION

See Sec. 11.0 for information on calibration and standardization.

11.0 PROCEDURE

11.1 Sample extraction

11.1.1 Refer to Chapter Two and Method 3500 for guidance in choosing the appropriate extraction procedure. In general, water samples are extracted at a neutral pH with methylene chloride using a separatory funnel (Method 3510), a continuous liquid-liquid extractor (Method 3520), solid-phase extraction (Method 3535), or other appropriate technique. Solid samples are extracted with hexane-acetone (1:1) or methylene chloride-acetone (1:1) using one of the Soxhlet extraction methods (Method 3540 or 3541), pressurized fluid extraction (Method 3545), microwave extraction (Method 3546),

ultrasonic extraction (Method 3550), supercritical fluid extraction (Method 3562), or other appropriate technique or solvents. Tissue samples are extracted using supercritical fluid extraction (Method 3562) or other appropriate technique.

NOTE: The use of hexane-acetone generally reduces the amount of interferences that are extracted and improves signal-to-noise.

The choice of extraction solvent and procedure will depend on the analytes of interest. No single solvent or extraction procedure is universally applicable to all analyte groups and sample matrices. The analyst *must* demonstrate adequate performance for the analytes of interest, at the levels of interest, for any solvent system and extraction procedure employed, *including* those specifically listed in this method. At a minimum, such a demonstration will encompass the initial demonstration of proficiency described in Method 3500, using a clean reference matrix. Each new sample type must be spiked with the compounds of interest to determine the percent recovery. Method 8000 describes procedures that may be used to develop performance criteria for such demonstrations as well as for matrix spike and laboratory control sample results.

11.1.2 Reference materials, field-contaminated samples, or spiked samples should be used to verify the applicability of the selected extraction technique to each new sample type. Such samples should contain or be spiked with the compounds of interest in order to determine the percent recovery and the limit of detection for that sample type (see Chapter One). When other materials are not available and spiked samples are used, they should be spiked with the analytes of interest, either specific Aroclors or PCB congeners. When the presence of specific Aroclors is not anticipated, the Aroclor 1016/1260 mixture may be an appropriate choice for spiking. See Methods 3500 and 8000 for guidance on demonstration of initial method proficiency as well as guidance on matrix spikes for routine sample analysis.

11.1.3 The extraction techniques for solids may be applicable to wipe samples and other sample matrices not addressed in Sec. 11.1.1. The analysis of oil samples may need special sample preparation procedures that are not described here. Analysts should follow the steps described in Sec. 11.1.2 to verify the applicability of the sample preparation and extraction techniques for matrices such as wipes and oils.

11.2 Extract cleanup

Cleanup procedures may not be necessary for a relatively clean sample matrix, but most extracts from environmental and waste samples will require additional preparation before analysis. The specific cleanup procedure used will depend on the nature of the sample to be analyzed and the data quality objectives for the measurements. Refer to Methods 3600, 3660 and 3665 for general guidance on extract cleanup.

11.3 GC conditions

This method allows the analyst to choose between a single-column or a dual-column configuration in the injector port. The columns listed in this section were the columns used to develop the method performance data. Listing these columns in this method is not intended to exclude the use of other columns that are available or that may be developed. Wide-bore or narrow-bore columns may be used with either option. Laboratories may use either the columns listed in this method or other capillary columns or columns of other dimensions, provided that the laboratories document method performance data (e.g., chromatographic resolution, analyte breakdown, and sensitivity) that are appropriate for the intended application.

11.3.1 Single-column analysis

This capillary GC/ECD method allows the analyst the option of using 0.25-mm or 0.32-mm ID capillary columns (narrow-bore) or 0.53-mm ID capillary columns (wide-bore). Narrow-bore columns generally provide greater chromatographic resolution than wide-bore columns, although narrow-bore columns have a lower sample capacity. As a result, narrow-bore columns may be more suitable for relatively clean samples or for extracts that have been prepared with one or more of the clean-up options referenced in the method. Wide-bore columns (0.53-mm ID) may be more suitable for more complex environmental and waste matrices. However, the choice of the appropriate column diameter is left to the professional judgement of the analyst.

11.3.2 Dual-column analysis

The dual-column/dual-detector approach recommends the use of two 30-m x 0.53-mm ID fused-silica open-tubular columns of different polarities, thus, different selectivities towards the target analytes. The columns may be connected to an injection tee and separate electron capture detectors, or to both separate injectors and separate detectors. However, the choice of the appropriate column dimensions is left to the professional judgement of the analyst.

11.3.3 GC temperature programs and flow rates

11.3.3.1 Table 1 lists suggested GC operating conditions for the analysis of PCBs as Aroclors for single-column analysis, using either narrow-bore or wide-bore capillary columns. Table 2 lists suggested GC operating conditions for the dual-column analysis. Use the conditions in these tables as guidance and establish the GC temperature program and flow rate necessary to separate the analytes of interest.

11.3.3.2 When determining PCBs as congeners, difficulties may be encountered with coelution of congener 153 and other sample components. When determining PCBs as Aroclors, chromatographic conditions should be adjusted to give adequate separation of the characteristic peaks in each Aroclor (see Sec. 11.4.6).

11.3.3.3 Tables 3 and 4 summarize example retention times of up to 73 Aroclor peaks determined during dual-column analysis using the operating conditions listed in Table 2. These retention times are provided as guidance as to what may be achieved using the GC columns, temperature programs, and flow rates described in this method. Each laboratory must determine retention times and retention time windows for their specific application of the method. Note that the peak numbers used in these tables are *not* the IUPAC congener numbers, but represent the elution order of the peaks on these GC columns.

11.3.3.4 Once established, the same operating conditions must be used for the analysis of samples and standards.

11.4 Calibration

11.4.1 Prepare calibration standards using the procedures in Sec. 7.0. Refer to Method 8000 and Sec. 9.3 for proper calibration techniques for both initial calibration and calibration verification. When PCBs are to be determined as congeners, the use of internal standard calibration is highly recommended. Therefore, the calibration standards

must contain the internal standard (see Sec. 7.9) at the same concentration as the sample extracts. When PCBs are to be determined as Aroclors, external standard calibration is generally used.

NOTE: Because of the sensitivity of the electron capture detector, always clean the injection port and column prior to performing the initial calibration.

11.4.2 When PCBs are to be quantitatively determined as congeners, an initial multi-point calibration must be performed that includes standards for all the target analytes (congeners). See Method 8000 for details on calibration options.

11.4.3 When PCBs are to be quantitatively determined as Aroclors, the initial calibration consists of two parts, described below.

11.4.3.1 As noted in Sec. 7.7.1, a standard containing a mixture of Aroclor 1016 and Aroclor 1260 will include many of the peaks represented in the other five Aroclor mixtures. Thus, such a standard may be used to demonstrate the linearity of the detector and that a sample does not contain peaks that represent any one of the Aroclors. This standard can also be used to determine the concentrations of either Aroclor 1016 or Aroclor 1260, should they be present in a sample. Therefore, an initial multi-point calibration is performed using the mixture of Aroclors 1016 and 1260 described in Sec. 7.7.1. See Method 8000 for guidance on the use of linear and non-linear calibrations.

11.4.3.2 Standards of the other five Aroclors are necessary for pattern recognition. When employing the traditional model of a linear calibration through the origin, these standards are also used to determine a single-point calibration factor for each Aroclor, assuming that the Aroclor 1016/1260 mixture in Sec. 11.4.3.1 has been used to describe the detector response. The standards for these five Aroclors should be analyzed before the analysis of any samples, and may be analyzed before or after the analysis of the five 1016/1260 standards in Sec. 11.4.3.1. For non-linear calibrations, see Sec. 11.4.3.3.

11.4.3.3 In situations where only a few Aroclors are of interest for a specific project, the analyst may employ a multi-point initial calibration of each of the Aroclors of interest (e.g., five standards of Aroclor 1232 if this Aroclor is of concern and linear calibration is employed) and not use the 1016/1260 mixture described in Sec. 11.4.3.1 or the pattern recognition standards described in 11.4.3.2. When non-linear calibration models are employed, more than five standards of each Aroclor of interest will be needed to adequately describe the detector response (see Method 8000).

11.4.4 Establish the GC operating conditions appropriate for the configuration (single-column or dual column, Sec. 11.3), using Tables 1 or 2 as guidance. Optimize the instrumental conditions for resolution of the target compounds and sensitivity. A final temperature of between 240 °C and 275 °C may be needed to elute decachlorobiphenyl. The use of injector pressure programming will improve the chromatography of late eluting peaks.

NOTE: Once established, the same operating conditions must be used for both calibrations and sample analyses.

11.4.5 A 2-µL injection of each calibration standard is recommended. Other injection volumes may be employed, provided that the analyst can demonstrate adequate sensitivity for the compounds of interest.

11.4.6 Record the peak area (or height) for each congener or each characteristic Aroclor peak to be used for quantitation.

11.4.6.1 A minimum of 3 peaks must be chosen for each Aroclor, and preferably 5 peaks. The peaks must be characteristic of the Aroclor in question. Choose peaks in the Aroclor standards that are at least 25% of the height of the largest Aroclor peak. For each Aroclor, the set of 3 to 5 peaks should include at least one peak that is unique to that Aroclor. Use at least five peaks for the Aroclor 1016/1260 mixture, none of which should be found in both of these Aroclors.

11.4.6.2 Late-eluting Aroclor peaks are generally the most stable in the environment. Table 5 lists diagnostic peaks in each Aroclor, along with example retention times on two GC columns suitable for single-column analysis. Table 6 lists 13 specific PCB congeners found in Aroclor mixtures. Table 7 lists PCB congeners with example retention times on a DB-5 wide-bore GC column. Use these tables as guidance in choosing the appropriate peaks. Each laboratory must determine retention times and retention time windows for their specific application of the method.

11.4.7 When determining PCB congeners by the internal standard procedure, calculate the response factor (RF) for each congener in the calibration standards relative to the internal standard, decachlorobiphenyl, using the equation that follows.

$$RF = \frac{A_s \times C_{is}}{A_{is} \times C_s}$$

where:

A_s = Peak area (or height) of the analyte or surrogate.
A_{is} = Peak area (or height) of the internal standard.
C_s = Concentration of the analyte or surrogate, in µg/L.
C_{is} = Concentration of the internal standard, in µg/L.

11.4.8 When determining PCBs as Aroclors by the external standard technique, calculate the calibration factor (CF) for each characteristic Aroclor peak in each of the initial calibration standards (from either Sec. 11.4.3.1 or 11.4.3.2) using the equation below.

$$CF = \frac{\text{Peak Area (or Height) in the Standard}}{\text{Total Mass of the Standard Injected (in nanograms)}}$$

Using the equation above, a calibration factor will be determined for each characteristic peak, using the total mass of the Aroclor injected. These individual calibration factors are used to quantitate sample results by applying the factor for each individual peak to the area of that peak, as described in Sec. 11.9.

For a five-point calibration, five sets of calibration factors will be generated for the Aroclor 1016/1260 mixture, each set consisting of the calibration factors for each of the five (or more) peaks chosen for this mixture, e.g., there will be at least 25 separate calibration factors for the mixture. The single standard for each of the other Aroclors (see Sec. 11.4.3.1) will generate at least three calibration factors, one for each selected peak.

If a non-linear calibration model is employed, as described in Method 8000, then additional standards containing each Aroclor of interest will be employed, with a corresponding increase in the total number of calibration factors.

11.4.9 The response factors or calibration factors from the initial calibration are used to evaluate the linearity of the initial calibration, if a linear calibration model is used. This involves the calculation of the mean response or calibration factor, the standard deviation, and the relative standard deviation (RSD) for each congener or Aroclor peak.

When the Aroclor 1016/1260 mixture is used to demonstrate the detector response, the linear calibration models must be applied to the other five Aroclors for which only single standards are analyzed. If multi-point calibration is performed for individual Aroclors (see Sec. 11.4.3.3), use the calibration factors from those standards to evaluate linearity.

See Method 8000 for the specifics of the evaluation of the linearity of the calibration and guidance on performing non-linear calibrations. In general, non-linear calibrations also will consider each characteristic Aroclor peak separately.

11.5 Retention time windows

Absolute retention times are generally used for compound identification. When absolute retention times are used, retention time windows are crucial to the identification of target compounds, and should be established by one of the approaches described in Method 8000. Retention time windows are established to compensate for minor shifts in absolute retention times as a result of sample loadings and normal chromatographic variability. The width of the retention time window should be carefully established to minimize the occurrence of both false positive and false negative results. Tight retention time windows may result in false negatives and/or may cause unnecessary reanalysis of samples when surrogates or spiked compounds are erroneously not identified. Overly wide retention time windows may result in false positive results that cannot be confirmed upon further analysis. Analysts should consult Method 8000 for the details of establishing retention time windows. Other approaches to compound identification may be employed, provided that the analyst can demonstrate and document that the approaches are appropriate for the intended application. When PCBs are determined as congeners by an internal standard technique, absolute retention times may be used in conjunction with relative retention times (relative to the internal standard).

When conducting either Aroclor or congener analysis, it is important to determine that common single-component pesticides such as DDT, DDD, and DDE do not elute at the same retention times as the target congeners. There may be substantial DDT interference with the last major Aroclor 1254 peak in some soil and sediment samples. Therefore, in conjunction with determining the retention time windows of the congeners, the analyst should analyze a standard containing the DDT analogs. This standard need only be analyzed when the retention time

windows are determined. It is not considered part of the routine initial calibration or calibration verification steps in the method, nor are there any performance criteria associated with the analysis of this standard.

If Aroclor analysis is performed and any of the DDT analogs elute at the same retention time as an Aroclor peak that was chosen for use in quantitation (see Sec. 11.4.6), then the analyst must either adjust the GC conditions to achieve better resolution, or choose another peak that is characteristic of that Aroclor and does not correspond to a peak from a DDT analog. If PCB congener analysis is performed and any of the DDT analogs elute at the same retention time as a PCB congener of interest, then the analyst must adjust the GC conditions to achieve better resolution.

11.6 Gas chromatographic analysis of sample extracts

11.6.1 The same GC operating conditions used for the initial calibration must be employed for the analysis of samples.

11.6.2 Verify calibration at least once each 12-hr shift by injecting calibration verification standards prior to conducting any sample analyses. A calibration standard must also be injected at intervals of not less than once every twenty samples (after every 10 samples is recommended to minimize the number of samples requiring reinjection when QC limits are exceeded) and at the end of the analysis sequence. For Aroclor analyses, the calibration verification standard should be a mixture of Aroclor 1016 and Aroclor 1260. The calibration verification process does not *require* analysis of the other Aroclor standards used for pattern recognition, but the analyst may wish to include a standard for one of these Aroclors after the 1016/1260 mixture used for calibration verification throughout the analytical sequence.

11.6.2.1 The calibration factor for each analyte calculated from the calibration verification standard (CF_v) should not exceed a difference of more than ±20 percent when compared to the mean calibration factor from the initial calibration curve. If a calibration approach other than the RSD method has been employed for the initial calibration (e.g., a linear model not through the origin, a non-linear calibration model, etc.), consult Method 8000 for the specifics of calibration verification.

$$\% \text{ Difference} = \frac{\overline{CF} - CF_v}{\overline{CF}} \times 100$$

11.6.2.2 When internal standard calibration is used for PCB congeners, the response factor calculated from the calibration verification standard (RF_v) should not exceed a ±20 percent difference when compared to the mean response factor from the initial calibration. If a calibration approach other than the RSD method has been employed for the initial calibration (e.g., a linear model not through the origin, a non-linear calibration model, etc.), consult Method 8000 for the specifics of calibration verification.

$$\% \text{ Difference} = \frac{\overline{RF} - RF_v}{\overline{RF}} \times 100$$

11.6.2.3 If the calibration does not meet the ±20% limit on the basis of each compound, check the instrument operating conditions, and if necessary, restore them to the original settings, and inject another aliquot of the calibration verification standard. If the response for the analyte is still not within ±20%, then a new initial calibration must be prepared. See Sec. 11.6.6 for a discussion on the effects of a failing calibration verification standard on sample results.

11.6.3 Inject a measured aliquot of the concentrated sample extract. A 2-µL aliquot is suggested, however, other injection volumes may be employed, provided that the analyst can demonstrate adequate sensitivity for the compounds of interest. The same injection volume should be used for both the calibration standards and the sample extracts, unless the analyst can demonstrate acceptable performance using different volumes or conditions. Record the volume injected and the resulting peak size in area units.

11.6.4 Qualitative identifications of target analytes are made by examination of the sample chromatograms, as described in Sec. 11.7.

11.6.5 Quantitative results are determined for each identified analyte (Aroclors or congeners), using the procedures described in Secs. 11.8 and 11.9 for either the internal or the external calibration procedure (Method 8000). If the responses in the sample chromatogram exceed the calibration range of the system, dilute the extract and reanalyze. Peak height measurements are recommended over peak area when overlapping peaks cause errors in area integration.

11.6.6 Each sample analysis employing external standard calibration must be bracketed with an acceptable initial calibration, calibration verification standard(s) (each 12-hr analytical shift), or calibration standards interspersed within the samples. The results from these bracketing standards must meet the calibration verification criteria in Sec. 11.6.2.

Multi-level standards (mixtures or multi-component analytes) are highly recommended to ensure that detector response remains stable for all analytes over the calibration range.

When a calibration verification standard fails to meet the QC criteria, all samples that were injected after the last standard that met the QC criteria must be evaluated to prevent misquantitations and possible false negative results, and reinjection of the sample extracts may be required. More frequent analyses of standards will minimize the number of sample extracts that would have to be reinjected if the QC limits are violated for the standard analysis.

However, if the standard analyzed <u>after</u> a group of samples exhibits a response for an analyte that is <u>above</u> the acceptance limit, i.e., >20%, and the analyte was <u>not</u> detected in the specific samples analyzed during the analytical shift, then the extracts for those samples do not need to be reanalyzed, since the verification standard has demonstrated that the analyte would have been detected if it were present. In contrast, if an analyte

above the QC limits was detected in a sample extract, then reinjection is necessary to ensure accurate quantitation.

If an analyte was not detected in the sample and the standard response is more than 20% below the initial calibration response, then reinjection is necessary. The purpose of this reinjection is to ensure that the analyte could be detected, if present, despite the change in the detector response, e.g., to protect against a false negative result.

11.6.7 Sample injections may continue for as long as the calibration verification standards and standards interspersed with the samples meet instrument QC requirements. It is *recommended* that standards be analyzed after every 10 samples (*required* after every 20 samples and at the end of a set) to minimize the number of samples that must be re-injected when the standards fail the QC limits. The sequence ends when the set of samples has been injected or when qualitative or quantitative QC criteria are exceeded.

11.6.8 The use of internal standard calibration techniques does not require that all sample results be bracketed with calibration verification standards. However, when internal standard calibration is used, the retention times of the internal standards and the area responses of the internal standards should be checked for each analysis. Retention time shifts of more than 30 sec from the retention time of the most recent calibration standard and/or changes in internal standard areas of more than -50 to +100% are cause for concern and must be investigated.

11.6.9 If the peak response is less than 2.5 times the baseline noise level, the validity of the quantitative result may be questionable. The analyst should consult with the source of the sample to determine whether further concentration of the sample is warranted.

11.6.10 Use the calibration standards analyzed during the sequence to evaluate retention time stability. If any of the standards fall outside their daily retention time windows, the system is out of control. Determine the cause of the problem and correct it.

11.6.11 If compound identification or quantitation is precluded due to interferences (e.g., broad, rounded peaks or ill-defined baselines are present), corrective action is warranted. Cleanup of the extract or replacement of the capillary column or detector may be necessary. The analyst may begin by rerunning the sample on another instrument to determine if the problem results from analytical hardware or the sample matrix. Refer to Method 3600 for the procedures to be followed in sample cleanup.

11.7 Qualitative identification

The identification of PCBs as either Aroclors or congeners using this method with an electron capture detector is based on agreement between the retention times of peaks in the sample chromatogram with the retention time windows established through the analysis of standards of the target analytes. See Method 8000 for information on the establishment of retention time windows.

Tentative identification of an analyte occurs when a peak from a sample extract falls within the established retention time window for a specific target analyte. Confirmation is necessary when the sample composition is not well characterized. See Method 8000 for information on confirmation of tentative identifications. See Sec. 11.11 of this procedure for information on the use of GC/MS as a confirmation technique.

When results are confirmed using a second GC column of dissimilar stationary phase, the analyst should check the agreement between the quantitative results on both columns once the identification has been confirmed. See Method 8000 for a discussion of such a comparison and appropriate data reporting approaches.

11.7.1 When simultaneous analyses are performed from a single injection (the dual-column GC configuration described in Sec. 11.3), it is not practical to designate one column as the analytical (primary) column and the other as the confirmation column. Since the calibration standards are analyzed on both columns, both columns must meet the calibration acceptance criteria. If the retention times of the peaks on both columns fall within the retention time windows on the respective columns, then the target analyte identification has been confirmed.

11.7.2 The results of a single column/single injection analysis may be confirmed, if necessary, on a second, dissimilar, GC column. In order to be used for confirmation, retention time windows must have been established for the second GC column. In addition, the analyst must demonstrate the sensitivity of the second column analysis. This demonstration must include the analysis of a standard of the target analyte at a concentration at least as low as the concentration estimated from the primary analysis. That standard may be either the individual congeners, individual Aroclor or the Aroclor 1016/1260 mixture.

11.7.3 When samples are analyzed from a source known to contain specific Aroclors, the results from a single-column analysis may be confirmed on the basis of a clearly recognizable Aroclor pattern. This approach should <u>not</u> be attempted for samples from unknown or unfamiliar sources or for samples that appear to contain mixtures of Aroclors. In order to employ this approach, the analyst must document:

- The peaks that were evaluated when comparing the sample chromatogram and the Aroclor standard.
- The absence of major peaks representing any other Aroclor.
- The source-specific information indicating that Aroclors are anticipated in the sample (e.g., historical data, generator knowledge, etc.).

This information should either be provided to the data user or maintained by the laboratory.

11.7.4 See Sec. 11.11 for information on GC/MS confirmation.

11.8 Quantitation of PCBs as congeners

11.8.1 The quantitation of PCB congeners is accomplished by the comparison of the sample chromatogram to those of the PCB congener standards, using the internal standard technique (see Method 8000). Calculate the concentration of each congener.

11.8.2 Depending on project requirements, the PCB congener results may be reported as congeners, or may be summed and reported as total PCBs. The analyst should use caution when using the congener method for quantitation when regulatory requirements are based on Aroclor concentrations. See Sec. 11.9.3.

11.8.3 The analytical procedures for these 19 congeners may be appropriate for the analysis of other congeners not specifically included in this method and may be used

as a template for the development of such a procedure. However, all 209 PCB congeners cannot be separated using the GC columns and procedures described in this method. If this procedure is expanded to encompass other congeners, then the analyst must either document the resolution of the congeners in question or establish procedures for reporting the results of coeluting congeners that are appropriate for the intended application.

11.9 Quantitation of PCBs as Aroclors

The quantitation of PCB residues as Aroclors is accomplished by comparison of the sample chromatogram to that of the most similar Aroclor standard. A choice must be made as to which Aroclor is most similar to that of the residue and whether that standard is truly representative of the PCBs in the sample.

11.9.1 Use the individual Aroclor standards (not the 1016/1260 mixtures) to determine the pattern of peaks on Aroclors 1221, 1232, 1242, 1248, and 1254. The patterns for Aroclors 1016 and 1260 will be evident in the mixed calibration standards.

11.9.2 Once the Aroclor pattern has been identified, compare the responses of 3 to 5 major peaks in the single-point calibration standard for that Aroclor with the peaks observed in the sample extract. The amount of Aroclor is calculated using the individual calibration factor for each of the 3 to 5 characteristic peaks chosen in Sec. 11.4.6.1. and the calibration model (linear or non-linear) established from the multi-point calibration of the 1016/1260 mixture. Non-linear calibration may result in different models for each selected peak. A concentration is determined using each of the characteristic peaks, using the individual calibration factor calculated for that peak in Sec. 11.4.8, and then those 3 to 5 concentrations are averaged to determine the concentration of that Aroclor.

11.9.3 Weathering of PCBs in the environment and changes resulting from waste treatment processes may alter the PCBs to the point that the pattern of a specific Aroclor is no longer recognizable. Samples containing more than one Aroclor present similar problems. If the purpose of the analysis is <u>not</u> regulatory compliance monitoring on the basis of Aroclor concentrations, then it may be more appropriate to perform the analyses using the PCB congener approach described in this method. If results in terms of Aroclors <u>are</u> required, then the quantitation as Aroclors may be performed by measuring the total area of the PCB pattern and quantitating on the basis of the Aroclor standard that is most similar to the sample. Any peaks that are not identifiable as PCBs on the basis of retention times should be subtracted from the total area. When quantitation is performed in this manner, the problems should be fully described for the data user and the specific procedures employed by the analyst should be thoroughly documented.

11.10 Confirmation

Tentative identification of an analyte occurs when a peak from a sample extract falls within the daily retention time window. Confirmation is necessary when the sample composition is not well characterized. Confirmatory techniques such as gas chromatography with a dissimilar column or a mass spectrometer should be used. See Method 8000 for information on confirmation of tentative identifications.

When results are confirmed using a second GC column of dissimilar stationary phase, the analyst should check the agreement between the quantitative results on both columns once the identification has been confirmed. See Method 8000 for a discussion of such a comparison and appropriate data reporting approaches.

When the dual-column approach is employed, the target phenols are identified and confirmed when they meet the identification criteria on both columns.

11.11 GC/MS confirmation

GC/MS confirmation may be used in conjunction with either single-or dual-column analysis if the concentration is sufficient for detection by GC/MS.

11.11.1 Full-scan quadrupole GC/MS will normally require a higher concentration of the analyte of interest than full-scan ion trap or selected ion monitoring techniques. The concentrations will be instrument-dependent, but values for full-scan quadrupole GC/MS may be as high as 10 ng/µL in the final extract, while ion trap or SIM may only be a concentration of 1 ng/µL.

11.11.2 The GC/MS must be calibrated for the target analytes when it is used for quantitative analysis. If GC/MS is used only for confirmation of the identification of the target analytes, then the analyst must demonstrate that those PCBs identified by GC/ECD can be confirmed by GC/MS. This demonstration may be accomplished by analyzing a single-point standard containing the analytes of interest at or below the concentrations reported in the GC/ECD analysis. When using SIM techniques, the ions and retention times should be characteristic of the Aroclors to be confirmed.

11.11.3 GC/MS confirmation should be accomplished by analyzing the same extract used for GC/ECD analysis and the extract of the associated blank.

11.12 GC/AED confirmation by Method 8085 may be used in conjunction with either single-column or dual-column analysis if the concentration is sufficient for detection by GC/AED.

11.13 Chromatographic system maintenance as corrective action

When system performance does not meet the established QC requirements, corrective action is required, and may include one or more of the following.

11.13.1 Splitter connections

For dual columns which are connected using a press-fit Y-shaped glass splitter or a Y-shaped fused-silica connector, clean and deactivate the splitter port insert or replace with a cleaned and deactivated splitter. Break off the first few centimeters (up to 30 cm) of the injection port side of the column. Remove the columns and solvent backflush according to the manufacturer's instructions. If these procedures fail to eliminate the degradation problem, it may be necessary to deactivate the metal injector body and/or replace the columns.

11.13.2 Metal injector body

Turn off the oven and remove the analytical columns when the oven has cooled. Remove the glass injection port insert (instruments with on-column injection). Lower the injection port temperature to room temperature. Inspect the injection port and remove any noticeable foreign material.

11.13.2.1 Place a beaker beneath the injector port inside the oven. Using a wash bottle, rinse the entire inside of the injector port with acetone and then rinse it with toluene, catching the rinsate in the beaker.

11.13.2.2 Consult the manufacturer's instructions regarding deactivating the injector port body. Glass injection port liners may need deactivation with a silanizing solution containing dimethyldichlorosilane. After all metal surfaces inside the injector body have been thoroughly coated with the deactivation solution, rinse the injector body with toluene, methanol, acetone, then hexane. Reassemble the injector and replace the columns.

11.13.3 Column rinsing

Rinse the column with several column volumes of an appropriate solvent. Both polar and nonpolar solvents are recommended. Depending on the nature of the sample residues expected, the first rinse might be water, followed by methanol and acetone. Methylene chloride is a good final rinse and in some cases may be the only solvent necessary. Fill the column with methylene chloride and allow it to stand flooded overnight to allow materials within the stationary phase to migrate into the solvent. Afterwards, flush the column with fresh methylene chloride, drain the column, and dry it at room temperature with a stream of ultrapure nitrogen.

12.0 DATA ANALYSIS AND CALCULATIONS

See Secs. 11.6 through 11.9 for information regarding data analysis and calculations.

13.0 METHOD PERFORMANCE

13.1 Performance data and related information are provided in SW-846 methods only as examples and guidance. The data do not represent required performance goals for users of the methods. Instead, performance criteria should be developed on a project-specific basis, and the laboratory should establish in-house QC performance criteria for the application of this method. <u>These performance data are not intended to be and must not be used as absolute QC acceptance criteria for purposes of laboratory accreditation.</u>

13.2 The accuracy and precision obtainable with this method depend on the sample matrix, sample preparation technique, optional cleanup techniques, and calibration procedures used. Table 8 provides single laboratory recovery data for Aroclors spiked into clay and soil and extracted with automated Soxhlet. Table 9 provides multiple laboratory data on the precision and accuracy for Aroclors spiked into soil and extracted by automated Soxhlet. These data are provided for guidance purposes only.

13.3 During method performance studies, the concentrations determined as Aroclors were higher than those obtained using the congener method for the limited set of congeners listed in Sec. 1.1. In certain soils, interference prevented the measurement of congener 66. Recoveries of congeners from environmental reference materials ranged from 51 - 66% of the certified Aroclor values, illustrating the potential difficulties in using congener analysis to demonstrate compliance with Aroclor-based regulatory limits. These data are provided for guidance purposes only.

13.4 Tables 10 and 11 contain laboratory performance data for several PCB congeners using supercritical fluid extraction (Method 3562) on an HP 7680 to extract solid samples, including soils, sewage sludge, and fish tissue. Seven replicate extractions were performed on each sample. The method was performed using a variable restrictor and solid trapping material (Florisil). These data are provided for guidance purposes only. Sample analysis was performed by GC/ECD. The following solid samples were used for this study:

13.4.1 Two field-contaminated certified reference materials were extracted by a single laboratory. One of the materials (EC-5) was a lake sediment from Environment Canada. The other material (EC-1) was soil from a dump site and was provided by the National Science and Engineering Research Council of Canada. The average recoveries for EC-5 are based on the certified value for that sample. The average recoveries for EC-1 are based on the certified value of the samples or a Soxhlet value, if a certified value was unavailable for a specific analyte. These data are provided for guidance purposes only.

13.4.2 Four certified reference materials were extracted by two independent laboratories. The materials included a marine sediment from NIST (SRM 1941), a fish tissue from NIST (SRM 2974), a sewage sludge from BCR European Union (CRM 392), and a soil sample from BCR European Union (CRM 481). The average recoveries were based on the certified value of the samples or a Soxhlet value, if a certified value was unavailable for a specific analyte. These data are provided for guidance purposes only.

13.4.3 A weathered sediment sample from Michigan (Saginaw Bay) was extracted by a single laboratory. Soxhlet extractions were carried out on this sample and the SFE recovery is relative to that for each congener. The average recoveries were based on the certified value of the samples. Additional data are shown in the tables for some congeners for which no certified values were available. These data are provided for guidance purposes only.

13.5 Tables 12 through 14 contain single laboratory recovery data for Aroclor 1254 using solid-phase extraction (Method 3535). Recovery data at 2, 10, and 100 µg/L are presented. Results represent three replicate solid-phase extractions of spiked wastewaters. Two different wastewaters from each wastewater type were spiked. All of the extractions were performed using 90-mm C_{18} disks. These data are provided for guidance purposes only.

13.6 Single-laboratory data were developed for PCBs extracted by pressurized fluid extraction (Method 3545) from sewage sludge, a river sediment standard reference material (SRM 1939), and a certified soil reference material (CRM911-050). Certified values were available for five PCB congeners for the sewage sludge and for four congeners in SRM 1939. The soil reference material was certified for Aroclor 1254. All pressurized fluid extractions were conducted using hexane:acetone (1:1), at 100 °C, 1300-1500 psi, and a 5-min static extraction. Extracts were analyzed by GC/ECD. The data are presented in Tables 15 through 17 and are reported in detail in Reference 13. These data are provided for guidance purposes only.

13.7 Single-laboratory accuracy data were obtained for PCBs extracted by microwave extraction (Method 3546) from three reference materials, EC-1, EC-2, and EC-3, from Environment Canada. Natural soils, glass fiber, and sand samples were also used as matrices that were spiked with PCBs. Concentrations varied between 0.2 and 10 µg/g (total PCBs). All samples were extracted using 1:1 hexane:acetone. Extracts were analyzed by GC/ECD. Method blanks, spikes and spike duplicates were included for the low concentration spikes; matrix spikes were included for all other concentrations. The data are presented in Tables 18 through 20 and are reported in detail in Reference 14. These data are provided for guidance purposes only.

14.0 POLLUTION PREVENTION

14.1 Pollution prevention encompasses any technique that reduces or eliminates the quantity and/or toxicity of waste at the point of generation. Numerous opportunities for pollution prevention exist in laboratory operations. The EPA has established a preferred hierarchy of

environmental management techniques that places pollution prevention as the management option of first choice. Whenever feasible, laboratory personnel should use pollution prevention techniques to address their waste generation. When wastes cannot be feasibly reduced at the source, the Agency recommends recycling as the next best option.

14.2 For information about pollution prevention that may be applicable to laboratories and research institutions consult *Less is Better: Laboratory Chemical management for Waste Reduction* available from the American Chemical Society, Department of Government Relations and Science Policy, 1155 16th Street, NW, Washington, DC, 20036, http://www.acs.org.

15.0 WASTE MANAGEMENT

The Environmental Protection Agency requires that laboratory waste management practices be conducted consistent with all applicable rules and regulations. The Agency urges laboratories to protect the air, water, and land by minimizing and controlling all releases from hoods and bench operations, complying with the letter and spirit of any sewer discharge permits and regulations, and by complying with all solid and hazardous waste regulations, particularly the hazardous waste identification rules and land disposal restrictions. For further information on waste management, consult *The Waste Management Manual for Laboratory Personnel* available from the American Chemical Society at the address listed in Sec. 14.2.

16.0 REFERENCES

1. V. Lopez-Avila, E. Baldin, J. Benedicto, J. Milanes, W. F. Beckert, "Application of Open-Tubular Columns to SW-846 GC Methods," Final Report to the U.S. Environmental Protection Agency on Contract 68-03-3511, Mid-Pacific Environmental Laboratory, Mountain View, CA, 1990.

2. Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 10 -- Pesticides and PCB Report for the U.S. Environmental Protection Agency on Contract 68-03-2606.

3. M. Ahnoff, B. Josefsson, "Cleanup Procedures for PCB Analysis on River Water Extracts," *Bull. Environ. Contam. Toxicol.*, 1975, 13, 159.

4. P. J. Marsden, "Performance Data for SW-846 Methods 8270, 8081, and 8141," U.S. Environmental Protection Agency, EMSL-Las Vegas, EPA/600/4-90/015.

5. P. J. Marsden, "Analysis of PCBs," U.S. Environmental Protection Agency, EMSL-Las Vegas, NV, EPA/600/8-90/004.

6. M. Erickson, Analytical Chemistry of PCBs, Butterworth Publishers, Ann Arbor Science Book, 1986.

7. J. Stewart, "EPA Verification Experiment for Validation of the SOXTEC® PCB Extraction Procedure," Oak Ridge National Laboratory, Oak Ridge, TN, 37831-6138, October 1988.

8. V. Lopez-Avila, "Development of a Soxtec Extraction Procedure for Extracting Organic Compounds from Soils and Sediments," EPA 600/X-91/140, U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Las Vegas, NV, October 1991.

9. J. H. Stewart, C. K. Bayne, R. L. Holmes, W. F. Rogers, and M. P. Maskarinec, "Evaluation of a Rapid Quantitative Organic Extraction System for Determining the Concentration of PCB in Soils," Proceedings of the U.S. EPA Symposium on Waste Testing and Quality Assurance, Oak Ridge National Laboratory, Oak Ridge, TN, 37831, July 11-15, 1988.

10. S. F. Tsang, P. J. Marsden, and B. Lesnik, "Quantitation of Polychlorinated Biphenyls Using 19 Specific Congeners," Proceedings of the 9th Annual Waste Testing and Quality Assurance Symposium, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC, July 1993.

11. S. Bøwadt, B. Johansson, S. Wunderli, M. Zennegg, L. F. de Alencastro and D. Grandjean, "Independent Comparison of Soxhlet and Supercritical Fluid Extraction for the Determination of PCBs in an Industrial Soil," *Anal. Chem.*, 1995, 67(14) 2424-2430.

12. C. Markell, "3M Data Submission to EPA," letter to B. Lesnik, June 27, 1995.

13. B. Richter, J. Ezzell, and D. Felix "Single Laboratory Method Validation Report -- Extraction of Organophosphorus Pesticides, Herbicides and Polychlorinated Biphenyls using Accelerated Solvent Extraction (ASE) with Analytical Validation by GC/NPD and GC/ECD," Dionex, Salt Lake City, UT, Document 101124, December 2, 1994.

14. K. Li, J. M. R. Bélanger, M. P. Llompart, R. D. Turpin, R. Singhvi, and J. R. J. Paré, "Evaluation of Rapid Solid Sample Extraction Using the Microwave-assisted Process (MAP™) under Closed-vessel Conditions," *Spectros. Int. J.* 13 (1), 1-14, 1997.

17.0 TABLES, DIAGRAMS, FLOW CHARTS, AND VALIDATION DATA

The following pages contain the tables and figures referenced by this method.

TABLE 1

SUGGESTED GC OPERATING CONDITIONS FOR PCBs AS AROCLORS
SINGLE-COLUMN ANALYSIS

Narrow-bore columns

Narrow-bore Column 1 -- 30-m x 0.25 or 0.32-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5 or equivalent), 1 µm film thickness.

Carrier gas (He)	16 psi
Injector temperature	225 °C
Detector temperature	300 °C
Initial temperature	100 °C, hold 2 min
Temperature program	100 °C to 160 °C at 15 °C/min, followed by 160 °C to 270 °C at 5 °C/min
Final temperature	270 °C

Narrow-bore Column 2 -- 30-m x 0.25-mm ID fused-silica capillary column chemically bonded with 35 percent phenyl methylpolysiloxane (DB-608, SPB-608, or equivalent) 25 µm coating thickness, 1 µm film thickness

Carrier gas (N_2)	20 psi
Injector temperature	225 °C
Detector temperature	300 °C
Initial temperature	160 °C, hold 2 min
Temperature program	160 °C to 290 °C at 5 °C/min
Final temperature	290 °C, hold 1 min

Wide-bore columns

Wide-bore Column 1 -- 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 35 percent phenyl methylpolysiloxane (DB-608, SPB-608, RTx-35, or equivalent), 0.5 µm or 0.83 µm film thickness.

Wide-bore Column 2 -- 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 14% cyanopropylmethylpolysiloxane (DB-1701, or equivalent), 1.0 µm film thickness.

Carrier gas (He)	5-7 mL/min
Makeup gas (argon/methane [P-5 or P-10] or N_2)	30 mL/min
Injector temperature	250 °C
Detector temperature	290 °C
Initial temperature	150 °C, hold 0.5 min
Temperature program	150 °C to 270 °C at 5 °C/min
Final temperature	270 °C, hold 10 min

TABLE 1
(continued)

SUGGESTED GC OPERATING CONDITIONS FOR PCBs AS AROCLORS
SINGLE-COLUMN ANALYSIS

Wide-bore Columns (continued)

Wide-bore Column 3 -- 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5, SPB-5, RTx-5, or equivalent), 1.5 µm film thickness.

Carrier gas (He)	6 mL/min
Makeup gas (argon/methane [P-5 or P-10] or N_2)	30 mL/min
Injector temperature	205 °C
Detector temperature	290 °C
Initial temperature	140 °C, hold 2 min
Temperature program	140 °C to 240 °C at 10 °C/min, hold 5 min at 240 °C, 240 °C to 265 °C at 5 °C/min
Final temperature	265 °C, hold 18 min

TABLE 2

SUGGESTED GC OPERATING CONDITIONS FOR PCBs AS AROCLORS
FOR THE DUAL-COLUMN METHOD OF ANALYSIS

Column 1 -- DB-1701 or equivalent, 30-m x 0.53-mm ID, 1.0 µm film thickness.

Column 2 -- DB-5 or equivalent, 30-m x 0.53-mm ID, 1.5 µm film thickness.

Carrier gas (He) flow rate	6 mL/min
Makeup gas (N_2) flow rate	20 mL/min
Temperature program	0.5 min hold 150 °C to 190 °C, at 12 °C/min, 2 min hold 190 °C to 275 °C, at 4 °C/min, 10 min hold
Injector temperature	250 °C
Detector temperature	320 °C
Injection volume	2 µL
Solvent	Hexane
Type of injector	Flash vaporization
Detector type	Dual ECD
Range	10
Attenuation	64 (DB-1701)/64 (DB-5)
Type of splitter	J&W Scientific press-fit Y-shaped inlet splitter

TABLE 3
(continued)

TABLE 3

EXAMPLE RETENTION TIMES OF AROCLORS
ON THE DB-5 COLUMN[a], DUAL-COLUMN ANALYSIS

Peak No.	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
1		5.85	5.85				
2		7.63	7.64	7.57			
3	8.41	8.43	8.43	8.37			
4	8.77	8.77	8.78	8.73			
5	8.98	8.99	9.00	8.94	8.95		
6	9.71			9.66			
7	10.49	10.50	10.50	10.44	10.45		
8	10.58	10.59	10.59	10.53			
9	10.90		10.91	10.86	10.85		
10	11.23	11.24	11.24	11.18	11.18		
11	11.88		11.90	11.84	11.85		
12	11.99		12.00	11.95			
13	12.27	12.29	12.29	12.24	12.24		
14	12.66	12.68	12.69	12.64	12.64		
15	12.98	12.99	13.00	12.95	12.95		
16	13.18		13.19	13.14	13.15		
17	13.61		13.63	13.58	13.58	13.59	13.59
18	13.80		13.82	13.77	13.77	13.78	
19	13.96		13.97	13.93	13.93	13.90	
20	14.48		14.50	14.46	14.45	14.46	
21	14.63		14.64	14.60	14.60		
22	14.99		15.02	14.98	14.97	14.98	
23	15.35		15.36	15.32	15.31	15.32	
24	16.01			15.96			
25			16.14	16.08	16.08	16.10	
26	16.27		16.29	16.26	16.24	16.25	16.26
27						16.53	
28			17.04		16.99	16.96	16.97
29			17.22	17.19	17.19	17.19	17.21
30			17.46	17.43	17.43	17.44	
31					17.69	17.69	
32				17.92	17.91	17.91	
33				18.16	18.14	18.14	
34			18.41	18.37	18.36	18.36	18.37
35			18.58	18.56	18.55	18.55	
36							18.68
37			18.83	18.80	18.78	18.78	18.79
38			19.33	19.30	19.29	19.29	19.29

TABLE 3
(continued)

Peak No.	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
39						19.48	19.48
40						19.81	19.80
41			20.03	19.97	19.92	19.92	
42						20.28	20.28
43					20.46	20.45	
44						20.57	20.57
45				20.85	20.83	20.83	20.83
46			21.18	21.14	21.12	20.98	
47					21.36	21.38	21.38
48						21.78	21.78
49				22.08	22.05	22.04	22.03
50						22.38	22.37
51						22.74	22.73
52						22.96	22.95
53						23.23	23.23
54							23.42
55						23.75	23.73
56						23.99	23.97
57							24.16
58						24.27	
59							24.45
60						24.61	24.62
61						24.93	24.91
62							25.44
63						26.22	26.19
64							26.52
65							26.75
66							27.41
67							28.07
68							28.35
69							29.00

[a] GC operating conditions are given in Table 2. All retention times in minutes and are provided for illustrative purposes only. Each laboratory must determine retention times and retention time windows for their specific application of the method.

[b] The peaks listed in this table are sequentially numbered in elution order for illustrative purposes only and are not isomer numbers.

TABLE 4

EXAMPLE RETENTION TIMES OF AROCLORS
ON THE DB-1701 COLUMN[a], DUAL-COLUMN ANALYSIS

Peak No.	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
1		4.45	4.45				
2		5.38					
3		5.78					
4		5.86	5.86				
5	6.33	6.34	6.34	6.28			
6	6.78	6.78	6.79	6.72			
7	6.96	6.96	6.96	6.90	6.91		
8	7.64			7.59			
9	8.23	8.23	8.23	8.15	8.16		
10	8.62	8.63	8.63	8.57			
11	8.88		8.89	8.83	8.83		
12	9.05	9.06	9.06	8.99	8.99		
13	9.46		9.47	9.40	9.41		
14	9.77	9.79	9.78	9.71	9.71		
15	10.27	10.29	10.29	10.21	10.21		
16	10.64	10.65	10.66	10.59	10.59		
17				10.96	10.95	10.95	
18	11.01		11.02	11.02	11.03		
19	11.09		11.10				
20	11.98		11.99	11.94	11.93	11.93	
21	12.39		12.39	12.33	12.33	12.33	
22			12.77	12.71	12.69		
23	12.92			12.94	12.93		
24	12.99		13.00	13.09	13.09	13.10	
25	13.14		13.16				
26						13.24	
27	13.49		13.49	13.44	13.44		
28	13.58		13.61	13.54	13.54	13.51	13.52
29				13.67		13.68	
30			14.08	14.03	14.03	14.03	14.02
31			14.30	14.26	14.24	14.24	14.25
32					14.39	14.36	
33			14.49	14.46	14.46		
34						14.56	14.56
35					15.10	15.10	
36			15.38	15.33	15.32	15.32	
37			15.65	15.62	15.62	15.61	16.61
38			15.78	15.74	15.74	15.74	15.79
39			16.13	16.10	16.10	16.08	
40							16.19
41						16.34	16.34

TABLE 4
(continued)

Peak No.	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
42						16.44	16.45
43						16.55	
44			16.77	16.73	16.74	16.77	16.77
45			17.13	17.09	17.07	17.07	17.08
46						17.29	17.31
47				17.46	17.44	17.43	17.43
48				17.69	17.69	17.68	17.68
49					18.19	18.17	18.18
50				18.48	18.49	18.42	18.40
51						18.59	
52						18.86	18.86
53				19.13	19.13	19.10	19.09
54						19.42	19.43
55						19.55	19.59
56						20.20	20.21
57						20.34	
58							20.43
59					20.57	20.55	
60						20.62	20.66
61						20.88	20.87
62							21.03
63						21.53	21.53
64						21.83	21.81
65						23.31	23.27
66							23.85
67							24.11
68							24.46
69							24.59
70							24.87
71							25.85
72							27.05
73							27.72

[a] GC operating conditions are given in Table 2. All retention times are in minutes and are provided for illustrative purposes only. Each laboratory must determine retention times and retention time windows for their specific application of the method.

[b] The peaks listed in this table are sequentially numbered in elution order for illustrative purposes only and are not isomer numbers.

TABLE 5

EXAMPLE RETENTION TIMES OF PEAKS DIAGNOSTIC OF PCBs
ON A 0.53-mm ID COLUMNS DURING SINGLE-COLUMN ANALYSIS

Peak No.[a]	RT on DB-608[b]	RT on DB-1701[b]	Aroclor[c]
I	4.90	4.66	1221
II	7.15	6.96	1221, 1232, 1248
III	7.89	7.65	1061, 1221, 1232, 1242
IV	9.38	9.00	1016, 1232, 1242, 1248
V	10.69	10.54	1016, 1232, 1242
VI	14.24	14.12	1248, 1254
VII	14.81	14.77	1254
VIII	16.71	16.38	1254
IX	19.27	18.95	1254, 1260
X	21.22	21.23	1260
XI	22.89	22.46	1260

[a]Peaks are sequentially numbered in elution order and are not isomer numbers

[b]Temperature program: T_i = 150 °C, hold 30 sec; 5 °C/min to 275 °C.

[c]Underline indicates the largest peak in the pattern for that Aroclor

All retention times are in minutes and are provided for illustrative purposes only. Each laboratory must determine retention times and retention time windows for their specific application of the method.

TABLE 6

SPECIFIC PCB CONGENERS THAT ARE MAJOR COMPONENTS IN COMMON AROCLORS

		Aroclor						
Congener	IUPAC Number	1016	1221	1232	1242	1248	1254	1260
Biphenyl	--		X					
2-CB	1	X	X	X	X			
2,3-DCB	5	X	X	X	X	X		
3,4-DCB	12	X		X	X	X		
2,4,4'-TCB	28*	X		X	X	X	X	
2,2',3,5'-TCB	44			X	X	X	X	X
2,3',4,4'-TCB	66*					X	X	X
2,3,3',4',6-PCB	110						X	
2,3',4,4',5-PCB	118*						X	X
2,2',4,4',5,5'-HCB	153							X
2,2',3,4,4',5'-HCB	138							X
2,2',3,4,4',5,5'-HpCB	180							X
2,2',3,3',4,4',5-HpCB	170							X

*Apparent co-elution of: 28 with 31 (2,4',5-trichlorobiphenyl)
66 with 95 (2,2',3,5',6-pentachlorobiphenyl)
118 with 149 (2,2',3,4',5',6-hexachlorobiphenyl)

This table is not intended to illustrate all of the congeners that may be present in a given Aroclor, but rather to illustrate the major congener components.

TABLE 7
EXAMPLE RETENTION TIMES OF PCB CONGENERS ON THE DB-5 WIDE-BORE COLUMN

IUPAC Number	Retention Time (min)
1	6.52
5	10.07
18	11.62
31	13.43
52	14.75
44	15.51
66	17.20
101	18.08
87	19.11
110	19.45
151	19.87
153	21.30
138	21.79
141	22.34
187	22.89
183	23.09
180	24.87
170	25.93
206	30.70
209 (internal standard)	32.63

All data are provided for illustrative purposes only. Each laboratory must determine retention times and retention time windows for their specific application of the method.

TABLE 8

EXAMPLE SINGLE-LABORATORY RECOVERY DATA FOR THE EXTRACTION OF PCBs FROM CLAY AND SOIL BY AUTOMATED SOXHLET (METHOD 3541)[a]

Matrix	Aroclor	Spike Level (ppm)	Trial	Percent Recovery[b]
Clay	1254	5	1	87
			2	93
			3	94
			4	99
			5	79
			6	28
Clay	1254	50	1	65
			2	72
			3	97
			4	80
			5	50
			6	59
Clay	1260	5	1	87
			2	75
			3	61
			4	94
			5	97
			6	113
Clay	1260	50	1	74
			2	70
			3	92
			4	89
			5	90
			6	67

TABLE 8
(continued)

Matrix	Aroclor	Spike Level (ppm)	Trial	Percent Recovery[b]
Soil	1254	5	1	70
			2	89
			3	92
			4	83
			5	63
Soil	1254	50	1	84
			2	78
			3	92
			4	67
			5	82
			6	62
Soil	1260	5	1	84
			2	83
			3	82
			4	96
			5	94
			6	94
			7	98
Soil	1260	50	1	77
			2	69
			3	93
			4	82
			5	83
			6	76

[a]The operating conditions for the automated Soxhlet
Immersion time: 60 min
Reflux time: 60 min

[b]Multiple results from two different extractors

Data are taken from Reference 9
These data are provided for guidance purposes only.

TABLE 9

EXAMPLE MULTIPLE-LABORATORY PRECISION AND ACCURACY DATA
FOR THE EXTRACTION OF PCBs FROM SPIKED SOIL
BY AUTOMATED SOXHLET (METHOD 3541)

		Percent Recovery at Aroclor 1254 Spike Concentration (µg/kg)			Percent Recovery at Aroclor 1260 Spike Concentration (µg/kg)			Mean Recovery
		5	50	500	5	50	500	All Levels
	n	3	3		3	3		12
Lab 1	Mean	101.2	74.0		83.9	78.5		84.4
	S. D.	34.9	41.8		7.4	7.4		26.0
	n		6	6		6	6	24
Lab 2	Mean		56.5	66.9		70.1	74.5	67.0
	S. D.		7.0	15.4		14.5	10.3	13.3
	n	3	3		3	3		12
Lab 3	Mean	72.8	63.3		70.6	57.2		66.0
	S. D.	10.8	8.3		2.5	5.6		9.1
	n	6	6		6	6		24
Lab 4	Mean	112.6	144.3		100.3	84.8		110.5
	S. D.	18.2	30.4		13.3	3.8		28.5
	n		3	3		3	3	12
Lab 5	Mean		97.1	80.1		79.5	77.0	83.5
	S. D.		8.7	5.1		3.1	9.4	10.3
	n	2	3		3	4		12
Lab 6	Mean	140.9	127.7		138.7	105.9		125.4
	S. D.	4.3	15.5		15.5	7.9		18.4
	n	3	3		3	3		12
Lab 7	Mean	100.1	123.4		82.1	94.1		99.9
	S. D.	17.9	14.6		7.9	5.2		19.0
	n	3	3		3	3		12
Lab 8	Mean	65.0	38.3		92.8	51.9		62.0
	S. D.	16.0	21.9		36.5	12.8		29.1
	n	20	30	9	21	31	9	120
All	Mean	98.8	92.5	71.3	95.5	78.6	75.3	87.6
Labs	S. D.	28.7	42.9	14.1	25.3	18.0	9.5	29.7

Data are taken from Reference 7
These data are provided for guidance purposes only.

TABLE 10

EXAMPLE PERCENT RECOVERY (BIAS) OF PCBs IN VARIOUS SOILS
USING SUPERCRITICAL FLUID EXTRACTION (METHOD 3562)

PCB No.[a]	EC-1 Dump Site Soil Low #1	SRM 1941 Marine Sediment Low #2	EC-5 Lake Sediment Low #3	CRM 481[b] European Soil High #1	Saginaw Bay Sediment High #2	CRM 392 Sewage Sludge High #3	SRM 2974 Fish Tissue Mussel Low #4	Congener Mean
28	148.4	63.3	147.7	67.3	114.7	89.2	101.7	104.6
52	88.5	106.6	115.8	84.5	111.1	96.2	131.4	104.9
101	93.3	91.2	100.2	84.5	111.5	93.9	133.2	101.1
149	92.6	105.1	101.5	73.2	111.2		69.4	92.2
118	89.9	66.1	108.9	82.1	110.8	73.5	82.7	87.7
153	90.8	65.1	95.1	82.8	118.6	97.3	107.5	94.0
105[b]	89.1	72.6	96.6	83.4	111.8		79.4	88.8
138	90.1	57.4	97.9	76.9	126.9		73.1	87.1
128	90.8	69.9	101.2	65.9	87.6		62.5	79.7
156[b]	90.6	88.9	94.3	85.2	101.1		59.3	86.6
180	92.4	142.4	93.3	82.2	109.2	100.5	65.7	98.0
170	91.3	101.1	95.2	80.5			33.0	81.8
Matrix Mean	95.7	85.8	104.0	79.0	108.7	91.8	83.2	92.2

[a] Congeners which are either certified or have had Soxhlet confirmation.
[b] Congener 105 was not resolved from congener 132 and congener 156 was not resolved from congener 171 by the GC method used for samples EC-1 and EC-5.

TABLE 11

PRECISION (AS %RSD) OF PCBs EXTRACTED USING SUPERCRITICAL FLUID EXTRACTION (METHOD 3562)

PCB No.[a]	EC-1 Dump Site Soil Low #1	SRM 1941 Marine Sediment Low #2	EC-5 Lake Sediment Low #3	CRM 481 European Soil High #1	Saginaw Bay Sediment High #2	CRM 392 Sewage Sludge High #3	SRM 2974 Fish Tissue Mussel Low #4	Congener Mean
28	11.5	1.5	3.8	5.6	2.4	1.9	2.7	4.2
52	9.1	3.3	3.9	5.4	2.2	2.9	3.1	4.3
101	9.1	2.9	2.8	4.9	1.4	5.2	2.9	4.2
149	7.1	0.7	3.8	3.9	3.4		2.2	3.0
118	9.8	1.9	4.5	5.4	2.0	3.3	2.4	4.2
153	8.4	1.5	3.0	4.3	4.3	9.5	3.0	4.9
105[b]	6.6	3.7	2.7	4.3	2.7		2.5	3.2
138	9.2	1.8	3.1	4.7	2.3		2.9	3.4
128	6.0	5.3	3.3	4.9	2.8		3.3	3.7
156[b]	8.3	0.0	5.1	4.5	1.9		3.8	3.4
180	8.0	1.3	3.6	4.3	3.1	9.6	2.7	4.7
170	5.7	2.3	3.6	3.9	2.3		4.0	3.1
Matrix Mean	8.2	2.2	3.6	4.7	2.6	2.7	3.0	3.8

[a] Congeners which are either certified or have had Soxhlet confirmation.
[b] Congener 105 was not resolved from congener 132 and congener 156 was not resolved from congener 171 by the GC method used for samples EC-1 and EC-5.

These data are provided for guidance purposes only.

TABLE 12

EXAMPLE SINGLE-LABORATORY RECOVERY DATA FOR SOLID-PHASE EXTRACTION (METHOD 3535) OF AROCLOR 1254 FROM WASTEWATER MATRICES SPIKED AT 2 µg/L

Wastewater Type	Mean Conc. (µg/L)	Percent Recovery	Std. Dev. (µg/L)	RSD (%)
Chemical Industry	2.4	120	0.41	17.2
Chemical Industry	0.6	28	0.03	5.4
Paper Industry	3.0	150	0.56	18.5
Paper Industry	2.3	115	0.08	3.7
Pharmaceutical Industry	1.5	76	0.03	1.7
Pharmaceutical Industry	1.0	51	0.03	2.9
Refuse	0.5	27	0.04	6.7
Refuse	0.6	31	0.10	16.0
POTW	1.9	96	0.15	7.8
POTW	2.1	105	0.04	1.8

Results represent three replicate solid-phase extractions of spiked wastewaters. Two different wastewaters from each wastewater type were spiked. All extractions were performed using 90-mm C_{18} extraction disks.
These data are provided for guidance purposes only.

TABLE 13

EXAMPLE SINGLE-LABORATORY RECOVERY DATA FOR SOLID-PHASE EXTRACTION (METHOD 3535) OF AROCLOR 1254 FROM WASTEWATER MATRICES SPIKED AT 10 µg/L

Wastewater Type	Mean Conc. (µg/L)	Percent Recovery	Std. Dev. (µg/L)	RSD (%)
Chemical Industry	8.8	88	1.07	12.2
Chemical Industry	8.1	81	0.06	0.7
Paper Industry	8.9	89	0.71	7.9
Paper Industry	10.1	101	0.15	1.4
Pharmaceutical Industry	9.2	92	0.24	2.6
Pharmaceutical Industry	8.4	84	0.17	2.0
Refuse	8.8	88	0.49	5.6
Refuse	8.0	80	1.44	18.0
POTW	9.5	82	0.17	2.1
POTW	8.2	82	0.17	2.1

Results represent three replicate solid-phase extractions of spiked wastewaters. Two different wastewaters from each wastewater type were spiked. All extractions were performed using 90-mm C_{18} extraction disks.
These data are provided for guidance purposes only.

TABLE 14

EXAMPLE SINGLE-LABORATORY RECOVERY DATA
FOR SOLID-PHASE EXTRACTION (METHOD 3535) OF AROCLOR 1254
FROM WASTEWATER MATRICES SPIKED AT 100 µg/L

Wastewater Type	Mean Conc. (µg/L)	Percent Recovery	Std. Dev. (µg/L)	RSD (%)
Chemical Industry	81.7	82	1.46	1.8
Chemical Industry	89.7	90	0.66	0.7
Paper Industry	73.7	74	3.94	5.3
Paper Industry	95.3	95	1.89	2.0
Pharmaceutical Industry	86.4	86	1.95	2.3
Pharmaceutical Industry	79.2	79	3.92	4.9
Refuse	85.7	86	1.59	1.9
Refuse	71.5	72	1.61	2.2
POTW	87.8	88	1.76	2.0
POTW	80.6	81	0.40	0.5

Results represent three replicate solid-phase extractions of spiked wastewaters. Two different wastewaters from each wastewater type were spiked. All extractions were performed using 90-mm C_{18} extraction disks.
These data are provided for guidance purposes only.

TABLE 15

EXAMPLE SINGLE-LABORATORY PCB CONGENER DATA
FROM A SEWAGE SLUDGE SAMPLE EXTRACTED BY
PRESSURIZED FLUID EXTRACTION (METHOD 3545)

PCB No.	Mean Recovery (%)	%RSD	Certified Value (µg/kg)
52	114	4.7	163
101	143	7.4	161
138	110	3.9	193
153	110	5.8	198
180	160	7.5	207

Percent recoveries are the mean of six replicate extractions.

Data are taken from Reference 13.
These data are provided for guidance purposes only.

TABLE 16

EXAMPLE SINGLE-LABORATORY PCB CONGENER DATA
FROM A RIVER SEDIMENT REFERENCE MATERIAL
EXTRACTED BY PRESSURIZED FLUID EXTRACTION (METHOD 3545)

PCB No.	Mean Recovery (%)	%RSD	Certified Value (µg/kg)
101	89	3.7	780
138	122	2.3	570
153	62	4.1	370
180	112	5.9	180

Percent recoveries are the mean of six replicate extractions.
The river sediment reference material was SRM 1939.

Data are taken from Reference 13.
These data are provided for guidance purposes only.

TABLE 17

EXAMPLE SINGLE-LABORATORY AROCLOR 1254 DATA
FROM A SOIL REFERENCE MATERIAL
EXTRACTED BY PRESSURIZED FLUID EXTRACTION (METHOD 3545)

Replicate Extraction	Aroclor 1254 Concentration (µg/kg)
1	1290
2	1370
3	1280
4	1370
Mean	1330
%RSD	3.5%
Certified value	1340
Mean recovery (%)	99%

Data are taken from Reference 13.
These data are provided for guidance purposes only.

TABLE 18

EXAMPLE SINGLE-LABORATORY PCB HOMOLOGUE DATA BY MICROWAVE EXTRACTION (METHOD 3546) FROM A CERTIFIED GREAT LAKE SEDIMENT MATERIAL (EC-2)

	Microwave Extraction			Soxhlet Extraction		
PCB homologue	µg/kg	Peaks[a]	% RSD	µg/kg	Peaks[a]	% RSD
Trichlorobiphenyl	130	4	21.8	100	4	14.6
Tetrachlorobiphenyl	400	10	13.2	390	20	10.2
Pentachlorobiphenyl	310	9	1.9	300	9	8.7
Hexachlorobiphenyl	120	3	0.0	110	3	9.1

[a] Number of PCB peaks detected
Cl_3 to Cl_{10} homologues analyzed
n=3
Data are taken from Reference 14. These data are provided for guidance purposes only.

TABLE 19

EXAMPLE SINGLE-LABORATORY PCB HOMOLOGUE DATA BY MICROWAVE EXTRACTION (METHOD 3546) FROM A CERTIFIED HARBOR SEDIMENT MATERIAL (SRM-1944)

	Microwave Extraction			Soxhlet Extraction		
PCB homologue	µg/kg	Peaks[a]	% RSD	µg/kg	Peaks[a]	% RSD
Trichlorobiphenyl	450	8	10.1	360	6	5.8
Tetrachlorobiphenyl	580	12	3.9	580	11	6.0
Pentachlorobiphenyl	330	9	6.1	330	9	7.9
Hexachlorobiphenyl	260	3	12.4	240	3	5.1
Heptachlorobiphenyl	60	2	43.8	80	2	27.3

[a] Number of PCB peaks detected
Cl_3 to Cl_{10} homologues analyzed
n=3
Data are taken from Reference 14. These data are provided for guidance purposes only.

TABLE 20

EXAMPLE SINGLE-LABORATORY PCB DATA BY MICROWAVE EXTRACTION (METHOD 3546) FROM CERTIFIED GREAT LAKE SEDIMENT MATERIALS

Sediment	Total Aroclor Concentration (µg/kg)	Standard Deviation (µg/kg)	RSD (%)	n	Certified Value (µg/kg)
EC-1	1850	0.07	3.78	3	2000 ± 54
EC-2	1430	0.09	6.60	4	1160 ± 70
EC-3	670	0.02	3.12	3	660 ± 54

Sample size = 2 g extracted into a final volume of 4 mL

EC-2 and EC-3 certified values were only provisional values at the time the work was conducted. The data presented herein were part of the validation data package used to confirm the certified values.

Data are taken from Reference 14.
These data are provided for guidance purposes only.

FIGURE 1. Example GC/ECD chromatogram of the Aroclor 1016/1260 mixture analyzed on a Rtx-5/HP-608 column pair connected to separate injectors. The top trace is the Rtx-5 column (30-m x 0.53-mm ID, 1.5-µm film thickness) and the bottom trace is the HP-608 column (30-m x 0.53-mm ID, 0.5-µm film thickness). Temperature program: 150 °C (1.0 min hold) to 280 °C (17 min hold) at 8 °C/min.

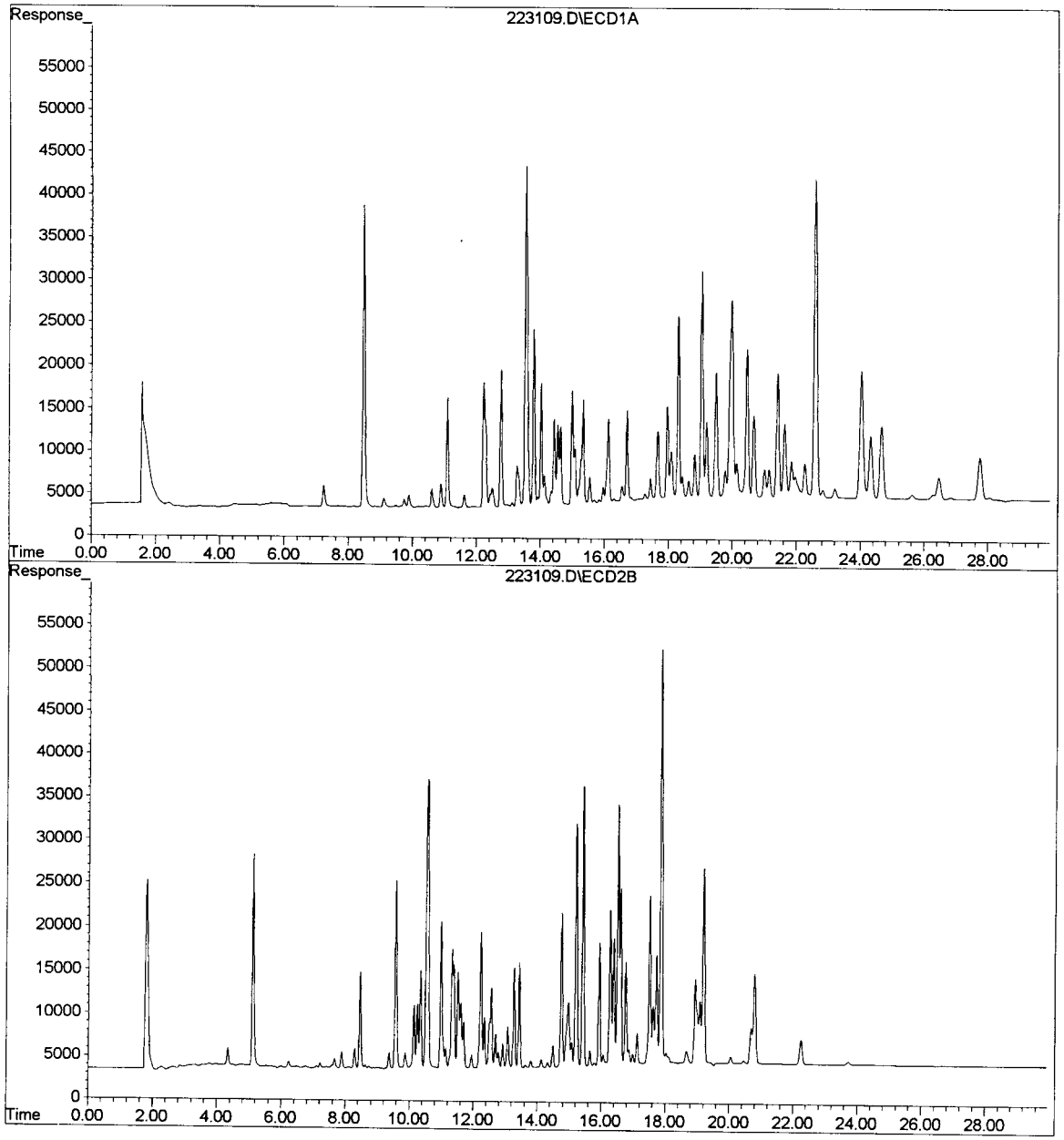


FIGURE 2. Example GC/ECD chromatogram of Aroclor 1221 analyzed on a Rtx-5/HP-608 column pair connected to separate injectors. The top trace is the Rtx-5 column (30-m x 0.53-mm ID, 1.5-µm film thickness) and the bottom trace is the HP-608 column (30-m x 0.53-mm ID, 0.5-µm film thickness). Temperature program: 150 °C (1.0 min hold) to 280 °C (17 min hold) at 8 °C/min.

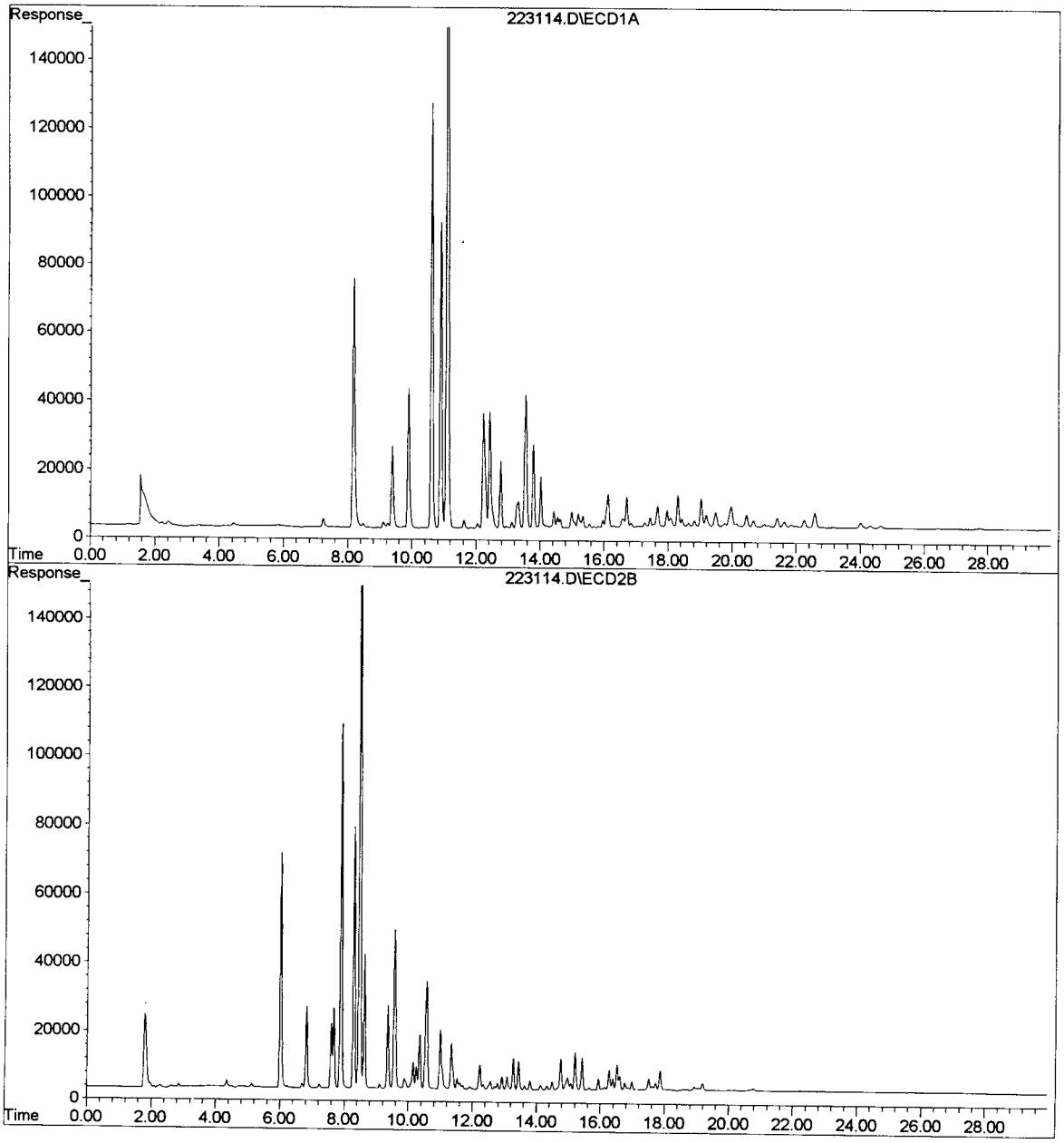


FIGURE 3. Example GC/ECD chromatogram of Aroclor 1232 analyzed on a Rtx-5/HP-608 column pair connected to separate injectors. The top trace is the Rtx-5 column (30-m x 0.53-mm ID, 1.5-µm film thickness) and the bottom trace is the HP-608 column (30-m x 0.53-mm ID, 0.5-µm film thickness). Temperature program: 150 °C (1.0 min hold) to 280 °C (17 min hold) at 8 °C/min.

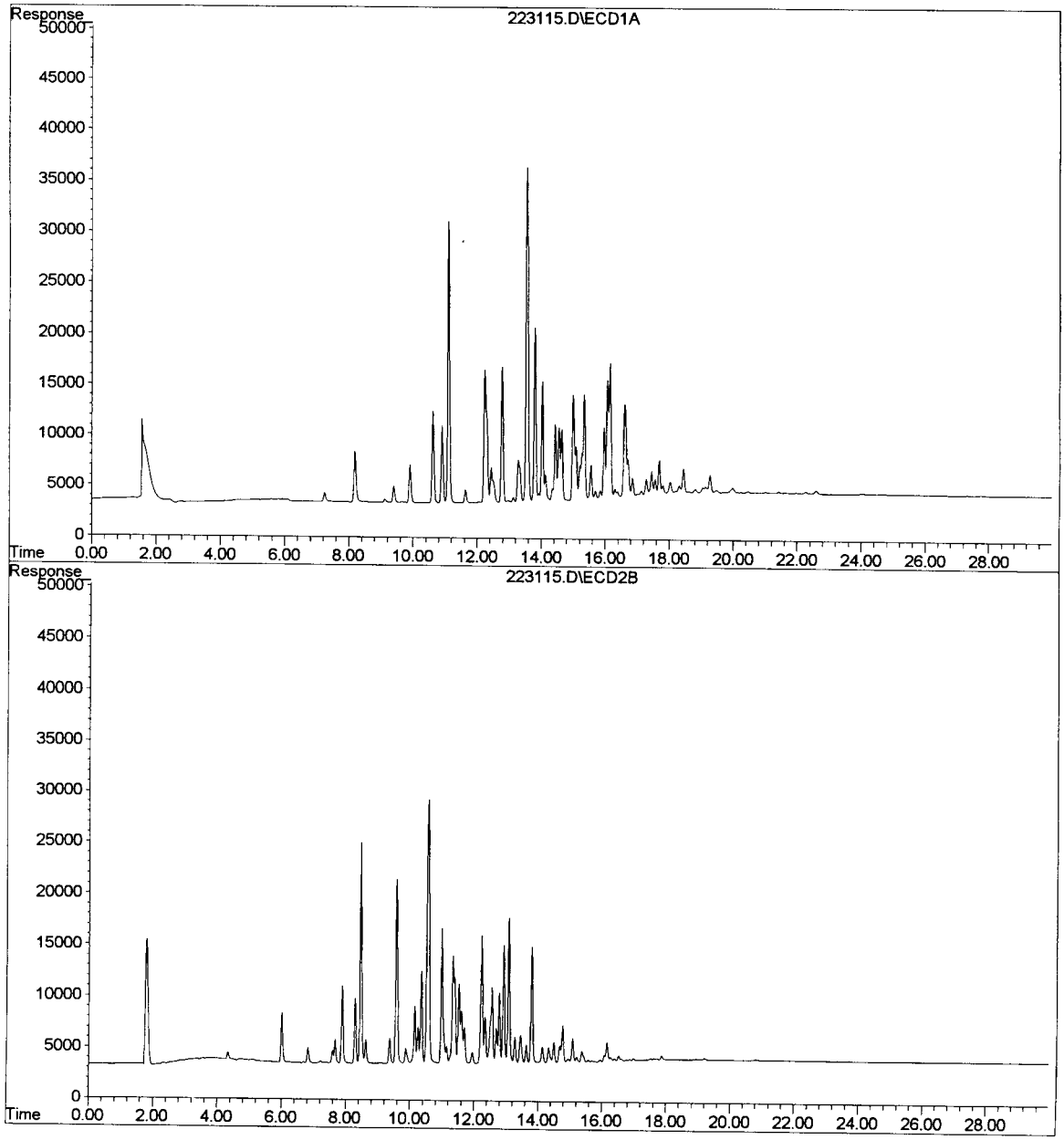


FIGURE 4. Example GC/ECD chromatogram of Aroclor 1242 analyzed on a Rtx-5/HP-608 column pair connected to separate injectors. The top trace is the Rtx-5 column (30-m x 0.53-mm ID, 1.5-µm film thickness) and the bottom trace is the HP-608 column (30-m x 0.53-mm ID, 0.5-µm film thickness). Temperature program: 150 °C (1.0 min hold) to 280 °C (17 min hold) at 8 °C/min.

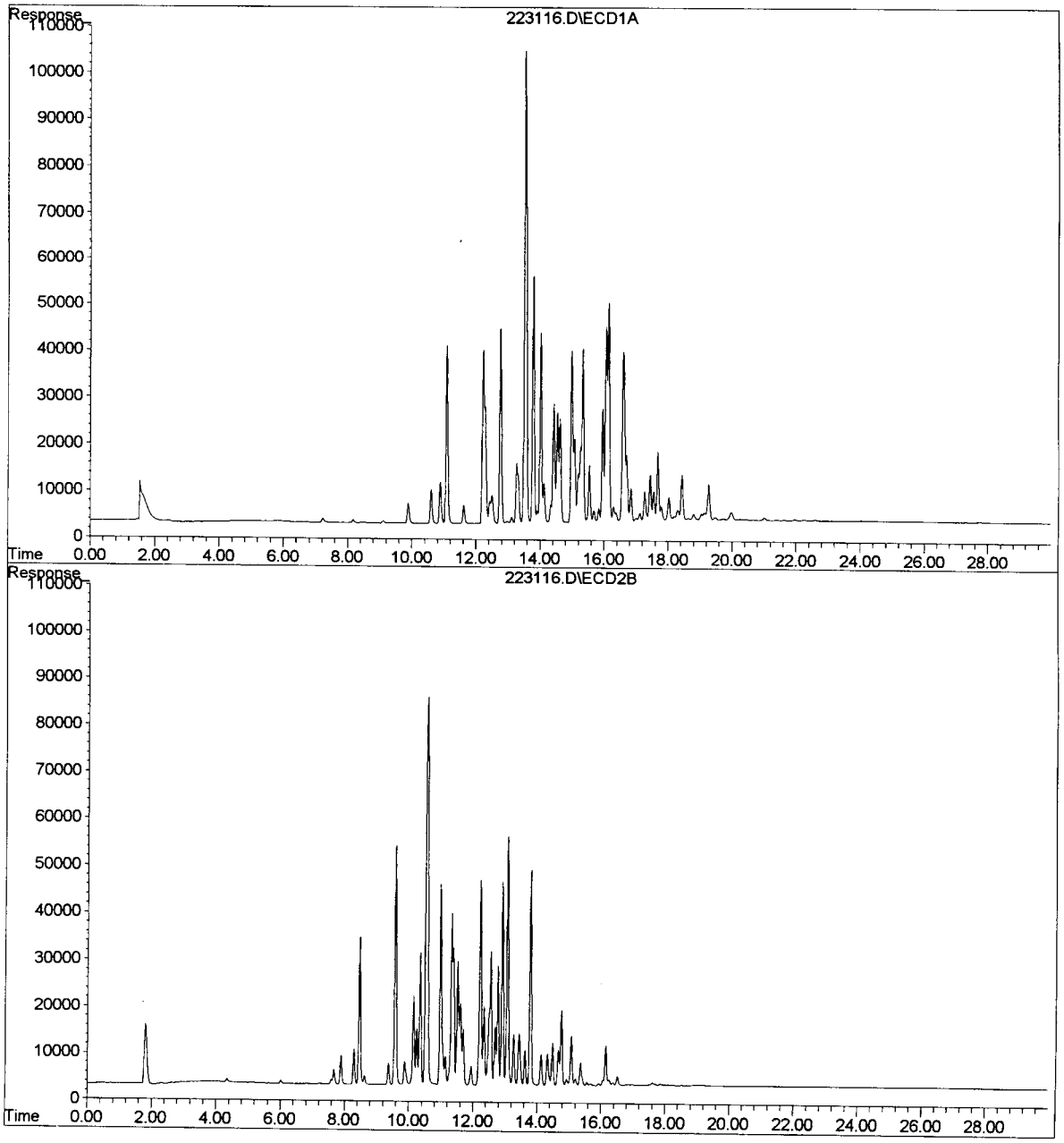


FIGURE 5. Example GC/ECD chromatogram of Aroclor 1248 analyzed on a Rtx-5/HP-608 column pair connected to separate injectors. The top trace is the Rtx-5 column (30-m x 0.53-mm ID, 1.5-µm film thickness) and the bottom trace is the HP-608 column (30-m x 0.53-mm ID, 0.5-µm film thickness). Temperature program: 150 °C (1.0 min hold) to 280 °C (17 min hold) at 8 °C/min.

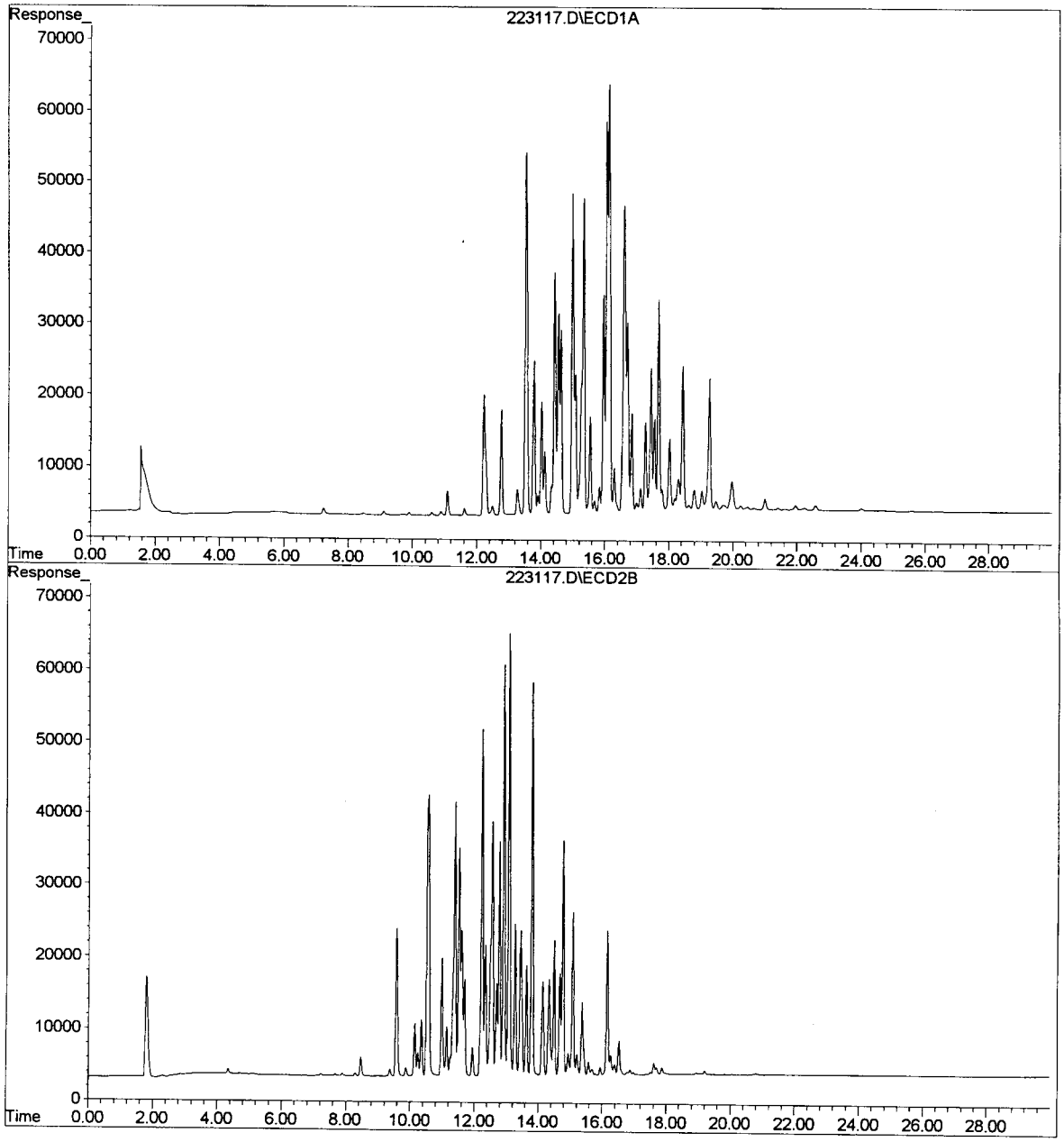
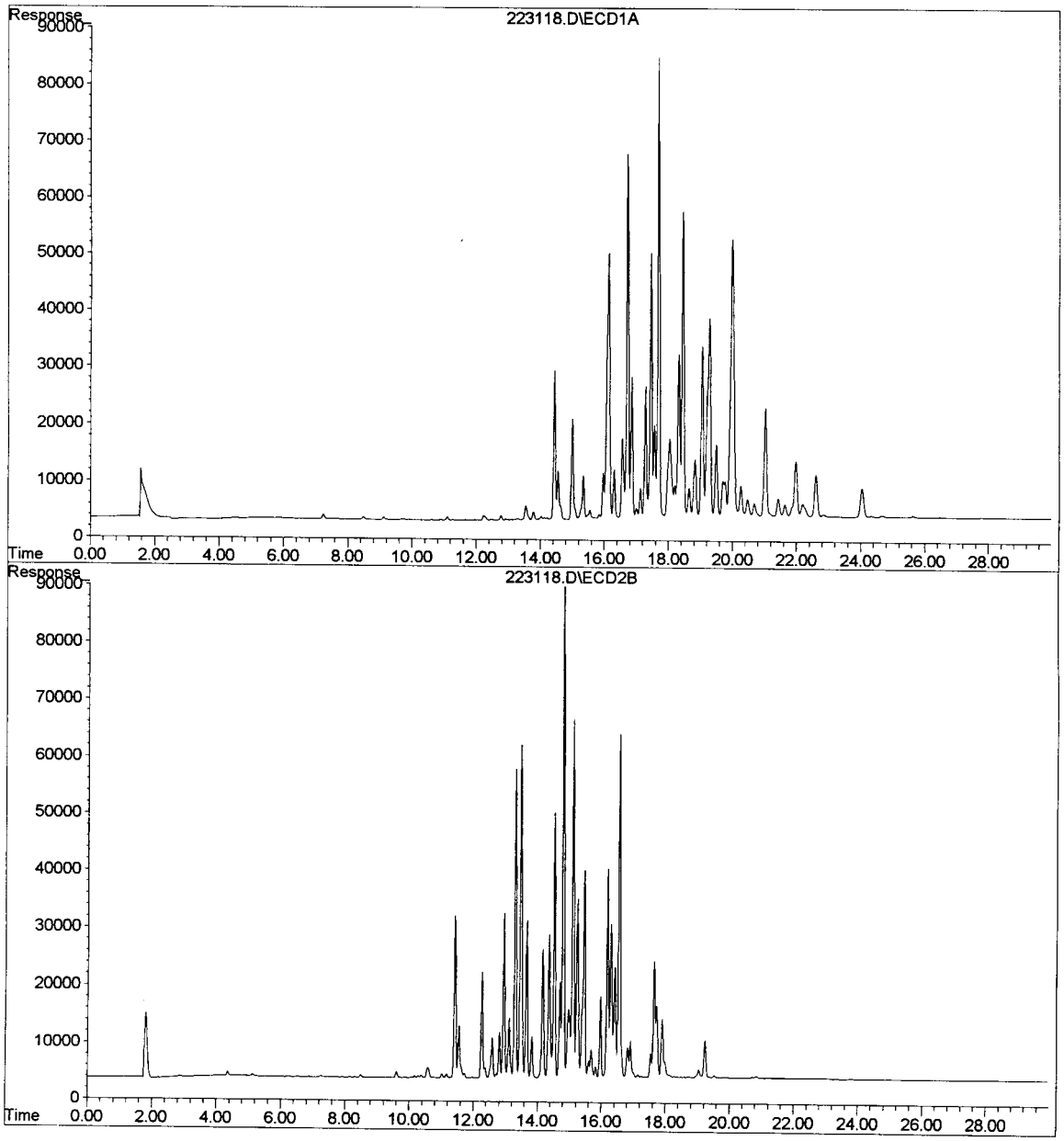


FIGURE 6. Example GC/ECD chromatogram of Aroclor 1254 analyzed on a Rtx-5/HP-608 column pair connected to separate injectors. The top trace is the Rtx-5 column (30-m x 0.53-mm ID, 1.5-µm film thickness) and the bottom trace is the HP-608 column (30-m x 0.53-mm ID, 0.5-µm film thickness). Temperature program: 150 °C (1.0 min hold) to 280 °C (17 min hold) at 8 °C/min.



APPENDIX B

ANALYTICAL METHOD SENSITIVITY
AND PROJECT CRITERIA TABLE

Analytical Method Sensitivity and Project Criteria Table

Quality Control Information provided by Con-Test Analytical Laboratory of East Longmeadow, MA

PCBs in soil EPA 3540/8082								
Analytes	**RL mg/Kg**	**LCS/MS % Rec**	**MS/MSD % RPD**	**TSCA PCB Cleanup Threshold (ppm)**	**TSCA Remediation Waste Threshold (ppm)**	**MCP METHOD 1 S-1/GW-1 (ppm)**	**MCP METHOD 1 S-1/GW-2 (ppm)**	**MCP METHOD 1 S-1/GW-3 (ppm)**
Aroclor 1016	0.02	40-140%	< 50%	1	50	2	2	2
Aroclor 1221	0.02		< 50%	1	50	2	2	2
Aroclor 1232	0.02		< 50%	1	50	2	2	2
Aroclor 1242	0.02		< 50%	1	50	2	2	2
Aroclor 1248	0.02		< 50%	1	50	2	2	2
Aroclor 1254	0.02		< 50%	1	50	2	2	2
Aroclor 1260	0.02	40-140%	< 50%	1	50	2	2	2
Aroclor 1262	0.02		< 50%	1	50	2	2	2
Aroclor 1268	0.02		< 50%	1	50	2	2	2

Surrogate(s)	% Recovery
Tetrachloro-m-xylene	30-150%
Decachlorobiphenyl	30-150%

PCB's in Product / Solid EPA 3540/8082								
Analytes	**RL ug/L**	**LCS/MS % Rec**	**MS/MSD % RPD**	**TSCA PCB Cleanup Threshold (ppm)**	**TSCA Remediation Waste Threshold (ppm)**	**MCP METHOD 1**	**MCP METHOD 1**	**MCP METHOD 1**
Aroclor 1016	0.1	40-140%	< 30%	1	50	N/A	N/A	N/A
Aroclor 1221	0.1		< 30%	1	50	N/A	N/A	N/A
Aroclor 1232	0.1		< 30%	1	50	N/A	N/A	N/A
Aroclor 1242	0.1		< 30%	1	50	N/A	N/A	N/A
Aroclor 1248	0.1		< 30%	1	50	N/A	N/A	N/A
Aroclor 1254	0.1		< 30%	1	50	N/A	N/A	N/A
Aroclor 1260	0.1	40-140%	< 30%	1	50	N/A	N/A	N/A
Aroclor 1262	0.1		< 30%	1	50	N/A	N/A	N/A
Aroclor 1268	0.1		< 30%	1	50	N/A	N/A	N/A

Surrogate(s)	% Recovery
Tetrachloro-m-xylene	30-150%
Decachlorobiphenyl	30-150%

APPENDIX C

QAPP PROJECT PERSONNEL LOG SHEET

QAPP PROJECT PERSONNEL LOG SHEET

By signing this QAPP Project Personnel Log Sheet, you are verifying that you have read the attached QAPP and agree to follow the procedures described therein.

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

APPENDIX C

SUPPLEMENTAL BUILDING MATERIALS SURVEY

NOVER-ARMSTRONG ASSOCIATES, INC.

124 Main Street, Unit 2GG
Carver, Massachusetts 02330
Telephone 508.866.8383
Facsimile 508.866.9898

SDO-certified DBE & WBE
www.noverarmstrong.com

August 8, 2012

Richard K. Quateman, LSP, CHMM
Principal Scientist
Kleinfelder ▪ S E A Consultants
215 First Street
Cambridge, MA 02142

RE: Supplemental Building Materials Survey
MBTA Tire Maintenance Facility
21 Water Street
Cambridge, Massachusetts
NAA File P2814
K/SEA Reference No. 2011035.01-A

Dear Mr. Quateman,

Nover-Armstrong Associates, Inc. (Nover-Armstrong) has completed a Supplemental Building Materials Survey of the MBTA Tire Maintenance Facility located at 21 Water Street in Cambridge, Massachusetts (the site). Please refer to Figure 1 – USGS Topographic Quadrangle, which identifies the site location.

The MBTA Tire Maintenance Facility consists of approximately 11,914 square feet. Nover-Armstrong understands the Facility is scheduled for future demolition as part of the MBTA's Green Line Extension (GLX) project. Our survey findings are presented below.

1.0 Summary of Initial Hazardous Materials Survey (November 2011)

As part of the Initial Hazardous Materials Survey completed by Nover-Armstrong in the Fall of 2011, Lead Based Paint (LBP), Asbestos Containing Materials (ACMs), and Polychlorinated Biphenyls (PCBs) surveys were completed.

During the PCB survey portion of the initial hazardous materials survey completed in November 2011, visual inspection revealed mortar, floor caulking, and painted caulking that were considered potential PCB sources. These building materials were observed to be in poor to good condition, with areas of isolated damage.

A total of four floor caulking samples, three window caulking samples, one painted wall caulking, two mortar, and one painted mortar samples were collected as part of this assessment. The building material samples were submitted to Alpha Analytical Laboratories, Inc. (Alpha) and analyzed for PCBs via EPA Method 3540C (Soxhlet Extraction Method).

The attached Table 1 – Summary of 11.2011 Building Materials Analytical Results (for PCBs) summarizes the analytical findings of the initial survey. Concentrations of PCBs were detected in all window caulking samples and one wall caulking sample. PCB concentrations ranged from 110,000 parts per million (ppm) to 993,000 ppm. Lower PCB concentrations ranging from 0.172 ppm to 40.4 ppm were detected in the floor caulking and mortar associated with concrete walls. Review of the analytical laboratory report revealed that 16 ppm PCBs was also detected in the Method Blank sample. Nover-Armstrong contacted Glenn Breland of Alpha relative to the detection of PCBs in the Method Blank. Mr. Breland stated that the Method Blank was run as part of the sample batch. During the Soxhlet extraction and / or blow down process, the Method Blank (and potentially some of the building material samples) was contaminated from the window caulking samples containing very high PCB concentrations run at the beginning of the batch. Therefore, samples containing less than 16 ppm PCBs, including FLOOR-1, FLOOR-3, FLOOR-4, WALL-1, and WALL-4, may not contain PCBs or may have concentrations less than the concentrations reported by Alpha in their laboratory report.

Based upon the data obtained during this Initial Hazardous Materials Survey, Nover-Armstrong recommended additional assessment of building materials surrounding the windows and surrounding impacted floor and wall samples. Due to the detection of PCBs within the Method Blank sample, Nover-Armstrong recommended re-sampling and analysis of the building materials with PCB concentrations less than 16 ppm to determine / confirm the presence of PCBs.

2.0 Site-Specific QAPP Addendum A1, Revision 1.2, June 2012 Implementation

Based upon the findings of the Initial Hazardous Materials Survey, a *Site-Specific QAPP Addendum A1*, dated June 2012, was completed for the supplemental analysis of PCBs in concrete masonry units (CMU) surrounding the windows of the facility and in building materials (concrete, caulking, and mortar) surrounding impacted floor and wall samples. The goal of this project is to identify potential PCB impacts from window caulking, floor caulking, wall caulking, and/or wall mortar leaching into building materials adjacent to the previously-identified PCB-impacted areas and to assess the limits of PCB contamination, if identified. The Site-Specific QAPP Addendum A1, Revision 1.2 documented all proposed sampling procedures, laboratory analytical methods, equipment necessary to complete the sampling procedures, quality assurance / quality control measures to be taken, and data assessment protocols. Please refer to the QAPP Addendum for a complete description (attached as Appendix D).

3.0 Summary of July 2012 Sampling Activities

CMUs Surrounding Windows

Nover-Armstrong collected concrete samples from CMUs adjacent to ten selected windows at the site between July 11 and 13, 2012. Each window was identified as one group (Groups A through J), as depicted in Figure 2. Each group is comprised of eight grab sampling points.

The spatial distribution of samples collected from CMUs surrounding individual windows is depicted in Figure 3. The samples were obtained from all four sides of each window at a distance from the window equaling approximately one-half of the CMU length (6 inches). A typical representation of the sampling completed at the windows is depicted in Figure 4. Additional samples were collected from the terminus of one cracked area originating at a window on an exterior wall on each side of the building (four total). Please refer to Appendix A – Photographic Documentation. The concrete samples were obtained following the guidance provided in the USEPA Region 1 *Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), Revision 4 (May 2011), EIASOP_POROUSSAMPLING* and in accordance with the Code of Federal Regulations (CFR) 40 CFR 761. This guidance was provided within the Standard Operating Procedures appendix of the Site-Specific QAPP Addendum A1.

A rotary impact hammer equipped with a one-inch diameter carbide drill bit was used to generate a fine concrete powder, which was collected into appropriate containers provided by Alpha. Samples were collected at approximately one-inch intervals and four to eight holes were required to obtained the required amount of concrete powder for laboratory quality assurance purposes. A total of 96 concrete grab samples were collected from surrounding the windows and six additional duplicate samples were collected, as noted in the chain of custody. The samples were submitted to Alpha for laboratory analysis of PCBs (Soxhlet Extraction Method – SW846 3540C / 8082).

Disposable sampling equipment was discarded after completing the sampling task and was not reused. All non-disposable sampling equipment was decontaminated after each sample was collected according to the guidelines for decontamination provided in the *Standard Operating Procedure for Sampling Porous Surfaces for PCBs, Revision 4 (May 2011), EIASOP_POROUSSAMPLING* guidance provided in Appendix A of the QAPP Addendum A1. All rinse liquids generated during the decontamination process were stored in a 55-gallon drum pending laboratory results. Six Equipment Blank samples, consisting of rinse water after the drill bit was decontaminated, were collected and submitted to Alpha for laboratory analysis of PCBs (Soxhlet Extraction Method – SW846 3540C / 8082). Field sampling logs are provided in Appendix B – Field Sampling Logs.

Building Materials Not Surrounding Windows

On July 17, 2012, Nover-Armstrong collected additional samples surrounding each of four interior and/or exterior building material sampling locations that were not associated with window caulking, but were previously identified during the November 2011 Initial Hazardous Materials Survey as containing PCBs. These samples were identified as WALL-1 (interior), WALL-3 (interior), WALL-4 (exterior), and FLOOR-2 (interior). Refer to Figures 5 and 6 and Appendix A – Photographic Documentation (Photos 17 – 20) for sampling locations. The samples were obtained from all four sides of each sampling location at a vertical distance of approximately 12 inches and at a horizontal distance of approximately 6 inches from the original November 2011 sample. The building materials consisted of caulking, concrete, and mortar, depending on the sample location. The building material samples were obtained following the guidance provided in the USEPA Region 1 *Standard Operating Procedure for Sampling Porous Surface for PCBs, Revision 4 (May 2011), EIASOP_POROUSSAMPLING* and in accordance with 40 CFR 761.

Concrete and mortar samples were collected using a rotary impact hammer equipped with a one-inch diameter carbide drill bit to generate a fine concrete and / or mortar powder, which were collected into appropriate containers provided by Alpha. For caulking samples, a chisel and sharp knife were used to generate representative samples.

A total of twelve concrete / mortar grab samples and four caulking grab samples were collected and submitted to Alpha for laboratory analysis of PCBs (Soxhlet Extraction Method – SW846 3540C/8082). Field sampling logs are provided in Appendix B – Field Sampling Logs.

The field equipment that was used for the sampling is listed below in Table 2.

Table 2: Field Equipment List

Equipment Type	Model
Makita 6 Amp 5/8" Hammer Drill	HP1640
Dewalt Premium Percussion 1" x 12" Carbide Drill Bit	DW5249
Spoon, chisel & knife (for sample collection)	N/A
Decontamination supplies	Refer to SOP.NAA_C.05.1

4.0 Results of Laboratory Analysis

The attached Table 3 – Summary of 07.2012 Building Materials Analytical Results summarizes analytical findings. Concentrations of PCBs were detected in 39 of the CMU samples at concentrations ranging from 0.0381 to 0.5 milligrams per kilogram (mg/kg), in nine of the concrete samples collected from around the previous samples collected in November 2011 at concentrations ranging from 0.0558 to 0.922 mg/kg, and all four of the caulking samples. PCB concentrations detected in the floor caulking ranged from 0.651 to 1.52 mg/kg, while PCB concentrations detected in the wall caulking around WALL-3 ranged from 18,400 to 22,500 mg/kg.

The results of the laboratory analysis completed on the concrete powder samples collected around the CMUs indicate the CMUs surrounding the window units have not been significantly impacted by the presence of PCBs within the window caulking. Furthermore, the results of the laboratory analysis completed on the concrete powder surrounding the previous building materials sampling locations in November 2011 also indicate that these building materials have not been significantly impacted by PCBs. Confirmatory sampling of the floor and wall caulking confirm that PCBs are present that would require proper disposal upon building demolition.

5.0 Data Usability

The data provided with this Supplemental Building Materials Survey were evaluated for usability in accordance with the Site-Specific QAPP Addendum A1.

5.1 Presumptive Certainty

As indicated in the laboratory reports provided in Appendix C, the analytical laboratory has indicated that the conditions for Presumptive Certainty under applicable provisions of the MCP and MassDEP policy guidance were met. The laboratory provided the necessary Analytical Method Report Certification Forms, case narratives, and QA/QC data reporting; these are included in the laboratory reports in Appendix C.

5.2 Data Quality

In an effort to verify that the data collected were suitable for use in Site Characterization, Nover-Armstrong reviewed the laboratory analytical reports generated as part of the assessment activities. This review included the report narrative, surrogate recovery results and the "MassDEP MCP Response Action Analytical Report Certification" (or equivalent) included in each data package. Surrogate recoveries for the specific analyses were reported as being within the range specified in the analytical methods, with certain exceptions noted, which were discussed in the report's narrative. The certification form included with each analytical data package indicated that:

- Samples were received by the laboratory in a condition consistent with the Chain of Custody.
- QA/QC procedures required for the analytical methods were followed and any data not meeting the appropriate performance standards were discussed in the case narrative.
- Analytical data met all the requirements for Presumptive Certainty, as described in Section 2.0 of the MassDEP document CAM VII A.
- All QC performance standards and recommendations for the specified methods were achieved, or data not meeting the appropriate performance standards were discussed in the case narrative.

5.3 Data Usability Conclusion

Based on the information provided in the laboratory analytical reports, the required QA/QC procedures were followed, and all performance/acceptance standards for the required QA/QC procedures were achieved or discussed. It is Nover-Armstrong's opinion that the concrete and caulking samples collected at the site:

- Generally meet the requirements for presumptive certainty as described in the MassDEP (WSC-CAM-VII A) policy for the acquisition and reporting of analytical data,
- Are acceptable for use in site characterization and conducting response actions under the QAPP at this Site, and
- Are deemed usable in support of opinions and conclusions for this site.

6.0 Conclusions and Recommendations

Based upon laboratory analytical results, CMUs surrounding the windows and previously-identified PCB-containing window caulking have not been significantly impacted by the leaching of PCBs. As such, a subsurface investigation surrounding the building to determine if PCBs have been leaching to site soil and / or pavement is not deemed necessary.

Building materials surrounding the window, floor, and wall caulking will not have to be managed as PCB bulk product or remediation waste.

The results of the laboratory analysis do confirm however that the window caulking and wall caulking have elevated concentrations of PCBs (> 50 ppm) that would require these materials to be disposed as a PCB remediation waste during building demolition, pursuant to TSCA requirements.

Nover-Armstrong appreciates the opportunity to provide you with environmental services. If you have any questions or comments regarding this report, please do not hesitate to contact our office.

Sincerely,

Nover-Armstrong Associates, Inc.

Marylou Armstrong, LSP
Principal

Attachments:

Figures:
Figure 1 – Site Location
Figure 2 – CMU Sampling Groups
Figure 3 – Individual Window Sampling Scheme
Figure 4 – CMU Sampling Group A
Figure 5 – Floor and Wall Material Sampling Locations not Surrounding Windows
Figure 6 – Individual Floor and Wall Sampling Groups

Tables:
Table 1 – Summary of 11.2011 Building Materials Analytical Results (for PCBs)
Table 3 – Summary of 7.2012 Building Materials Analytical Results

Appendices:
Appendix A – Photographic Documentation
Appendix B – Field Sampling Logs
Appendix C – Alpha Analytical Reports
Appendix D – *Site-Specific QAPP Addendum A1*, dated June 2012

FIGURES

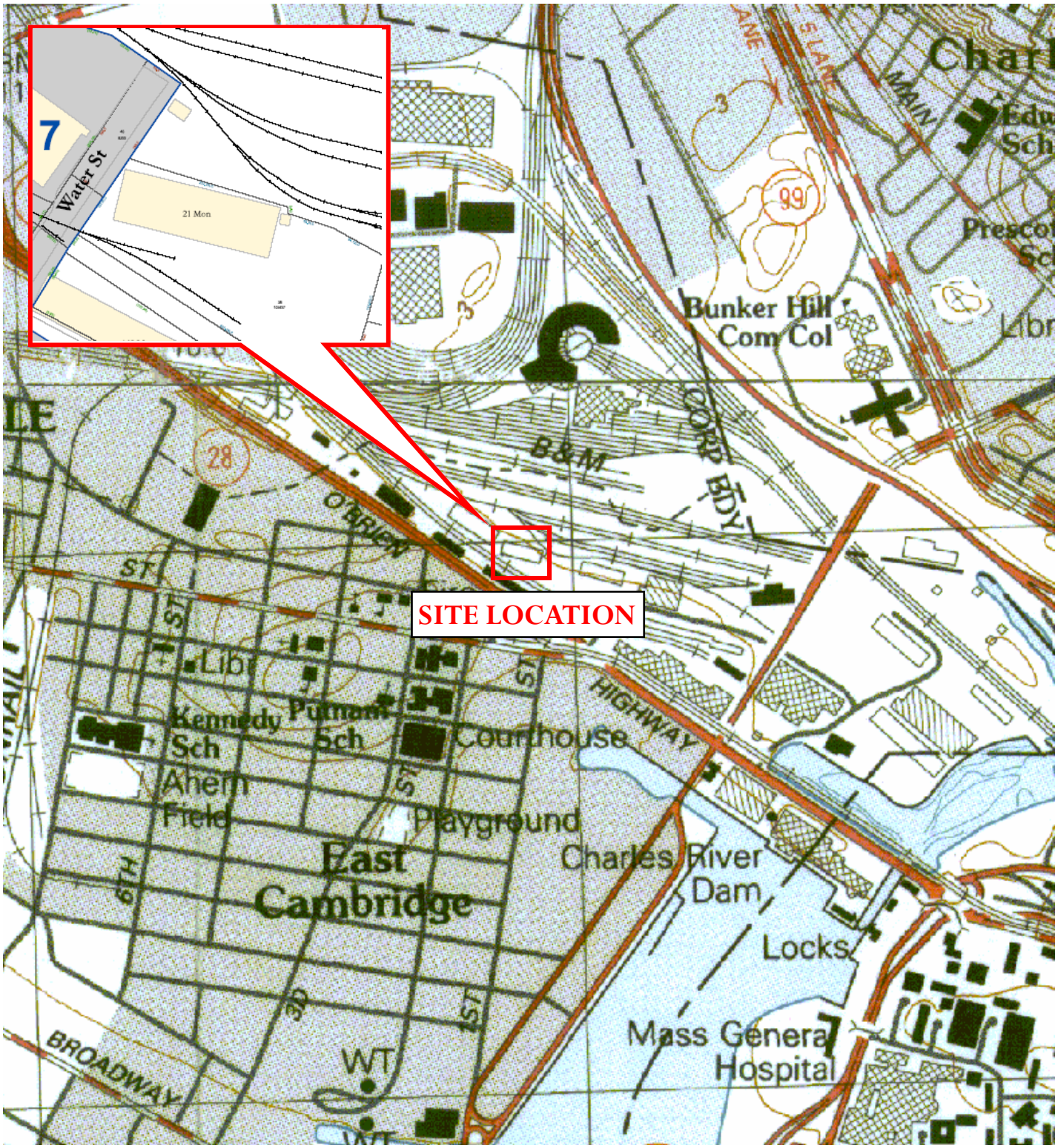


Figure 1 - Site Location

MBTA Tire Maintenance Facility

21 Water Street, Cambridge, Massachusetts

NAA File P2814

Figure 2 - CMU Sampling Groups

MBTA Tire Maintenance Facility
21 Water Street
Cambridge, Massachusetts
NAA File P2814

NOVER-ARMSTRONG ASSOCIATES, INC.

NOTES:
1. EACH SAMPLE WILL BE COLLECTED BY DRILLING 0-1" INTO THE EXTERIOR CONCRETE WALL SURFACE SURROUNDING THE WINDOW.

APPROXIMATE SAMPLING LOCATION

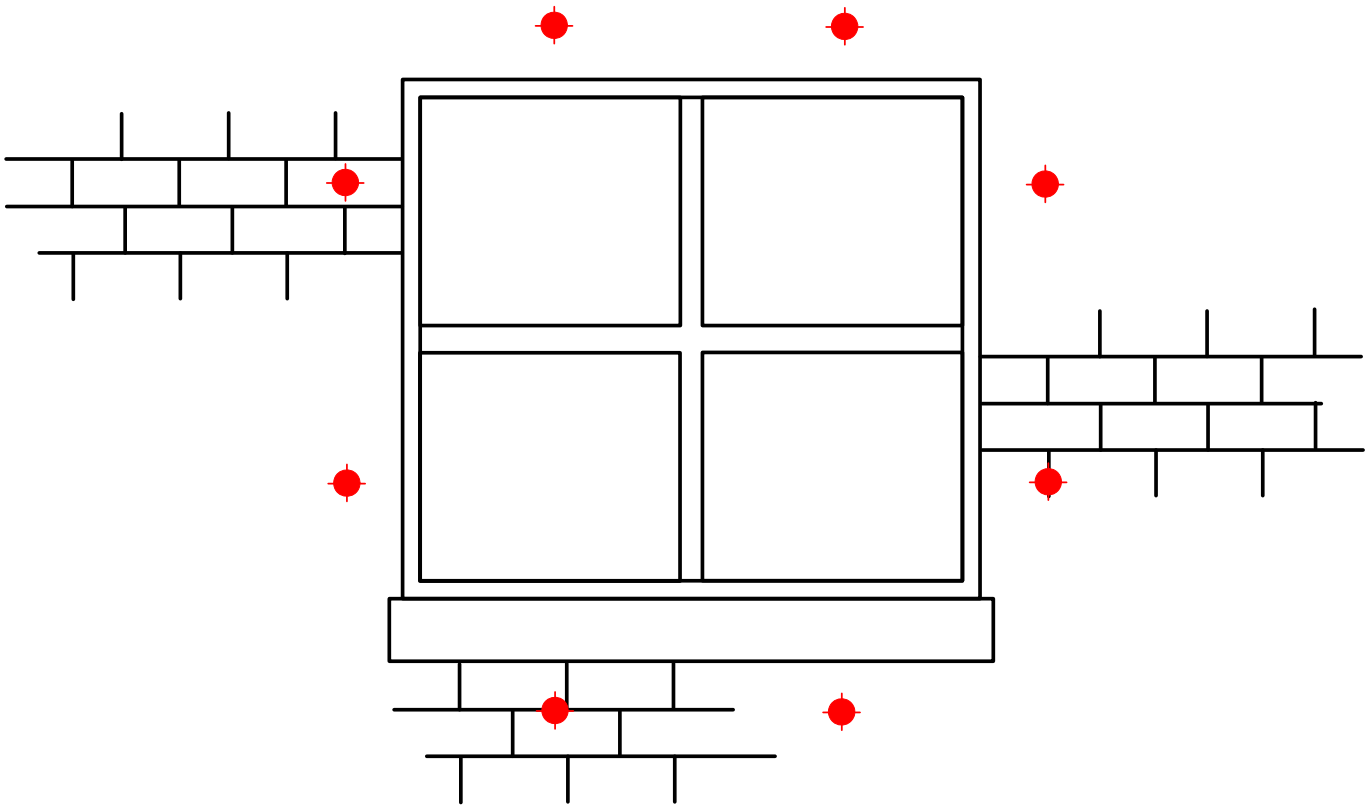


Figure 3: Individual Window Sampling Scheme
21 Water Street
Cambridge, Massachusetts
NAA File P2814

NOVER-ARMSTRONG ASSOCIATES, INC.

Site Plan Not to Scale

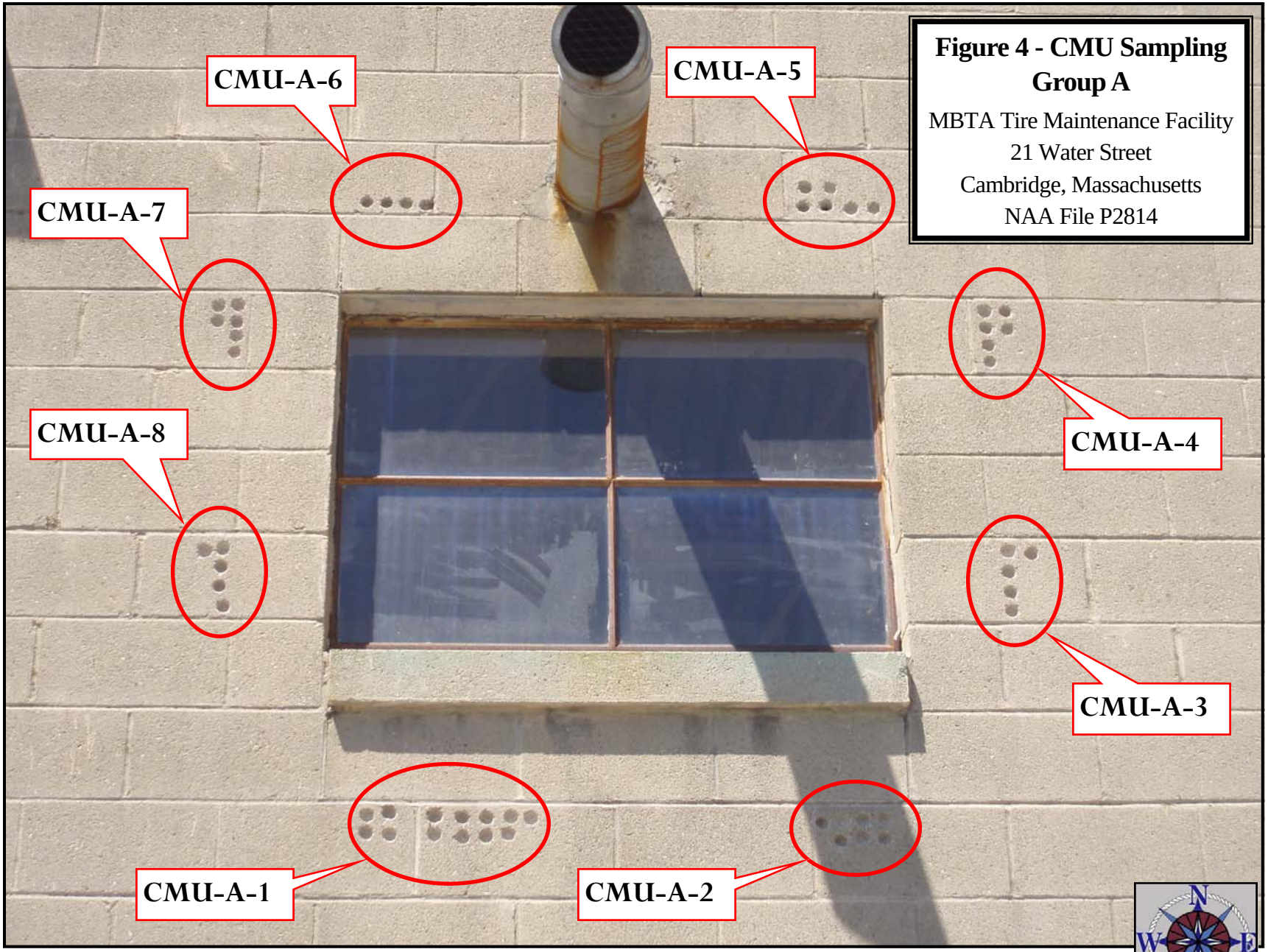
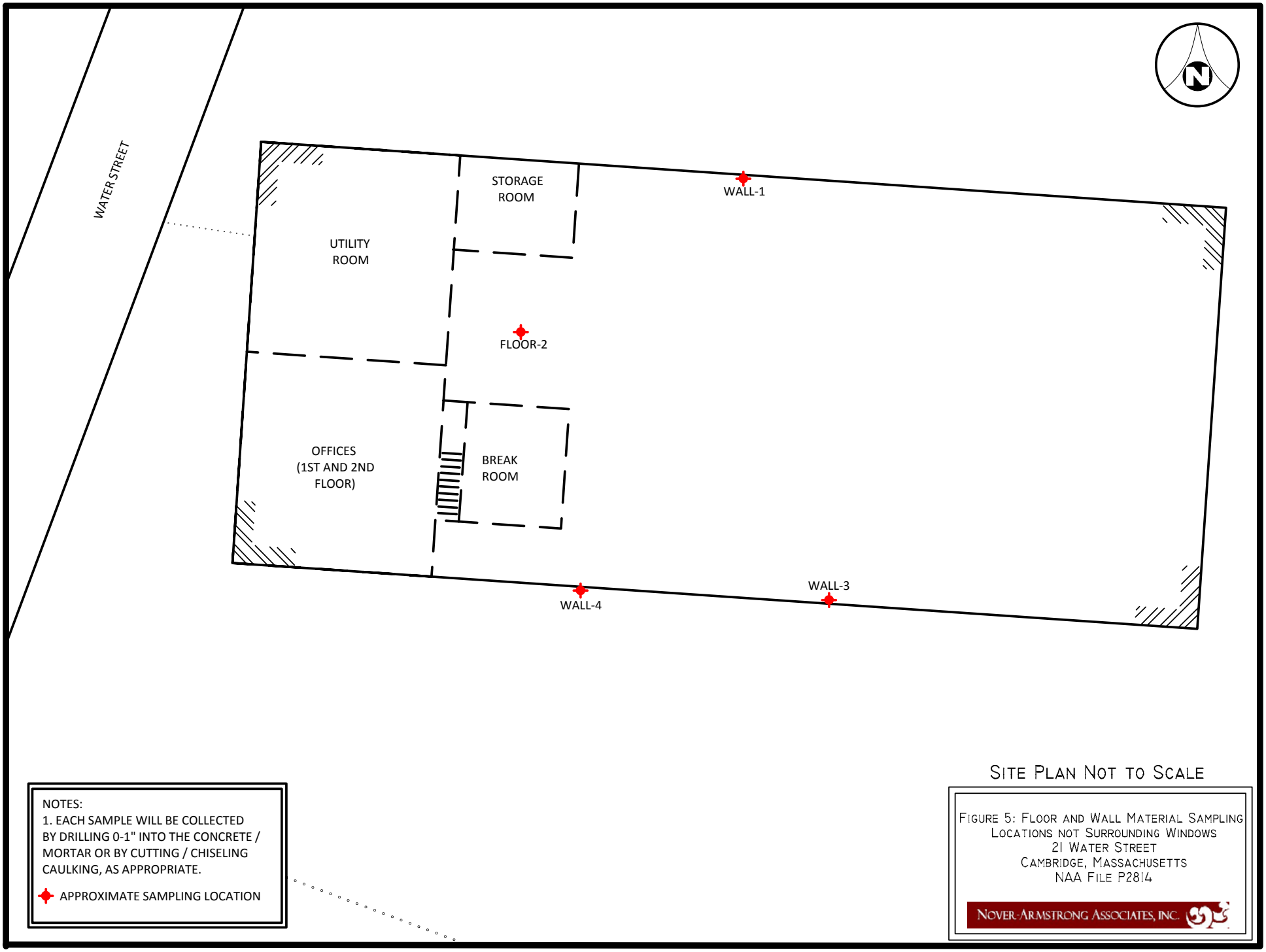


Figure 4 - CMU Sampling Group A

MBTA Tire Maintenance Facility
21 Water Street
Cambridge, Massachusetts
NAA File P2814



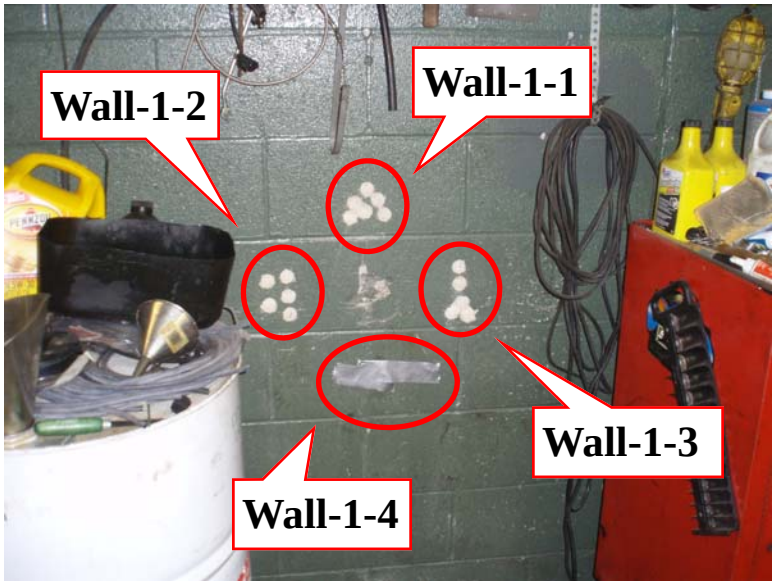
NOTES:
1. EACH SAMPLE WILL BE COLLECTED BY DRILLING 0-1" INTO THE CONCRETE / MORTAR OR BY CUTTING / CHISELING CAULKING, AS APPROPRIATE.

APPROXIMATE SAMPLING LOCATION

SITE PLAN NOT TO SCALE

FIGURE 5: FLOOR AND WALL MATERIAL SAMPLING LOCATIONS NOT SURROUNDING WINDOWS
21 WATER STREET
CAMBRIDGE, MASSACHUSETTS
NAA FILE P2814

NOVER-ARMSTRONG ASSOCIATES, INC.



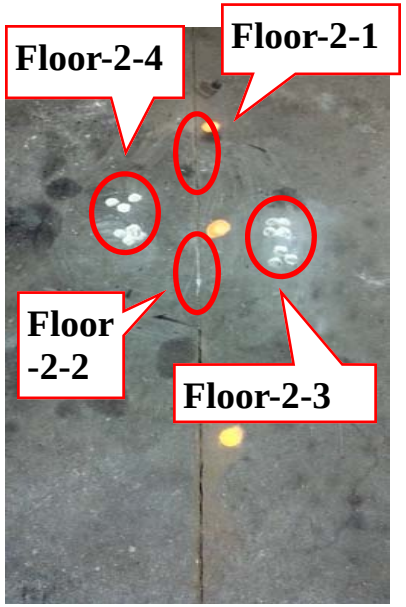
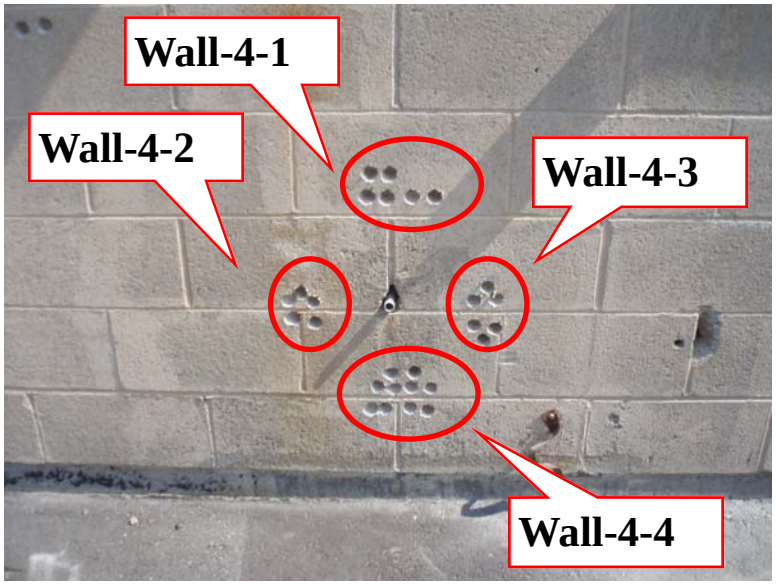


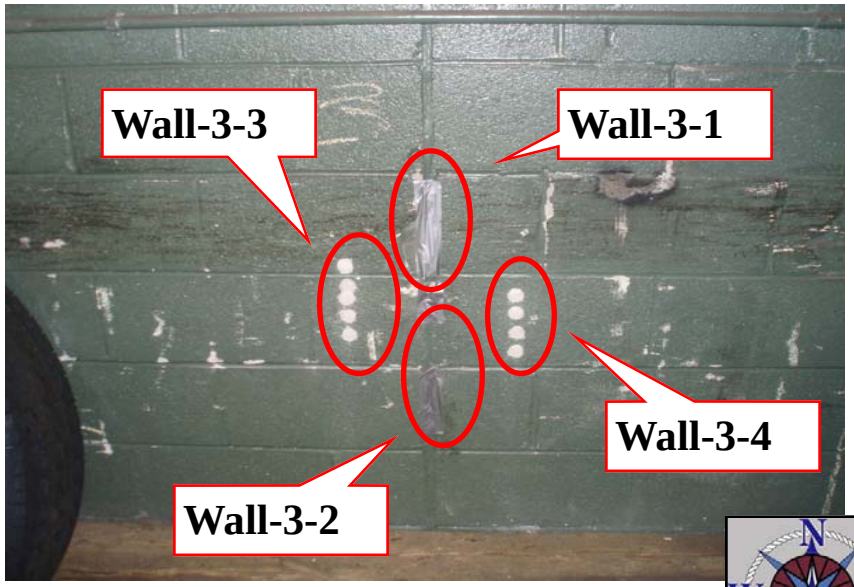
Figure 6 - Individual Wall & Floor Sampling Groups

MBTA Tire Maintenance Facility

21 Water Street

Cambridge, Massachusetts





TABLES

TABLE 1 - Summary of 11.2011 Building Materials Analytical Results (PCBs)

SAMPLE ID	FLOOR-1	FLOOR-2	FLOOR-3	FLOOR-4	WALL-1	WALL-2	WALL-3	WALL-4	WINDOW-1	WINDOW-2	WINDOW-3	Method Blank
SAMPLE MATERIAL	**caulking**	**caulking**	**caulking**	**caulking**	**painted mortar**	**mortar**	**painted caulking**	**mortar**	**caulking**	**caulking**	**caulking**	
SAMPLING DATE	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	11/2/2011	
LAB SAMPLE ID	L1118311-08	L1118311-09	L1118311-10	L1118311-11	L1118311-01	L1118311-02	L1118311-03	L1118311-04	L1118311-05	L1118311-06	L1118311-07	
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)												
Aroclor 1016	BRL(<0.104)	BRL(<1.42)	BRL(<0.0621)	BRL(<0.14)	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1221	BRL(<0.104)	BRL(<1.42)	BRL(<0.0621)	BRL(<0.14)	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1232	BRL(<0.104)	BRL(<1.42)	BRL(<0.0621)	BRL(<0.14)	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1242	BRL(<0.104)	BRL(<1.42)	BRL(<0.0621)	BRL(<0.14)	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1248	BRL(<0.0694)	BRL(<0.943)	BRL(<0.0414)	BRL(<0.0934)	BRL(<0.493)	BRL(<0.352)	BRL(<12900)	BRL(<0.472)	BRL(<37300)	BRL(<8330)	BRL(<32200)	BRL(<0.0374)
Aroclor 1254	**0.313**	BRL(<1.42)	**0.172**	**0.665**	BRL(<0.739)	BRL(<0.528)	BRL(<19300)	BRL(<0.708)	BRL(<56000)	BRL(<12500)	BRL(<48400)	BRL(<0.0562)
Aroclor 1260	**0.394**	**40.4**	**0.265**	**0.336**	**1.24**	BRL(<0.352)	**191,000**	**11.4**	**993,000**	**110,000**	**620,000**	**16.2**
Aroclor 1262	BRL(<0.0347)	BRL(<0.472)	BRL(<0.0207)	BRL(<0.0467)	BRL(<0.246)	BRL(<0.176)	BRL(<6440)	BRL(<0.236)	BRL(<18600)	BRL(<4170)	BRL(<16100)	BRL(<0.0187)
Aroclor 1268	BRL(<0.0347)	BRL(<0.472)	BRL(<0.0207)	BRL(<0.0467)	BRL(<0.246)	BRL(<0.176)	BRL(<6440)	BRL(<0.236)	BRL(<18600)	BRL(<4170)	BRL(<16100)	BRL(<0.0187)

Notes: Concentrations presented in mg/kg - milligrams per kilogram - parts per million
BRL - Below laboratory reporting limit

TABLE 3 - Summary of 07.2012 Building Materials Analytical Results

SAMPLE ID	CMU-A-1	CMU-A-1_DUP	CMU-A-2	CMU-A-3	CMU-A-4	CMU-A-5	CMU-A-6	CMU-A-7	CMU-A-8	CMU-B-1	CMU-B-2	CMU-B-3	CMU-B-4
SAMPLING DATE	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012
LAB SAMPLE ID	L1212415-02	L1212415-03	L1212415-04	L1212415-05	L1212415-06	L1212415-07	L1212415-08	L1212415-09	L1212415-10	L1212415-11	L1212415-12	L1212415-13	L1212415-14
SAMPLE MATRIX	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)													
Aroclor 1016	BRL(<0.0514)	BRL(<0.0527)	BRL(<0.0509)	BRL(<0.0537)	BRL(<0.0508)	BRL(<0.0554)	BRL(<0.0576)	BRL(<0.0522)	BRL(<0.0584)	BRL(<0.0562)	BRL(<0.0487)	BRL(<0.0511)	BRL(<0.0529)
Aroclor 1221	BRL(<0.0514)	BRL(<0.0527)	BRL(<0.0509)	BRL(<0.0537)	BRL(<0.0508)	BRL(<0.0554)	BRL(<0.0576)	BRL(<0.0522)	BRL(<0.0584)	BRL(<0.0562)	BRL(<0.0487)	BRL(<0.0511)	BRL(<0.0529)
Aroclor 1232	BRL(<0.0514)	BRL(<0.0527)	BRL(<0.0509)	BRL(<0.0537)	BRL(<0.0508)	BRL(<0.0554)	BRL(<0.0576)	BRL(<0.0522)	BRL(<0.0584)	BRL(<0.0562)	BRL(<0.0487)	BRL(<0.0511)	BRL(<0.0529)
Aroclor 1242	BRL(<0.0514)	BRL(<0.0527)	BRL(<0.0509)	BRL(<0.0537)	BRL(<0.0508)	BRL(<0.0554)	BRL(<0.0576)	BRL(<0.0522)	BRL(<0.0584)	BRL(<0.0562)	BRL(<0.0487)	BRL(<0.0511)	BRL(<0.0529)
Aroclor 1248	BRL(<0.0342)	BRL(<0.0351)	BRL(<0.034)	BRL(<0.0358)	BRL(<0.0338)	BRL(<0.037)	BRL(<0.0384)	BRL(<0.0348)	BRL(<0.0389)	BRL(<0.0374)	BRL(<0.0325)	BRL(<0.0341)	BRL(<0.0353)
Aroclor 1254	BRL(<0.0514)	BRL(<0.0527)	BRL(<0.0509)	BRL(<0.0537)	BRL(<0.0508)	BRL(<0.0554)	BRL(<0.0576)	BRL(<0.0522)	BRL(<0.0584)	BRL(<0.0562)	BRL(<0.0487)	BRL(<0.0511)	BRL(<0.0529)
Aroclor 1260	0.139	0.16	0.0634	BRL(<0.0358)	BRL(<0.0338)	BRL(<0.037)	BRL(<0.0384)	BRL(<0.0348)	BRL(<0.0389)	0.112	0.0554	BRL(<0.0341)	BRL(<0.0353)
Aroclor 1262	BRL(<0.0171)	BRL(<0.0176)	BRL(<0.017)	BRL(<0.0179)	BRL(<0.0169)	BRL(<0.0185)	BRL(<0.0192)	BRL(<0.0174)	BRL(<0.0194)	BRL(<0.0187)	BRL(<0.0162)	BRL(<0.017)	BRL(<0.0176)
Aroclor 1268	BRL(<0.0171)	BRL(<0.0176)	BRL(<0.017)	BRL(<0.0179)	BRL(<0.0169)	BRL(<0.0185)	BRL(<0.0192)	BRL(<0.0174)	BRL(<0.0194)	BRL(<0.0187)	BRL(<0.0162)	BRL(<0.017)	BRL(<0.0176)

SAMPLE ID	CMU-B-5	CMU-B-6	CMU-B-7	CMU-B-8	CMU-C-1	CMU-C-1_DUP	CMU-C-2	CMU-C-3	CMU-C-4	CMU-C-5	CMU-C-6	CMU-C-7	CMU-C-8
SAMPLING DATE	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012	7/12/2012
LAB SAMPLE ID	L1212415-15	L1212415-16	L1212415-17	L1212415-18	L1212415-19	L1212415-20	L1212415-21	L1212415-22	L1212415-23	L1212415-24	L1212415-25	L1212415-26	L1212415-27
SAMPLE MATRIX	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)													
Aroclor 1016	BRL(<0.055)	BRL(<0.0512)	BRL(<0.0559)	BRL(<0.0534)	BRL(<0.054)	BRL(<0.052)	BRL(<0.0519)	BRL(<0.0544)	BRL(<0.0556)	BRL(<0.0513)	BRL(<0.057)	BRL(<0.0569)	BRL(<0.0552)
Aroclor 1221	BRL(<0.055)	BRL(<0.0512)	BRL(<0.0559)	BRL(<0.0534)	BRL(<0.054)	BRL(<0.052)	BRL(<0.0519)	BRL(<0.0544)	BRL(<0.0556)	BRL(<0.0513)	BRL(<0.057)	BRL(<0.0569)	BRL(<0.0552)
Aroclor 1232	BRL(<0.055)	BRL(<0.0512)	BRL(<0.0559)	BRL(<0.0534)	BRL(<0.054)	BRL(<0.052)	BRL(<0.0519)	BRL(<0.0544)	BRL(<0.0556)	BRL(<0.0513)	BRL(<0.057)	BRL(<0.0569)	BRL(<0.0552)
Aroclor 1242	BRL(<0.055)	BRL(<0.0512)	BRL(<0.0559)	BRL(<0.0534)	BRL(<0.054)	BRL(<0.052)	BRL(<0.0519)	BRL(<0.0544)	BRL(<0.0556)	BRL(<0.0513)	BRL(<0.057)	BRL(<0.0569)	BRL(<0.0552)
Aroclor 1248	BRL(<0.0367)	BRL(<0.0341)	BRL(<0.0372)	BRL(<0.0356)	BRL(<0.036)	BRL(<0.0347)	BRL(<0.0346)	BRL(<0.0363)	BRL(<0.0371)	BRL(<0.0342)	BRL(<0.038)	BRL(<0.038)	BRL(<0.0368)
Aroclor 1254	BRL(<0.055)	BRL(<0.0512)	BRL(<0.0559)	BRL(<0.0534)	BRL(<0.054)	BRL(<0.052)	BRL(<0.0519)	BRL(<0.0544)	BRL(<0.0556)	BRL(<0.0513)	BRL(<0.057)	BRL(<0.0569)	BRL(<0.0552)
Aroclor 1260	BRL(<0.0367)	BRL(<0.0341)	BRL(<0.0372)	BRL(<0.0356)	0.268	0.243	0.0784	0.0451	0.0592	BRL(<0.0342)	BRL(<0.038)	0.0381	0.0687
Aroclor 1262	BRL(<0.0183)	BRL(<0.0171)	BRL(<0.0186)	BRL(<0.0178)	BRL(<0.018)	BRL(<0.0173)	BRL(<0.0173)	BRL(<0.0181)	BRL(<0.0186)	BRL(<0.0171)	BRL(<0.019)	BRL(<0.019)	BRL(<0.0184)
Aroclor 1268	BRL(<0.0183)	BRL(<0.0171)	BRL(<0.0186)	BRL(<0.0178)	BRL(<0.018)	BRL(<0.0173)	BRL(<0.0173)	BRL(<0.0181)	BRL(<0.0186)	BRL(<0.0171)	BRL(<0.019)	BRL(<0.019)	BRL(<0.0184)

SAMPLE ID	CMU-D-1	CMU-D-2	CMU-D-3	CMU-D-4	CMU-D-5	CMU-D-6	CMU-D-7	CMU-D-8	CMU-E-1	CMU-E-2	CMU-E-3	CMU-E-4	CMU-E-5
SAMPLING DATE	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/12/2012	7/12/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/12/2012
LAB SAMPLE ID	L1212503-01	L1212503-02	L1212503-03	L1212503-04	L1212415-29	L1212415-30	L1212503-05	L1212503-06	L1212503-07	L1212503-08	L1212503-09	L1212503-10	L1212415-31
SAMPLE MATRIX	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)													
Aroclor 1016	BRL(<0.0587)	BRL(<0.0562)	BRL(<0.0581)	BRL(<0.0576)	BRL(<0.054)	BRL(<0.0522)	BRL(<0.0574)	BRL(<0.0578)	BRL(<0.0575)	BRL(<0.0582)	BRL(<0.0585)	BRL(<0.0588)	BRL(<0.0502)
Aroclor 1221	BRL(<0.0587)	BRL(<0.0562)	BRL(<0.0581)	BRL(<0.0576)	BRL(<0.054)	BRL(<0.0522)	BRL(<0.0574)	BRL(<0.0578)	BRL(<0.0575)	BRL(<0.0582)	BRL(<0.0585)	BRL(<0.0588)	BRL(<0.0502)
Aroclor 1232	BRL(<0.0587)	BRL(<0.0562)	BRL(<0.0581)	BRL(<0.0576)	BRL(<0.054)	BRL(<0.0522)	BRL(<0.0574)	BRL(<0.0578)	BRL(<0.0575)	BRL(<0.0582)	BRL(<0.0585)	BRL(<0.0588)	BRL(<0.0502)
Aroclor 1242	BRL(<0.0587)	BRL(<0.0562)	BRL(<0.0581)	BRL(<0.0576)	BRL(<0.054)	BRL(<0.0522)	BRL(<0.0574)	BRL(<0.0578)	BRL(<0.0575)	BRL(<0.0582)	BRL(<0.0585)	BRL(<0.0588)	BRL(<0.0502)
Aroclor 1248	BRL(<0.0391)	BRL(<0.0374)	BRL(<0.0388)	BRL(<0.0384)	BRL(<0.036)	BRL(<0.0348)	BRL(<0.0382)	BRL(<0.0385)	BRL(<0.0383)	BRL(<0.0388)	BRL(<0.039)	BRL(<0.0392)	BRL(<0.0335)
Aroclor 1254	BRL(<0.0587)	BRL(<0.0562)	BRL(<0.0581)	BRL(<0.0576)	BRL(<0.054)	BRL(<0.0522)	BRL(<0.0574)	BRL(<0.0578)	BRL(<0.0575)	BRL(<0.0582)	BRL(<0.0585)	BRL(<0.0588)	BRL(<0.0502)
Aroclor 1260	0.223	0.0985	BRL(<0.0388)	BRL(<0.0384)	BRL(<0.036)	BRL(<0.0348)	BRL(<0.0382)	BRL(<0.0385)	0.0522	BRL(<0.0388)	BRL(<0.039)	BRL(<0.0392)	BRL(<0.0335)
Aroclor 1262	BRL(<0.0196)	BRL(<0.0187)	BRL(<0.0194)	BRL(<0.0192)	BRL(<0.018)	BRL(<0.0174)	BRL(<0.0191)	BRL(<0.0193)	BRL(<0.0192)	BRL(<0.0194)	BRL(<0.0195)	BRL(<0.0196)	BRL(<0.0168)
Aroclor 1268	BRL(<0.0196)	BRL(<0.0187)	BRL(<0.0194)	BRL(<0.0192)	BRL(<0.018)	BRL(<0.0174)	BRL(<0.0191)	BRL(<0.0193)	BRL(<0.0192)	BRL(<0.0194)	BRL(<0.0195)	BRL(<0.0196)	BRL(<0.0168)

TABLE 3 - Summary of 07.2012 Building Materials Analytical Results

SAMPLE ID	CMU-E-6	CMU-E-7	CMU-E-8	CMU-F-1	CMU-F-2	CMU-F-3	CMU-F-4	CMU-F-5	CMU-F-6	CMU-F-7	CMU-F-8	CMU-G-1	CMU-G-2
SAMPLING DATE	7/12/2012	7/13/2012	7/13/2012	7/11/2012	7/11/2012	7/11/2012	7/11/2012	7/11/2012	7/11/2012	7/11/2012	7/11/2012	7/11/2012	7/11/2012
LAB SAMPLE ID	L1212415-32 R1	L1212503-11	L1212503-12	L1212310-11	L1212310-12	L1212310-13	L1212310-14	L1212310-15	L1212310-16	L1212310-17	L1212310-18	L1212310-02	L1212310-03
SAMPLE MATRIX	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)													
Aroclor 1016	BRL(<0.0577)	BRL(<0.0582)	BRL(<0.0571)	BRL(<0.0549)	BRL(<0.056)	BRL(<0.0535)	BRL(<0.0579)	BRL(<0.0546)	BRL(<0.0505)	BRL(<0.0563)	BRL(<0.0511)	BRL(<0.0521)	BRL(<0.0548)
Aroclor 1221	BRL(<0.0577)	BRL(<0.0582)	BRL(<0.0571)	BRL(<0.0549)	BRL(<0.056)	BRL(<0.0535)	BRL(<0.0579)	BRL(<0.0546)	BRL(<0.0505)	BRL(<0.0563)	BRL(<0.0511)	BRL(<0.0521)	BRL(<0.0548)
Aroclor 1232	BRL(<0.0577)	BRL(<0.0582)	BRL(<0.0571)	BRL(<0.0549)	BRL(<0.056)	BRL(<0.0535)	BRL(<0.0579)	BRL(<0.0546)	BRL(<0.0505)	BRL(<0.0563)	BRL(<0.0511)	BRL(<0.0521)	BRL(<0.0548)
Aroclor 1242	BRL(<0.0577)	BRL(<0.0582)	BRL(<0.0571)	BRL(<0.0549)	BRL(<0.056)	BRL(<0.0535)	BRL(<0.0579)	BRL(<0.0546)	BRL(<0.0505)	BRL(<0.0563)	BRL(<0.0511)	BRL(<0.0521)	BRL(<0.0548)
Aroclor 1248	BRL(<0.0385)	BRL(<0.0388)	BRL(<0.0381)	BRL(<0.0366)	BRL(<0.0373)	BRL(<0.0356)	BRL(<0.0386)	BRL(<0.0364)	BRL(<0.0337)	BRL(<0.0375)	BRL(<0.0341)	BRL(<0.0347)	BRL(<0.0366)
Aroclor 1254	BRL(<0.0577)	BRL(<0.0582)	BRL(<0.0571)	BRL(<0.0549)	BRL(<0.056)	BRL(<0.0535)	BRL(<0.0579)	BRL(<0.0546)	BRL(<0.0505)	BRL(<0.0563)	BRL(<0.0511)	BRL(<0.0521)	BRL(<0.0548)
Aroclor 1260	0.0532	0.0482	0.0499	0.0842	BRL(<0.0373)	0.0572	0.0574	BRL(<0.0364)	BRL(<0.0337)	BRL(<0.0375)	BRL(<0.0341)	0.0959	0.106
Aroclor 1262	BRL(<0.0192)	BRL(<0.0194)	BRL(<0.019)	BRL(<0.0183)	BRL(<0.0186)	BRL(<0.0178)	BRL(<0.0193)	BRL(<0.0182)	BRL(<0.0168)	BRL(<0.0188)	BRL(<0.017)	BRL(<0.0174)	BRL(<0.0183)
Aroclor 1268	BRL(<0.0192)	BRL(<0.0194)	BRL(<0.019)	BRL(<0.0183)	BRL(<0.0186)	BRL(<0.0178)	BRL(<0.0193)	BRL(<0.0182)	BRL(<0.0168)	BRL(<0.0188)	BRL(<0.017)	BRL(<0.0174)	BRL(<0.0183)

SAMPLE ID	CMU-G-3	CMU-G-4	CMU-G-5	CMU-G-6	CMU-G-7	CMU-G-8	CMU-H-1	CMU-H-1_DUP	CMU-H-2	CMU-H-3	CMU-H-4	CMU-H-5	CMU-H-6
SAMPLING DATE	7/11/2012	7/11/2012	7/11/2012	7/11/2012	7/11/2012	7/11/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012
LAB SAMPLE ID	L1212310-04	L1212310-05	L1212310-06	L1212310-07	L1212310-08	L1212310-09	L1212503-14	L1212503-15	L1212503-16	L1212503-17	L1212503-18	L1212503-19	L1212503-20
SAMPLE MATRIX	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)													
Aroclor 1016	BRL(<0.0514)	BRL(<0.0508)	BRL(<0.0505)	BRL(<0.0514)	BRL(<0.0581)	BRL(<0.0595)	BRL(<0.0567)	BRL(<0.0559)	BRL(<0.0569)	BRL(<0.0565)	BRL(<0.0586)	BRL(<0.0565)	BRL(<0.0567)
Aroclor 1221	BRL(<0.0514)	BRL(<0.0508)	BRL(<0.0505)	BRL(<0.0514)	BRL(<0.0581)	BRL(<0.0595)	BRL(<0.0567)	BRL(<0.0559)	BRL(<0.0569)	BRL(<0.0565)	BRL(<0.0586)	BRL(<0.0565)	BRL(<0.0567)
Aroclor 1232	BRL(<0.0514)	BRL(<0.0508)	BRL(<0.0505)	BRL(<0.0514)	BRL(<0.0581)	BRL(<0.0595)	BRL(<0.0567)	BRL(<0.0559)	BRL(<0.0569)	BRL(<0.0565)	BRL(<0.0586)	BRL(<0.0565)	BRL(<0.0567)
Aroclor 1242	BRL(<0.0514)	BRL(<0.0508)	BRL(<0.0505)	BRL(<0.0514)	BRL(<0.0581)	BRL(<0.0595)	BRL(<0.0567)	BRL(<0.0559)	BRL(<0.0569)	BRL(<0.0565)	BRL(<0.0586)	BRL(<0.0565)	BRL(<0.0567)
Aroclor 1248	BRL(<0.0342)	BRL(<0.0338)	BRL(<0.0337)	BRL(<0.0343)	BRL(<0.0388)	BRL(<0.0397)	BRL(<0.0378)	BRL(<0.0372)	BRL(<0.038)	BRL(<0.0377)	BRL(<0.0391)	BRL(<0.0377)	BRL(<0.0378)
Aroclor 1254	BRL(<0.0514)	BRL(<0.0508)	BRL(<0.0505)	BRL(<0.0514)	BRL(<0.0581)	BRL(<0.0595)	BRL(<0.0567)	BRL(<0.0559)	BRL(<0.0569)	BRL(<0.0565)	BRL(<0.0586)	BRL(<0.0565)	BRL(<0.0567)
Aroclor 1260	BRL(<0.0342)	0.0609	BRL(<0.0337)	0.0526	0.0556	BRL(<0.0397)	0.181	0.524	0.148	0.0564	BRL(<0.0391)	0.0679	0.184
Aroclor 1262	BRL(<0.0171)	BRL(<0.0169)	BRL(<0.0168)	BRL(<0.0172)	BRL(<0.0194)	BRL(<0.0198)	BRL(<0.0189)	BRL(<0.0186)	BRL(<0.019)	BRL(<0.0188)	BRL(<0.0195)	BRL(<0.0188)	BRL(<0.0189)
Aroclor 1268	BRL(<0.0171)	BRL(<0.0169)	BRL(<0.0168)	BRL(<0.0172)	BRL(<0.0194)	BRL(<0.0198)	BRL(<0.0189)	BRL(<0.0186)	BRL(<0.019)	BRL(<0.0188)	BRL(<0.0195)	BRL(<0.0188)	BRL(<0.0189)

SAMPLE ID	CMU-H-7	CMU-H-8	CMU-I-1	CMU-I-2	CMU-I-3	CMU-I-4	CMU-I-5	CMU-I-6	CMU-I-7	CMU-I-8	CMU-I-8_DUP	CMU-J-1	CMU-J-2
SAMPLING DATE	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012
LAB SAMPLE ID	L1212504-02	L1212504-03	L1212504-04	L1212504-05	L1212504-06	L1212504-07	L1212504-08	L1212504-09	L1212504-10	L1212504-11	L1212504-13	L1212504-14	L1212504-15
SAMPLE MATRIX	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)													
Aroclor 1016	BRL(<0.0559)	BRL(<0.0558)	BRL(<0.0593)	BRL(<0.0589)	BRL(<0.0587)	BRL(<0.0587)	BRL(<0.0577)	BRL(<0.0567)	BRL(<0.0567)	BRL(<0.0576)	BRL(<0.0571)	BRL(<0.0566)	BRL(<0.0579)
Aroclor 1221	BRL(<0.0559)	BRL(<0.0558)	BRL(<0.0593)	BRL(<0.0589)	BRL(<0.0587)	BRL(<0.0587)	BRL(<0.0577)	BRL(<0.0567)	BRL(<0.0567)	BRL(<0.0576)	BRL(<0.0571)	BRL(<0.0566)	BRL(<0.0579)
Aroclor 1232	BRL(<0.0559)	BRL(<0.0558)	BRL(<0.0593)	BRL(<0.0589)	BRL(<0.0587)	BRL(<0.0587)	BRL(<0.0577)	BRL(<0.0567)	BRL(<0.0567)	BRL(<0.0576)	BRL(<0.0571)	BRL(<0.0566)	BRL(<0.0579)
Aroclor 1242	BRL(<0.0559)	BRL(<0.0558)	BRL(<0.0593)	BRL(<0.0589)	BRL(<0.0587)	BRL(<0.0587)	BRL(<0.0577)	BRL(<0.0567)	BRL(<0.0567)	BRL(<0.0576)	BRL(<0.0571)	BRL(<0.0566)	BRL(<0.0579)
Aroclor 1248	BRL(<0.0372)	BRL(<0.0372)	BRL(<0.0395)	BRL(<0.0393)	BRL(<0.0391)	BRL(<0.0391)	BRL(<0.0385)	BRL(<0.0378)	BRL(<0.0378)	BRL(<0.0384)	BRL(<0.0381)	BRL(<0.0377)	BRL(<0.0386)
Aroclor 1254	BRL(<0.0559)	BRL(<0.0558)	BRL(<0.0593)	BRL(<0.0589)	BRL(<0.0587)	BRL(<0.0587)	BRL(<0.0577)	BRL(<0.0567)	BRL(<0.0567)	BRL(<0.0576)	BRL(<0.0571)	BRL(<0.0566)	BRL(<0.0579)
Aroclor 1260	0.0731	0.102	0.428	0.0754	0.107	0.103	0.04	0.0892	0.0575	0.1	0.112	0.449	0.5
Aroclor 1262	BRL(<0.0186)	BRL(<0.0186)	BRL(<0.0198)	BRL(<0.0196)	BRL(<0.0196)	BRL(<0.0196)	BRL(<0.0192)	BRL(<0.0189)	BRL(<0.0189)	BRL(<0.0192)	BRL(<0.019)	BRL(<0.0189)	BRL(<0.0193)
Aroclor 1268	BRL(<0.0186)	BRL(<0.0186)	BRL(<0.0198)	BRL(<0.0196)	BRL(<0.0196)	BRL(<0.0196)	BRL(<0.0192)	BRL(<0.0189)	BRL(<0.0189)	BRL(<0.0192)	BRL(<0.019)	BRL(<0.0189)	BRL(<0.0193)

TABLE 3 - Summary of 07.2012 Building Materials Analytical Results

SAMPLE ID	CMU-J-3	CMU-J-4	CMU-J-5	CMU-J-6	CMU-J-7	CMU-J-8	CMU-J-8_DUP	CRACK-1	CRACK-2	CRACK-3	CRACK-4	FLOOR 2-3	FLOOR 2-4	FLOOR-2-1 (CAULK)
SAMPLING DATE	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/13/2012	7/11/2012	7/13/2012	7/13/2012	7/13/2012	7/17/2012	7/17/2012	7/17/2012
LAB SAMPLE ID	L1212504-16	L1212504-17	L1212504-18	L1212504-19	L1212504-20	L1212504-21	L1212504-22	L1212310-10	L1212503-13	L1212504-12	L1212504-24	L1212650-04	L1212650-05	L1212650-02
SAMPLE MATRIX	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Caulking Material
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)														
Aroclor 1016	BRL(<0.057)	BRL(<0.0585)	BRL(<0.0582)	BRL(<0.0561)	BRL(<0.0574)	BRL(<0.0588)	BRL(<0.0584)	BRL(<0.0579)	BRL(<0.058)	BRL(<0.0587)	BRL(<0.0578)	BRL(<0.0522)	BRL(<0.0548)	BRL(<0.0585)
Aroclor 1221	BRL(<0.057)	BRL(<0.0585)	BRL(<0.0582)	BRL(<0.0561)	BRL(<0.0574)	BRL(<0.0588)	BRL(<0.0584)	BRL(<0.0579)	BRL(<0.058)	BRL(<0.0587)	BRL(<0.0578)	BRL(<0.0522)	BRL(<0.0548)	BRL(<0.0585)
Aroclor 1232	BRL(<0.057)	BRL(<0.0585)	BRL(<0.0582)	BRL(<0.0561)	BRL(<0.0574)	BRL(<0.0588)	BRL(<0.0584)	BRL(<0.0579)	BRL(<0.058)	BRL(<0.0587)	BRL(<0.0578)	BRL(<0.0522)	BRL(<0.0548)	BRL(<0.0585)
Aroclor 1242	BRL(<0.057)	BRL(<0.0585)	BRL(<0.0582)	BRL(<0.0561)	BRL(<0.0574)	BRL(<0.0588)	BRL(<0.0584)	BRL(<0.0579)	BRL(<0.058)	BRL(<0.0587)	BRL(<0.0578)	BRL(<0.0522)	BRL(<0.0548)	BRL(<0.0585)
Aroclor 1248	BRL(<0.038)	BRL(<0.039)	BRL(<0.0388)	BRL(<0.0374)	BRL(<0.0382)	BRL(<0.0392)	BRL(<0.0389)	BRL(<0.0386)	BRL(<0.0387)	BRL(<0.0391)	BRL(<0.0385)	BRL(<0.0348)	BRL(<0.0365)	BRL(<0.039)
Aroclor 1254	BRL(<0.057)	BRL(<0.0585)	BRL(<0.0582)	BRL(<0.0561)	BRL(<0.0574)	BRL(<0.0588)	BRL(<0.0584)	BRL(<0.0579)	0.224	BRL(<0.0587)	BRL(<0.0578)	BRL(<0.0522)	BRL(<0.0548)	BRL(<0.0585)
Aroclor 1260	0.0684	0.0603	0.0575	0.128	0.0914	0.0968	0.088	BRL(<0.0386)	0.368	0.0809	BRL(<0.0385)	0.114	0.336	1.52
Aroclor 1262	BRL(<0.019)	BRL(<0.0195)	BRL(<0.0194)	BRL(<0.0187)	BRL(<0.0191)	BRL(<0.0196)	BRL(<0.0194)	BRL(<0.0193)	BRL(<0.0194)	BRL(<0.0196)	BRL(<0.0193)	BRL(<0.0174)	BRL(<0.0182)	BRL(<0.0195)
Aroclor 1268	BRL(<0.019)	BRL(<0.0195)	BRL(<0.0194)	BRL(<0.0187)	BRL(<0.0191)	BRL(<0.0196)	BRL(<0.0194)	BRL(<0.0193)	BRL(<0.0194)	BRL(<0.0196)	BRL(<0.0193)	BRL(<0.0174)	BRL(<0.0182)	BRL(<0.0195)

SAMPLE ID	FLOOR-2-2 (CAULK)	WALL-1-1	WALL-1-2	WALL-1-3	WALL-1-4	WALL-3-1 (CAULK)	WALL-3-2 (CAULK)	WALL-3-3	WALL-3-4	WALL-4-1	WALL-4-2	WALL-4-3	WALL-4-4	WALL-4-4 (DUP)
SAMPLING DATE	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012	7/17/2012
LAB SAMPLE ID	L1212650-03	L1212650-11	L1212650-12	L1212650-13	L1212650-14	L1212650-15	L1212650-16	L1212650-17	L1212650-18	L1212650-06	L1212650-07	L1212650-08	L1212650-09	L1212650-10
SAMPLE MATRIX	Caulking Material	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Caulking Material	Caulking Material	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder	Concrete Powder
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)														
Aroclor 1016	BRL(<0.0579)	BRL(<0.055)	BRL(<0.0516)	BRL(<0.113)	BRL(<0.058)	BRL(<1030)	BRL(<1040)	BRL(<0.0572)	BRL(<0.0586)	BRL(<0.0527)	BRL(<0.0516)	BRL(<0.051)	BRL(<0.0534)	BRL(<0.0535)
Aroclor 1221	BRL(<0.0579)	BRL(<0.055)	BRL(<0.0516)	BRL(<0.113)	BRL(<0.058)	BRL(<1030)	BRL(<1040)	BRL(<0.0572)	BRL(<0.0586)	BRL(<0.0527)	BRL(<0.0516)	BRL(<0.051)	BRL(<0.0534)	BRL(<0.0535)
Aroclor 1232	BRL(<0.0579)	BRL(<0.055)	BRL(<0.0516)	BRL(<0.113)	BRL(<0.058)	BRL(<1030)	BRL(<1040)	BRL(<0.0572)	BRL(<0.0586)	BRL(<0.0527)	BRL(<0.0516)	BRL(<0.051)	BRL(<0.0534)	BRL(<0.0535)
Aroclor 1242	BRL(<0.0579)	BRL(<0.055)	BRL(<0.0516)	BRL(<0.113)	BRL(<0.058)	BRL(<1030)	BRL(<1040)	BRL(<0.0572)	BRL(<0.0586)	BRL(<0.0527)	BRL(<0.0516)	BRL(<0.051)	BRL(<0.0534)	BRL(<0.0535)
Aroclor 1248	BRL(<0.0386)	BRL(<0.0367)	BRL(<0.0344)	BRL(<0.0753)	BRL(<0.0387)	BRL(<690)	BRL(<696)	BRL(<0.0382)	BRL(<0.0391)	BRL(<0.0351)	BRL(<0.0344)	BRL(<0.034)	BRL(<0.0356)	BRL(<0.0356)
Aroclor 1254	BRL(<0.0579)	BRL(<0.055)	BRL(<0.0516)	BRL(<0.113)	BRL(<0.058)	BRL(<1030)	BRL(<1040)	BRL(<0.0572)	0.922	BRL(<0.0527)	BRL(<0.0516)	BRL(<0.051)	BRL(<0.0534)	BRL(<0.0535)
Aroclor 1260	0.651	0.142	0.17	0.264	0.14	**18400**	**22500**	0.491	0.854	BRL(<0.0351)	BRL(<0.0344)	BRL(<0.034)	0.0558	BRL(<0.0356)
Aroclor 1262	BRL(<0.0193)	BRL(<0.0183)	BRL(<0.0172)	BRL(<0.0377)	BRL(<0.0193)	BRL(<345)	BRL(<348)	BRL(<0.0191)	BRL(<0.0195)	BRL(<0.0176)	BRL(<0.0172)	BRL(<0.017)	BRL(<0.0178)	BRL(<0.0178)
Aroclor 1268	BRL(<0.0193)	BRL(<0.0183)	BRL(<0.0172)	BRL(<0.0377)	BRL(<0.0193)	BRL(<345)	BRL(<348)	BRL(<0.0191)	BRL(<0.0195)	BRL(<0.0176)	BRL(<0.0172)	BRL(<0.017)	BRL(<0.0178)	BRL(<0.0178)

APPENDIX A – PHOTOGRAPHIC DOCUMENTATION

Photo 1

Photo depicts site structure, looking northeast.

Photo 2

Photo depicts southern side of site structure, looking northwest.

Photo 3

Photo depicts western side of site structure, looking northeast.

Photo 4

Photo depicts Nover-Armstrong personnel collecting samples at CMU Sampling Group F.

PHOTOGRAPHIC DOCUMENTATION

21 Water Street

Cambridge, Massachusetts

Photographs Documented 7.11.12 - 7.25.12

NAA File P2814

Photo 5

Photo depicts CMU Sampling Groups A (right) and B (left).

Photo 6

Photo depicts individual sample cluster CMU-A-8.

Photo 7

Photo depicts CMU Sampling Group C.

Photo 8

Photo depicts CMU Sampling Group D.

PHOTOGRAPHIC DOCUMENTATION

21 Water Street

Cambridge, Massachusetts

Photographs Documented 7.11.12 - 7.25.12

NAA File P2814

Photo 9

Photo depicts CMU Sampling Group E.

Photo 10

Photo depicts CMU Sampling Group F.

Photo 11

Photo depicts CMU Sampling Group G.

Photo 12

Photo depicts CMU Sampling Groups H (foreground), I (middle), and J (background).

PHOTOGRAPHIC DOCUMENTATION

21 Water Street

Cambridge, Massachusetts

Photographs Documented 7.11.12 - 7.25.12

NAA File P2814

Photo 13

Photo depicts sampling location CRACK-1, on the western side of the site structure.

Photo 14

Photo depicts sampling location CRACK-2, on the southern side of the site structure.

Photo 15

Photo depicts sampling location CRACK-3, on the northern side of the site structure.

Photo 16

Photo depicts sampling location CRACK-4, on the eastern side of the site structure.

PHOTOGRAPHIC DOCUMENTATION

21 Water Street

Cambridge, Massachusetts

Photographs Documented 7.11.12 - 7.25.12

NAA File P2814

Photo 17

Photo depicts sampling location WALL-1.

Photo 18

Photo depicts sampling location WALL-3.

Photo 19

Photo depicts sampling location WALL-4.

Photo 20

Photo depicts sampling location FLOOR-2.

PHOTOGRAPHIC DOCUMENTATION

21 Water Street

Cambridge, Massachusetts

Photographs Documented 7.11.12 - 7.25.12

NAA File P2814

APPENDIX B – FIELD SAMPLING LOGS

NOVER-ARMSTRONG ASSOC., INC. FIELD SAMPLING LOG

DATE: 7/11/12

SITE LOCATION: 21 Water St, Cambridge (MBTA)

PROJECT NUMBER: P2814

INITIALS OF PERSON MAKING LOG ENTRY: M.A.

WEATHER CONDITIONS: Sunny 90°F

NOVER-ARMSTRONG PERSONNEL ON-SITE: Matt Alger, Brian Lydon

ARRIVE: 7:00 am

DEPART: 2:30 pm

VISITORS: Marylou Armstrong (Nover-Armstrong) 1:45-2:30 pm

PURPOSE / SUMMARY OF TASK(S): Collect Concrete Masonry Unit (CMU) samples - PCB analysis

EQUIPMENT: Hammer Drill, scissor lift, fall protection PPE, ladder

NOTES/OBSERVATIONS: Lab method - EPA 8082 w/ Soxhlet Extraction

SAMPLE ID	SAMPLE TIME	SAMPLE MATRIX	SAMPLE TYPE	SAMPLER INITIALS	LAB ANALYSIS	FIELD SCREENING
EQUIP BLANK-1	8:45am	DI water	Grab	MA	PCBs	None
CMU-G-1	9:00am	Concrete Powder				
CMU-G-2	9:10am					
CMU-G-3	9:20am					
CMU-G-4	9:35am					
CMU-G-5	9:50am					
CMU-G-6	10:05am					
CMU-G-7	10:25am					
CMU-G-8	10:45am					
CRACK-1	11:30am					
CMU-F-1	12:15pm					
CMU-F-2	12:25pm					
CMU-F-3	1:15pm					
CMU-F-4	1:25pm					
CMU-F-5	12:40pm					
CMU-F-6	12:45pm					
CMU-F-7	1:35pm					
CMU-F-8	1:45pm					

NOVER-ARMSTRONG ASSOC., INC. FIELD SAMPLING LOG

DATE: 7/12/12

SITE LOCATION: 21 Water St, Cambridge (MBTA)

PROJECT NUMBER: P2814

INITIALS OF PERSON MAKING LOG ENTRY: M.A.

WEATHER CONDITIONS: Sunny 90°F

NOVER-ARMSTRONG PERSONNEL ON-SITE: Matt Alger, Brian Lydon

ARRIVE: 7:00 am

DEPART: 2:00 pm

VISITORS: Beck Staley (Kleinfelder) ~11:00-11:30 am

PURPOSE / SUMMARY OF TASK(S): Collect CMU samples for PCB analysis

EQUIPMENT: Hammer Drill, Scissor lift, fall protection, ladder, PPE

NOTES/OBSERVATIONS: Lab method - EPA 8082 w/ Soxhlet Extraction

SAMPLE ID	SAMPLE TIME	SAMPLE MATRIX	SAMPLE TYPE	SAMPLER INITIALS	LAB ANALYSIS	FIELD SCREENING
EQUIP BLANK2	7:55am	DI Water	Grab	MA	PCBs	None
CMU-A-1	8:00am	Concrete powder				
CMU-A-1_DUP	8:00am					
CMU-A-2	8:07am					
CMU-A-3	8:14am					
CMU-A-4	8:20am					
CMU-A-5	8:30am					
CMU-A-6	8:37am					
CMU-A-7	8:45am					
CMU-A-8	8:50am					
CMU-B-1	9:30am					
CMU-B-2	9:35am					
CMU-B-3	9:42am					
CMU-B-4	9:50am					
CMU-B-5	10:00am					
CMU-B-6	10:10am					
CMU-B-7	10:15am					
CMU-B-8	10:30am					
CMU-C-1	11:30am					
CMU-C-1_DUP	11:30am					
CMU-C-2	11:35am					
CMU-C-3	11:40am					
CMU-C-4	11:45am					
CMU-C-5	11:50am					
CMU-C-6	11:55am					
CMU-C-7	12:00pm					
CMU-C-8	12:05pm					

(cont.)

NOVER-ARMSTRONG ASSOC., INC. FIELD SAMPLING LOG

DATE: 7/12/12

SITE LOCATION: 21 Water St, Cambridge (MBTA)

PROJECT NUMBER: P2814

INITIALS OF PERSON MAKING LOG ENTRY: MA

WEATHER CONDITIONS: Sunny 90°F

NOVER-ARMSTRONG PERSONNEL ON-SITE: Matt Alger, Brian Lydon

ARRIVE: 7:00 am

DEPART: 2:00 pm

VISITORS: Beck Straley (Kleinfelder) ~11:00-11:30 am

PURPOSE / SUMMARY OF TASK(S): Collect CMU samples for PCB analysis

EQUIPMENT: Hammer Drill, scissor lift, fall protection, ladder PPE

NOTES/OBSERVATIONS: Lab Method - EPA 8082 w/ Soxhlet extraction

SAMPLE ID	SAMPLE TIME	SAMPLE MATRIX	SAMPLE TYPE	SAMPLER INITIALS	LAB ANALYSIS	FIELD SCREENING
EQUIPBLANK-3	2:00 pm	DI Water	Grab	MA	PCBs	None
CMU-D-5	1:00 pm	Concrete Powder				
CMU-D-6	1:05 pm					
CMU-E-5	1:10 pm					
CMU-E-6	1:15 pm					

NOVER-ARMSTRONG ASSOC., INC. FIELD SAMPLING LOG

DATE: 7/13/12

SITE LOCATION: 21 Water St, Cambridge (MBTA)

PROJECT NUMBER: P2814

INITIALS OF PERSON MAKING LOG ENTRY: MA

WEATHER CONDITIONS: Sunny 90°F

NOVER-ARMSTRONG PERSONNEL ON-SITE: Matt Alger, Brian Lydon, Colin Kelley

ARRIVE: 7:00 am

DEPART: 2:00 pm

VISITORS: Beck Straley (Kleinfelder) ~ 12:00 - 12:30 pm

PURPOSE / SUMMARY OF TASK(S): Collect CMU samples for PCB analysis

EQUIPMENT: Hammer drill, PPE, ladder

NOTES/OBSERVATIONS: Lab method EPA 8082 w/ Soxhlet Extraction

SAMPLE ID	SAMPLE TIME	SAMPLE MATRIX	SAMPLE TYPE	SAMPLER INITIALS	LAB ANALYSIS	FIELD SCREENING
CMU-D-1	8:00 am	Concrete powder	Grab	MA	PCBs	None
CMU-D-2	8:05 am					
CMU-D-3	8:10 am					
CMU-D-4	8:15 am					
CMU-D-7	8:20 am					
CMU-D-8	8:25 am					
CMU-E-1	8:40 am					
CMU-E-2	8:45 am					
CMU-E-3	8:50 am					
CMU-E-4	8:55 am					
CMU-E-7	9:00 am					
CMU-E-8	9:05 am					
CRACK-2	9:10 am					
CMU-H-1	9:30 am					
CMU-H-1_DUP	9:30 am					
CMU-H-2	9:40 am					
CMU-H-3	9:45 am					
CMU-H-4	9:50 am					
CMU-H-5	9:55 am					
CMU-H-6	10:00 am					
EQUIP BLANK-1	9:20 am	DI Water				
CMU-H-7	10:05 am	Concrete Powder				
CMU-H-8	10:10 am					
CMU-I-1	10:20 am					
CMU-I-2	10:25 am					
CMU-I-3	10:30 am					
CMU-I-4	10:35 am					

(cont.)

NOVER-ARMSTRONG ASSOC., INC. FIELD SAMPLING LOG

DATE: 7/13/12

SITE LOCATION: 21 Water St, Cambridge (MBTA)

PROJECT NUMBER: P2814

INITIALS OF PERSON MAKING LOG ENTRY: MA

WEATHER CONDITIONS: Sunny 90°F

NOVER-ARMSTRONG PERSONNEL ON-SITE: Matt Alger, Brian Lydon, Colin Kelley

ARRIVE: 7:00 am

DEPART: 2:00 pm

VISITORS: Beck Straley (Kleinfelder) ~12:00-12:30 pm

PURPOSE / SUMMARY OF TASK(S): Collect CMU samples for PCB analysis

EQUIPMENT: Hammer drill, PPE, ladder

NOTES/OBSERVATIONS: Lab method EPA 8082 w/ Soxhlet extraction

SAMPLE ID	SAMPLE TIME	SAMPLE MATRIX	SAMPLE TYPE	SAMPLER INITIALS	LAB ANALYSIS	FIELD SCREENING
CMU-I-5	10:40am	Concrete powder	Grab	MA	PCBs	None
CMU-I-6	10:45am					
CMU-I-7	10:50am					
CMU-I-8	10:55am					
CMU-I-8_DUP	10:55am					
CRACK-3	10:25am					
CMU-J-1	11:00am					
CMU-J-2	11:05am					
CMU-J-3	11:10am					
CMU-J-4	11:15am					
CMU-J-5	11:20am					
CMU-J-6	11:25am					
CMU-J-7	11:30am					
CMU-J-8	11:35am					
CMU-J-8_DUP	11:35am					
EQUIP BLANK-5	12:00pm	DI water				
CRACK-4	12:15pm	Concrete Powder				

NOVER-ARMSTRONG ASSOC., INC. FIELD SAMPLING LOG

DATE: 7-17-12

SITE LOCATION: 21 Water st, Cambridge MA (MBTA)

PROJECT NUMBER: P2514

INITIALS OF PERSON MAKING LOG ENTRY: BL

WEATHER CONDITIONS: Sunny, 90° +

NOVER-ARMSTRONG PERSONNEL ON-SITE: Brian Lydon, Marylee Armstrong, Colin Kelley

ARRIVE: 6:30

DEPART: 11:30

VISITORS: Beck Straley (Kleinfelder) 10:15-10:40

PURPOSE / SUMMARY OF TASK(S): collect floor & wall caulking sample and concrete sample for PCB analysis

EQUIPMENT: hammer drill, PPE, chisel, knife, sample scoop

NOTES/OBSERVATIONS: Lab method - EPA 8082 w/ Soxhlet Extraction

SAMPLE ID	SAMPLE TIME	SAMPLE MATRIX	SAMPLE TYPE	SAMPLER INITIALS	LAB ANALYSIS	FIELD SCREENING
Equipment Blank	740	aqueous	grab	BL	PCB's	None
Floor-2-1	740	caulk				
Floor-2-2	740	caulk				
Floor-2-3	750	concrete powder				
Floor-2-4	800					
Wall-4-1	820					
Wall-4-2	830					
Wall-4-3	840					
Wall-4-4	850					
Wall-4-4(DUP)	850					
Wall-1-1	910					
Wall-1-2	920					
Wall-1-3	930					
Wall-1-4	940					
Wall-3-1	1000	caulk				
Wall-3-2	1010	caulk				
Wall-3-3	1020	concrete/caulk				
Wall-3-4	1030	"				

APPENDIX C – ALPHA ANALYTICAL REPORTS

ANALYTICAL REPORT

Lab Number:	L1212310
Client:	Nover-Armstrong Associates 124 Main Street Unit 2GG Carver, MA 02330
ATTN:	Matt Alger
Phone:	(508) 866-8383
Project Name:	MBTA/LECHMERE
Project Number:	P2814
Report Date:	07/18/12

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1212310-01	EQUIP BLANK -1	CAMBRIDGE	07/11/12 08:45
L1212310-02	CMU-G-1	CAMBRIDGE	07/11/12 09:00
L1212310-03	CMU-G-2	CAMBRIDGE	07/11/12 09:10
L1212310-04	CMU-G-3	CAMBRIDGE	07/11/12 09:20
L1212310-05	CMU-G-4	CAMBRIDGE	07/11/12 09:35
L1212310-06	CMU-G-5	CAMBRIDGE	07/11/12 09:50
L1212310-07	CMU-G-6	CAMBRIDGE	07/11/12 10:05
L1212310-08	CMU-G-7	CAMBRIDGE	07/11/12 10:25
L1212310-09	CMU-G-8	CAMBRIDGE	07/11/12 10:45
L1212310-10	CRACK-1	CAMBRIDGE	07/11/12 11:30
L1212310-11	CMU-F-1	CAMBRIDGE	07/11/12 12:15
L1212310-12	CMU-F-2	CAMBRIDGE	07/11/12 12:25
L1212310-13	CMU-F-3	CAMBRIDGE	07/11/12 13:15
L1212310-14	CMU-F-4	CAMBRIDGE	07/11/12 13:25
L1212310-15	CMU-F-5	CAMBRIDGE	07/11/12 12:40
L1212310-16	CMU-F-6	CAMBRIDGE	07/11/12 12:45
L1212310-17	CMU-F-7	CAMBRIDGE	07/11/12 13:35
L1212310-18	CMU-F-8	CAMBRIDGE	07/11/12 13:45

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is 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
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name: MBTA/LECHMERE **Lab Number:** L1212310
Project Number: P2814 **Report Date:** 07/18/12

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: MBTA/LECHMERE **Lab Number:** L1212310
Project Number: P2814 **Report Date:** 07/18/12

Case Narrative (continued)

MCP Related Narratives

PCBs

In reference to question H:

The dual column RPDs for L1212310-07 and -08 are above the acceptance criteria for Aroclor 1260; however, no obvious column interferences are present. The higher of the two results are reported and qualified with a "P".

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Elizabeth Simmons

Title: Technical Director/Representative Date: 07/18/12

ORGANICS

PCBS

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-01	Date Collected:	07/11/12 08:45
Client ID:	EQUIP BLANK -1	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	97,8082	Extraction Date:	07/12/12 11:18
Analytical Date:	07/13/12 20:54	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/12/12
		Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/12/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/l	0.250	--	1
Aroclor 1221	ND		ug/l	0.250	--	1
Aroclor 1232	ND		ug/l	0.250	--	1
Aroclor 1242	ND		ug/l	0.250	--	1
Aroclor 1248	ND		ug/l	0.250	--	1
Aroclor 1254	ND		ug/l	0.250	--	1
Aroclor 1260	ND		ug/l	0.250	--	1
Aroclor 1262	ND		ug/l	0.250	--	1
Aroclor 1268	ND		ug/l	0.250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	103		30-150
Decachlorobiphenyl	89		30-150
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	73		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-02	Date Collected:	07/11/12 09:00
Client ID:	CMU-G-1	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 21:51	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	52.1	--	1
Aroclor 1221	ND		ug/kg	52.1	--	1
Aroclor 1232	ND		ug/kg	52.1	--	1
Aroclor 1242	ND		ug/kg	52.1	--	1
Aroclor 1248	ND		ug/kg	34.7	--	1
Aroclor 1254	ND		ug/kg	52.1	--	1
Aroclor 1260	95.9		ug/kg	34.7	--	1
Aroclor 1262	ND		ug/kg	17.4	--	1
Aroclor 1268	ND		ug/kg	17.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	71		30-150
Decachlorobiphenyl	82		30-150
2,4,5,6-Tetrachloro-m-xylene	69		30-150
Decachlorobiphenyl	76		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-03	Date Collected:	07/11/12 09:10
Client ID:	CMU-G-2	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 22:06	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	54.8	--	1
Aroclor 1221	ND		ug/kg	54.8	--	1
Aroclor 1232	ND		ug/kg	54.8	--	1
Aroclor 1242	ND		ug/kg	54.8	--	1
Aroclor 1248	ND		ug/kg	36.6	--	1
Aroclor 1254	ND		ug/kg	54.8	--	1
Aroclor 1260	106		ug/kg	36.6	--	1
Aroclor 1262	ND		ug/kg	18.3	--	1
Aroclor 1268	ND		ug/kg	18.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	89		30-150
Decachlorobiphenyl	94		30-150
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	89		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-04	Date Collected:	07/11/12 09:20
Client ID:	CMU-G-3	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 22:22	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.4	--	1
Aroclor 1221	ND		ug/kg	51.4	--	1
Aroclor 1232	ND		ug/kg	51.4	--	1
Aroclor 1242	ND		ug/kg	51.4	--	1
Aroclor 1248	ND		ug/kg	34.2	--	1
Aroclor 1254	ND		ug/kg	51.4	--	1
Aroclor 1260	ND		ug/kg	34.2	--	1
Aroclor 1262	ND		ug/kg	17.1	--	1
Aroclor 1268	ND		ug/kg	17.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	81		30-150
Decachlorobiphenyl	96		30-150
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	94		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-05	Date Collected:	07/11/12 09:35
Client ID:	CMU-G-4	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 22:37	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	50.8	--	1
Aroclor 1221	ND		ug/kg	50.8	--	1
Aroclor 1232	ND		ug/kg	50.8	--	1
Aroclor 1242	ND		ug/kg	50.8	--	1
Aroclor 1248	ND		ug/kg	33.8	--	1
Aroclor 1254	ND		ug/kg	50.8	--	1
Aroclor 1260	60.9		ug/kg	33.8	--	1
Aroclor 1262	ND		ug/kg	16.9	--	1
Aroclor 1268	ND		ug/kg	16.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	88		30-150
Decachlorobiphenyl	101		30-150
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	92		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-06	Date Collected:	07/11/12 09:50
Client ID:	CMU-G-5	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 22:53	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	50.5	--	1
Aroclor 1221	ND		ug/kg	50.5	--	1
Aroclor 1232	ND		ug/kg	50.5	--	1
Aroclor 1242	ND		ug/kg	50.5	--	1
Aroclor 1248	ND		ug/kg	33.7	--	1
Aroclor 1254	ND		ug/kg	50.5	--	1
Aroclor 1260	ND		ug/kg	33.7	--	1
Aroclor 1262	ND		ug/kg	16.8	--	1
Aroclor 1268	ND		ug/kg	16.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	100		30-150
2,4,5,6-Tetrachloro-m-xylene	82		30-150
Decachlorobiphenyl	91		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-07	Date Collected:	07/11/12 10:05
Client ID:	CMU-G-6	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 23:08	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.4	--	1
Aroclor 1221	ND		ug/kg	51.4	--	1
Aroclor 1232	ND		ug/kg	51.4	--	1
Aroclor 1242	ND		ug/kg	51.4	--	1
Aroclor 1248	ND		ug/kg	34.3	--	1
Aroclor 1254	ND		ug/kg	51.4	--	1
Aroclor 1260	52.6	P	ug/kg	34.3	--	1
Aroclor 1262	ND		ug/kg	17.2	--	1
Aroclor 1268	ND		ug/kg	17.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	104		30-150
2,4,5,6-Tetrachloro-m-xylene	88		30-150
Decachlorobiphenyl	97		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-08	Date Collected:	07/11/12 10:25
Client ID:	CMU-G-7	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 23:23	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.1	--	1
Aroclor 1221	ND		ug/kg	58.1	--	1
Aroclor 1232	ND		ug/kg	58.1	--	1
Aroclor 1242	ND		ug/kg	58.1	--	1
Aroclor 1248	ND		ug/kg	38.8	--	1
Aroclor 1254	ND		ug/kg	58.1	--	1
Aroclor 1260	55.6	P	ug/kg	38.8	--	1
Aroclor 1262	ND		ug/kg	19.4	--	1
Aroclor 1268	ND		ug/kg	19.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	94		30-150
Decachlorobiphenyl	103		30-150
2,4,5,6-Tetrachloro-m-xylene	91		30-150
Decachlorobiphenyl	98		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-09	Date Collected:	07/11/12 10:45
Client ID:	CMU-G-8	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 02:20	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	59.5	--	1
Aroclor 1221	ND		ug/kg	59.5	--	1
Aroclor 1232	ND		ug/kg	59.5	--	1
Aroclor 1242	ND		ug/kg	59.5	--	1
Aroclor 1248	ND		ug/kg	39.7	--	1
Aroclor 1254	ND		ug/kg	59.5	--	1
Aroclor 1260	ND		ug/kg	39.7	--	1
Aroclor 1262	ND		ug/kg	19.8	--	1
Aroclor 1268	ND		ug/kg	19.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	91		30-150
Decachlorobiphenyl	96		30-150
2,4,5,6-Tetrachloro-m-xylene	86		30-150
Decachlorobiphenyl	91		30-150

Project Name: MBTA/LECHMERE
Project Number: P2814
Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-10	Date Collected:	07/11/12 11:30
Client ID:	CRACK-1	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 02:34	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.9	--	1
Aroclor 1221	ND		ug/kg	57.9	--	1
Aroclor 1232	ND		ug/kg	57.9	--	1
Aroclor 1242	ND		ug/kg	57.9	--	1
Aroclor 1248	ND		ug/kg	38.6	--	1
Aroclor 1254	ND		ug/kg	57.9	--	1
Aroclor 1260	ND		ug/kg	38.6	--	1
Aroclor 1262	ND		ug/kg	19.3	--	1
Aroclor 1268	ND		ug/kg	19.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	85		30-150
Decachlorobiphenyl	127		30-150
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	104		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-11	Date Collected:	07/11/12 12:15
Client ID:	CMU-F-1	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 02:47	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	54.9	--	1
Aroclor 1221	ND		ug/kg	54.9	--	1
Aroclor 1232	ND		ug/kg	54.9	--	1
Aroclor 1242	ND		ug/kg	54.9	--	1
Aroclor 1248	ND		ug/kg	36.6	--	1
Aroclor 1254	ND		ug/kg	54.9	--	1
Aroclor 1260	84.2		ug/kg	36.6	--	1
Aroclor 1262	ND		ug/kg	18.3	--	1
Aroclor 1268	ND		ug/kg	18.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	98		30-150
2,4,5,6-Tetrachloro-m-xylene	91		30-150
Decachlorobiphenyl	93		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-12	Date Collected:	07/11/12 12:25
Client ID:	CMU-F-2	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 03:00	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.0	--	1
Aroclor 1221	ND		ug/kg	56.0	--	1
Aroclor 1232	ND		ug/kg	56.0	--	1
Aroclor 1242	ND		ug/kg	56.0	--	1
Aroclor 1248	ND		ug/kg	37.3	--	1
Aroclor 1254	ND		ug/kg	56.0	--	1
Aroclor 1260	ND		ug/kg	37.3	--	1
Aroclor 1262	ND		ug/kg	18.6	--	1
Aroclor 1268	ND		ug/kg	18.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	81		30-150
Decachlorobiphenyl	95		30-150
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	90		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-13	Date Collected:	07/11/12 13:15
Client ID:	CMU-F-3	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 03:14	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	53.5	--	1
Aroclor 1221	ND		ug/kg	53.5	--	1
Aroclor 1232	ND		ug/kg	53.5	--	1
Aroclor 1242	ND		ug/kg	53.5	--	1
Aroclor 1248	ND		ug/kg	35.6	--	1
Aroclor 1254	ND		ug/kg	53.5	--	1
Aroclor 1260	57.2		ug/kg	35.6	--	1
Aroclor 1262	ND		ug/kg	17.8	--	1
Aroclor 1268	ND		ug/kg	17.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	75		30-150
Decachlorobiphenyl	90		30-150
2,4,5,6-Tetrachloro-m-xylene	72		30-150
Decachlorobiphenyl	85		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-14	Date Collected:	07/11/12 13:25
Client ID:	CMU-F-4	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 03:27	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.9	--	1
Aroclor 1221	ND		ug/kg	57.9	--	1
Aroclor 1232	ND		ug/kg	57.9	--	1
Aroclor 1242	ND		ug/kg	57.9	--	1
Aroclor 1248	ND		ug/kg	38.6	--	1
Aroclor 1254	ND		ug/kg	57.9	--	1
Aroclor 1260	57.4		ug/kg	38.6	--	1
Aroclor 1262	ND		ug/kg	19.3	--	1
Aroclor 1268	ND		ug/kg	19.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	91		30-150
Decachlorobiphenyl	95		30-150
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	91		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-15	Date Collected:	07/11/12 12:40
Client ID:	CMU-F-5	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 03:40	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	54.6	--	1
Aroclor 1221	ND		ug/kg	54.6	--	1
Aroclor 1232	ND		ug/kg	54.6	--	1
Aroclor 1242	ND		ug/kg	54.6	--	1
Aroclor 1248	ND		ug/kg	36.4	--	1
Aroclor 1254	ND		ug/kg	54.6	--	1
Aroclor 1260	ND		ug/kg	36.4	--	1
Aroclor 1262	ND		ug/kg	18.2	--	1
Aroclor 1268	ND		ug/kg	18.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	97		30-150
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	92		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-16	Date Collected:	07/11/12 12:45
Client ID:	CMU-F-6	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 03:53	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	50.5	--	1
Aroclor 1221	ND		ug/kg	50.5	--	1
Aroclor 1232	ND		ug/kg	50.5	--	1
Aroclor 1242	ND		ug/kg	50.5	--	1
Aroclor 1248	ND		ug/kg	33.7	--	1
Aroclor 1254	ND		ug/kg	50.5	--	1
Aroclor 1260	ND		ug/kg	33.7	--	1
Aroclor 1262	ND		ug/kg	16.8	--	1
Aroclor 1268	ND		ug/kg	16.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	97		30-150
Decachlorobiphenyl	100		30-150
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	93		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-17	Date Collected:	07/11/12 13:35
Client ID:	CMU-F-7	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 04:07	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.3	--	1
Aroclor 1221	ND		ug/kg	56.3	--	1
Aroclor 1232	ND		ug/kg	56.3	--	1
Aroclor 1242	ND		ug/kg	56.3	--	1
Aroclor 1248	ND		ug/kg	37.5	--	1
Aroclor 1254	ND		ug/kg	56.3	--	1
Aroclor 1260	ND		ug/kg	37.5	--	1
Aroclor 1262	ND		ug/kg	18.8	--	1
Aroclor 1268	ND		ug/kg	18.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	88		30-150
Decachlorobiphenyl	102		30-150
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	93		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

SAMPLE RESULTS

Lab ID:	L1212310-18	Date Collected:	07/11/12 13:45
Client ID:	CMU-F-8	Date Received:	07/11/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/12/12 20:00
Analytical Date:	07/17/12 04:20	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.1	--	1
Aroclor 1221	ND		ug/kg	51.1	--	1
Aroclor 1232	ND		ug/kg	51.1	--	1
Aroclor 1242	ND		ug/kg	51.1	--	1
Aroclor 1248	ND		ug/kg	34.1	--	1
Aroclor 1254	ND		ug/kg	51.1	--	1
Aroclor 1260	ND		ug/kg	34.1	--	1
Aroclor 1262	ND		ug/kg	17.0	--	1
Aroclor 1268	ND		ug/kg	17.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	101		30-150
2,4,5,6-Tetrachloro-m-xylene	86		30-150
Decachlorobiphenyl	93		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212310

Report Date: 07/18/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/13/12 21:06
Analyst: BA

Extraction Method: EPA 3510C
Extraction Date: 07/12/12 11:18
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/12/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/12/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 01 Batch: WG547979-1					
Aroclor 1016	ND		ug/l	0.250	--
Aroclor 1221	ND		ug/l	0.250	--
Aroclor 1232	ND		ug/l	0.250	--
Aroclor 1242	ND		ug/l	0.250	--
Aroclor 1248	ND		ug/l	0.250	--
Aroclor 1254	ND		ug/l	0.250	--
Aroclor 1260	ND		ug/l	0.250	--
Aroclor 1262	ND		ug/l	0.250	--
Aroclor 1268	ND		ug/l	0.250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	99		30-150
2,4,5,6-Tetrachloro-m-xylene	86		30-150
Decachlorobiphenyl	83		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212310

Report Date: 07/18/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/17/12 23:38
Analyst: BA

Extraction Method: EPA 3540C
Extraction Date: 07/12/12 20:00
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/15/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/15/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 02-18 Batch: WG548114-1					
Aroclor 1016	ND		ug/kg	57.6	--
Aroclor 1221	ND		ug/kg	57.6	--
Aroclor 1232	ND		ug/kg	57.6	--
Aroclor 1242	ND		ug/kg	57.6	--
Aroclor 1248	ND		ug/kg	38.4	--
Aroclor 1254	ND		ug/kg	57.6	--
Aroclor 1260	ND		ug/kg	38.4	--
Aroclor 1262	ND		ug/kg	19.2	--
Aroclor 1268	ND		ug/kg	19.2	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	106		30-150
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	98		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814
Lab Number: L1212310
Report Date: 07/18/12

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 01 Batch: WG547979-2 WG547979-3								
Aroclor 1016	91		94		40-140	3		20
Aroclor 1260	91		95		40-140	4		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	97		99		30-150
Decachlorobiphenyl	98		101		30-150
2,4,5,6-Tetrachloro-m-xylene	87		87		30-150
Decachlorobiphenyl	79		81		30-150

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 02-18 Batch: WG548114-2 WG548114-3								
Aroclor 1016	77		74		40-140	4		30
Aroclor 1260	82		81		40-140	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	98		91		30-150
Decachlorobiphenyl	108		101		30-150
2,4,5,6-Tetrachloro-m-xylene	93		87		30-150
Decachlorobiphenyl	100		94		30-150

INORGANICS
&
MISCELLANEOUS

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-02
Client ID: CMU-G-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 09:00
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-03
Client ID: CMU-G-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 09:10
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-04
Client ID: CMU-G-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 09:20
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-05
Client ID: CMU-G-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 09:35
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-06
Client ID: CMU-G-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 09:50
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-07
Client ID: CMU-G-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 10:05
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-08
Client ID: CMU-G-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 10:25
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-09
Client ID: CMU-G-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 10:45
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-10
Client ID: CRACK-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 11:30
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-11
Client ID: CMU-F-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 12:15
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-12
Client ID: CMU-F-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 12:25
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-13
Client ID: CMU-F-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 13:15
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-14
Client ID: CMU-F-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 13:25
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-15
Client ID: CMU-F-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 12:40
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-16
Client ID: CMU-F-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 12:45
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-17
Client ID: CMU-F-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 13:35
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

SAMPLE RESULTS

Lab ID: L1212310-18
Client ID: CMU-F-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/11/12 13:45
Date Received: 07/11/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/12/12 20:45	30,2540G	RD

Lab Duplicate Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02-18 QC Batch ID: WG548130-1 QC Sample: L1212310-02 Client ID: CMU-G-1						
Solids, Total	100	100	%	0		20

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1212310-01A	Amber 1000ml unpreserved	A	N/A	3.3	Y	Absent	MCP-8082-10(365)
L1212310-01B	Amber 1000ml unpreserved	A	N/A	3.3	Y	Absent	MCP-8082-10(365)
L1212310-02A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-03A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-04A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-05A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-06A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-07A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-08A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-09A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-10A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-11A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-12A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-13A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-14A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-15A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-16A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-17A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212310-18A	Amber 250ml unpreserved	A	N/A	3.3	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)

*Values in parentheses indicate holding time in days

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212310
Report Date: 07/18/12

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)

Container Comments

L1212310-02A

L1212310-03A

L1212310-04A

L1212310-05A

L1212310-06A

L1212310-07A

L1212310-08A

L1212310-09A

L1212310-10A

L1212310-11A

L1212310-12A

L1212310-13A

L1212310-14A

L1212310-15A

L1212310-16A

L1212310-17A

L1212310-18A

*Values in parentheses indicate holding time in days

Project Name:	MBTA/LECHMERE	**Lab Number:**	L1212310
Project Number:	P2814	**Report Date:**	07/18/12

GLOSSARY

Acronyms

EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
C	- Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D	- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E	- Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G	- The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H	- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I	- The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
M	- Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
NJ	- Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

Report Format: Data Usability Report

Project Name: MBTA/LECHMERE **Lab Number:** L1212310

Project Number: P2814 **Report Date:** 07/18/12

Data Qualifiers

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: MBTA/LECHMERE **Lab Number:** L1212310
Project Number: P2814 **Report Date:** 07/18/12

REFERENCES

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised May 11, 2012 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. ***NELAP Accredited Solid Waste/Soil.***

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223 P/A), E. Coli. – Colilert (SM9223 P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D, Fecal Coliform-EC Medium 9221E).

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterolert, E.Coli 9223.

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics, Acid Extractables (Phenols), Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2130B, 2320B, 2540C, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, SM2320B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-G, 4500NO3-F, 4500P-B, 4500P-E, 5210B, 5220D, 5310C, 9010B, 9040B, 9030B, 7470A, 7196A, 2340B, EPA 200.7, 6010B, 200.8, 6020, 245.1, 1311, 1312, 3005A, Enterolert, 9223D, 9222D. Organic Parameters: 608, 624, 625, 8081A, 8082, 8330, 8151A, 8260B, 8270C, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Inorganic Parameters: 9010B, 9012A, 9014A, 9030B, 9040B, 9045C, 6010B, 7471A, 7196A, 9050A, 1010, 1030, 9065, 1311, 1312, 3005A, 3050B. Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH, 8260B, 8270C, 8330, 8151A, 8081A, 8082, 3540C, 3546, 3580A, 3630C, 5030B, 5035.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
*Drinking Water (*Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

*Non-Potable Water (*Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn); 245.1, SM4500H,B, EPA 120.1,

SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.
Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B; Enterolert-QT: SM9222D-MF.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 245.2, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6010C, 6020, 6020A, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 350.2, 351.1, 353.2, 410.4, 420.1, 426C, 1664A, SW-846 9010B, 9030B, 9040B, SM426C, SM2120B, 2310B, 2320B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3510C, 3630C, 5030B, 8260B, 8270C, 8270D, 8330, EPA 624, 625, 608, SW-846 8082, 8081A, 8081B, 8151A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 6010C, 7196A, 7471A, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040B, 9045C, 9050, 9065,1311, 1312, 3005A, 3050B, 3060A. Organic Parameters: SW-846 3540C, 3546, 3550B, 3580A, 3630C, 5030B, 5035, 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330, 8151A, 8015B, 8082, 8082A, 8081A, 8081B.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.2, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-E, EPA 300.0, SM2120B, 2340B, SM4500F-BC, EPA 200.7, 200.8, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM510ABC, SM4500P-B5+E, 2540B, 2540C, 2540D, 2540G, EPA 120.1, SM2510B, SM15 426C, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, 350.2, SW-846 1312, 7470A, 5540C, SM4500H-B, 4500SO3-B, SM3500Cr-D, 4500CN-CE, EPA 245.1, 245.2, SW-846 9040B, 3005A, 3015, EPA 6010B, 6010C, 6020, 6020A, 7196A, 3060A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 1,4-Dioxane by NJ Modified 8270, 8015B, NJ OQA-QAM-025 Rev.7, NJ EPH.)

Solid & Chemical Materials (Inorganic Parameters: SW-846, 6010B, 6010C,6020, 6020A, 7196A, 3060A, 9010B, 9030B, 1010, 1030, 1311, 1312, 3005A, 3050B, 7471A, 7471B, 9014, 9012A, 9040B, 9045C, 9050A, 9065. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3630C, 5030B, 5035L, 5035H, NJ OQA-QAM-025 Rev.7, NJ EPH.)

New York Department of Health Certificate/Lab ID: 11148. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO3-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH3-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6010C, 6020, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, LACHAT 10-204-00-1-A, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 624, 8260B, 8270C, 8270D, 625, 608, 8081A, 8081B, 8151A, 8330, 8082, 8082A, EPA 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, EPA 6010B, 6010C, 7196A, 7471A, 7471B, 9012A, 9014, 9065, 9050A, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8015B, 8015C, 8081A, 8081B, 8151A, 8330, 8082 8082A, 3540C, 3546, 3580, 3580A, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666. Organic Parameters: MA-EPH, MA-VPH.

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-03671. ***NELAP Accredited.***
Drinking Water (Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 1312, 3005A, 200.7, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3050B, 3060A, 6010B, 6010C, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065, SM 4500NH3-H. Organic Parameters: 3540C, 3546, 3580A, 3630C, 5035, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. ***NELAP Accredited via NY-DOH.***
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2¯D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID: 460195. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 3005A,3015,1312,6010B,6010C,SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X. Organic Parameters: EPA 8260B)

Solid & Hazardous Waste (Inorganic Parameters: EPA 3050B, 1311, 1312, 6010B, 6010C, 9030B, 9010B, 9012A, 9014. Organic Parameters: EPA 5035, 5030B, 8260B, 8015B, 8015C.)

Department of Defense, L-A-B Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1. 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

The following analytes are not included in our current NELAP/TNI Scope of Accreditation:
EPA 8260B: Freon-113, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625:** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, Chloride in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix, SO4 in a soil matrix. **EPA 9071:** Total Petroleum Hydrocarbons, Oil & Grease

CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 7·11·12

ALPHA Job #: L1212310 ~~L1212293~~

ALPHA ANALYTICAL — World Class Chemistry
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information

Project Name: MBTA/Lechmere
Project Location: Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: P2814

Client Information

Client: Nover-Armstrong Assoc.
Address: 124 Main St, Unit 2GG, Carver, MA 02330
Phone: 508-866-8383
Email: malger@noverarmstrong.com

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: 7/15/12

Additional Project Information:

Use Soxhlet Extraction

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ☐ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☒ PCB ☐ PEST Soxhlet	TPH: ☐ Quant Only ☐ Fingerprint						Sample Comments	TOTAL # BOTTLES
12310 1	EQUIP BLANK-1	7/11/12	8:45am	DI Water	MA							2								2
2	CMU-G-1		9:00am	Concrete Powder								1								1
3	CMU-G-2		9:10am									1								1
4	CMU-G-3		9:20am									1								1
5	CMU-G-4		9:35am									1								1
6	CMU-G-5		9:50am									1								1
7	CMU-G-6		10:05am									1								1
8	CMU-G-7		10:25am									1								1
9	CMU-G-8		10:45am									1								1
10	CRACK-1		11:30am									1								1
				Container Type								G/A								
				Preservative								A								

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/11/12 3:40pm	[signature]	7/11/12 15:46

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 7-11-12

ALPHA Job #: L1212310

ALPHA ANALYTICAL
World Class Chemistry
8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Nover-Armstrong Assoc.
Address: 124 Main St. Unit 206
Carver, MA 02330
Phone: 508-866-8383
Email: mdger@noverarmstrong.com

Project Information

Project Name: MBTA/Lechmere
Project Location: Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: 7/18/12

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: P2814

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Additional Project Information:

Use Soxhlet Extraction

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☒ PCB ☐ PEST Soxhlet; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCB	Sample Comments	TOTAL # BOTTLES
1230-11	CMU-F-1	7/11/12	12:15pm	Concrete Powder	MA	1		1
12	CMU-F-2		12:25pm			1		1
13	CMU-F-3		1:15pm			1		1
14	CMU-F-4		1:25pm			1		1
15	CMU-F-5		12:40pm			1		1
16	CMU-F-6		12:45pm			1		1
17	CMU-F-7		1:35pm			1		1
18	CMU-F-8		1:45pm			1		1
Container Type						G		
Preservative						A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/11/12 3:40pm	[signature]	7/11/12

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1212415
Client:	Nover-Armstrong Associates 124 Main Street Unit 2GG Carver, MA 02330
ATTN:	Matt Alger
Phone:	(508) 866-8383
Project Name:	MBTA/LECHMERE
Project Number:	P2814
Report Date:	07/20/12

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1212415-01	EQUIP BLANK-2	CAMBRIDGE	07/12/12 07:55
L1212415-02	CMU-A-1	CAMBRIDGE	07/12/12 08:00
L1212415-03	CMU-A-1_DUP	CAMBRIDGE	07/12/12 08:00
L1212415-04	CMU-A-2	CAMBRIDGE	07/12/12 08:07
L1212415-05	CMU-A-3	CAMBRIDGE	07/12/12 08:14
L1212415-06	CMU-A-4	CAMBRIDGE	07/12/12 08:20
L1212415-07	CMU-A-5	CAMBRIDGE	07/12/12 08:30
L1212415-08	CMU-A-6	CAMBRIDGE	07/12/12 08:37
L1212415-09	CMU-A-7	CAMBRIDGE	07/12/12 08:45
L1212415-10	CMU-A-8	CAMBRIDGE	07/12/12 08:50
L1212415-11	CMU-B-1	CAMBRIDGE	07/12/12 09:30
L1212415-12	CMU-B-2	CAMBRIDGE	07/12/12 09:35
L1212415-13	CMU-B-3	CAMBRIDGE	07/12/12 09:42
L1212415-14	CMU-B-4	CAMBRIDGE	07/12/12 09:50
L1212415-15	CMU-B-5	CAMBRIDGE	07/12/12 10:00
L1212415-16	CMU-B-6	CAMBRIDGE	07/12/12 10:10
L1212415-17	CMU-B-7	CAMBRIDGE	07/12/12 10:15
L1212415-18	CMU-B-8	CAMBRIDGE	07/12/12 10:30
L1212415-19	CMU-C-1	CAMBRIDGE	07/12/12 11:30
L1212415-20	CMU-C-1_DUP	CAMBRIDGE	07/12/12 11:30
L1212415-21	CMU-C-2	CAMBRIDGE	07/12/12 11:35
L1212415-22	CMU-C-3	CAMBRIDGE	07/12/12 11:40
L1212415-23	CMU-C-4	CAMBRIDGE	07/12/12 11:45
L1212415-24	CMU-C-5	CAMBRIDGE	07/12/12 11:50
L1212415-25	CMU-C-6	CAMBRIDGE	07/12/12 11:55
L1212415-26	CMU-C-7	CAMBRIDGE	07/12/12 12:00
L1212415-27	CMU-C-8	CAMBRIDGE	07/12/12 12:05
L1212415-28	EQUIP BLANK-3	CAMBRIDGE	07/12/12 14:00
L1212415-29	CMU-D-5	CAMBRIDGE	07/12/12 13:00
L1212415-30	CMU-D-6	CAMBRIDGE	07/12/12 13:05
L1212415-31	CMU-E-5	CAMBRIDGE	07/12/12 13:10

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1212415-32	CMU-E-6	CAMBRIDGE	07/12/12 13:15

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is 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
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name: MBTA/LECHMERE **Lab Number:** L1212415
Project Number: P2814 **Report Date:** 07/20/12

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: MBTA/LECHMERE **Lab Number:** L1212415
Project Number: P2814 **Report Date:** 07/20/12

Case Narrative (continued)

MCP Related Narratives

Report Submission

All MCP required questions were answered with affirmative responses; therefore, there are no relevant protocol-specific QC and/or performance standard non-conformances to report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 07/20/12

ORGANICS

PCBS

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-01	Date Collected:	07/12/12 07:55
Client ID:	EQUIP BLANK-2	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	97,8082	Extraction Date:	07/14/12 00:35
Analytical Date:	07/17/12 08:19	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
		Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/l	0.250	--	1
Aroclor 1221	ND		ug/l	0.250	--	1
Aroclor 1232	ND		ug/l	0.250	--	1
Aroclor 1242	ND		ug/l	0.250	--	1
Aroclor 1248	ND		ug/l	0.250	--	1
Aroclor 1254	ND		ug/l	0.250	--	1
Aroclor 1260	ND		ug/l	0.250	--	1
Aroclor 1262	ND		ug/l	0.250	--	1
Aroclor 1268	ND		ug/l	0.250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	97		30-150
Decachlorobiphenyl	62		30-150
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	72		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-02	Date Collected:	07/12/12 08:00
Client ID:	CMU-A-1	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 16:25
Analytical Date:	07/18/12 18:38	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.4	--	1
Aroclor 1221	ND		ug/kg	51.4	--	1
Aroclor 1232	ND		ug/kg	51.4	--	1
Aroclor 1242	ND		ug/kg	51.4	--	1
Aroclor 1248	ND		ug/kg	34.2	--	1
Aroclor 1254	ND		ug/kg	51.4	--	1
Aroclor 1260	139		ug/kg	34.2	--	1
Aroclor 1262	ND		ug/kg	17.1	--	1
Aroclor 1268	ND		ug/kg	17.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	93		30-150
Decachlorobiphenyl	85		30-150
2,4,5,6-Tetrachloro-m-xylene	89		30-150
Decachlorobiphenyl	79		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-03	Date Collected:	07/12/12 08:00
Client ID:	CMU-A-1_DUP	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 16:25
Analytical Date:	07/18/12 18:52	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	52.7	--	1
Aroclor 1221	ND		ug/kg	52.7	--	1
Aroclor 1232	ND		ug/kg	52.7	--	1
Aroclor 1242	ND		ug/kg	52.7	--	1
Aroclor 1248	ND		ug/kg	35.1	--	1
Aroclor 1254	ND		ug/kg	52.7	--	1
Aroclor 1260	160		ug/kg	35.1	--	1
Aroclor 1262	ND		ug/kg	17.6	--	1
Aroclor 1268	ND		ug/kg	17.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	67		30-150
2,4,5,6-Tetrachloro-m-xylene	75		30-150
Decachlorobiphenyl	62		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-04	Date Collected:	07/12/12 08:07
Client ID:	CMU-A-2	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 19:05	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	50.9	--	1
Aroclor 1221	ND		ug/kg	50.9	--	1
Aroclor 1232	ND		ug/kg	50.9	--	1
Aroclor 1242	ND		ug/kg	50.9	--	1
Aroclor 1248	ND		ug/kg	34.0	--	1
Aroclor 1254	ND		ug/kg	50.9	--	1
Aroclor 1260	63.4		ug/kg	34.0	--	1
Aroclor 1262	ND		ug/kg	17.0	--	1
Aroclor 1268	ND		ug/kg	17.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	66		30-150
Decachlorobiphenyl	63		30-150
2,4,5,6-Tetrachloro-m-xylene	64		30-150
Decachlorobiphenyl	58		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-05	Date Collected:	07/12/12 08:14
Client ID:	CMU-A-3	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 19:18	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	53.7	--	1
Aroclor 1221	ND		ug/kg	53.7	--	1
Aroclor 1232	ND		ug/kg	53.7	--	1
Aroclor 1242	ND		ug/kg	53.7	--	1
Aroclor 1248	ND		ug/kg	35.8	--	1
Aroclor 1254	ND		ug/kg	53.7	--	1
Aroclor 1260	ND		ug/kg	35.8	--	1
Aroclor 1262	ND		ug/kg	17.9	--	1
Aroclor 1268	ND		ug/kg	17.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	103		30-150
2,4,5,6-Tetrachloro-m-xylene	82		30-150
Decachlorobiphenyl	98		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-06	Date Collected:	07/12/12 08:20
Client ID:	CMU-A-4	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 19:32	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	50.8	--	1
Aroclor 1221	ND		ug/kg	50.8	--	1
Aroclor 1232	ND		ug/kg	50.8	--	1
Aroclor 1242	ND		ug/kg	50.8	--	1
Aroclor 1248	ND		ug/kg	33.8	--	1
Aroclor 1254	ND		ug/kg	50.8	--	1
Aroclor 1260	ND		ug/kg	33.8	--	1
Aroclor 1262	ND		ug/kg	16.9	--	1
Aroclor 1268	ND		ug/kg	16.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	97		30-150
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	92		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-07	Date Collected:	07/12/12 08:30
Client ID:	CMU-A-5	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 19:45	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	55.4	--	1
Aroclor 1221	ND		ug/kg	55.4	--	1
Aroclor 1232	ND		ug/kg	55.4	--	1
Aroclor 1242	ND		ug/kg	55.4	--	1
Aroclor 1248	ND		ug/kg	37.0	--	1
Aroclor 1254	ND		ug/kg	55.4	--	1
Aroclor 1260	ND		ug/kg	37.0	--	1
Aroclor 1262	ND		ug/kg	18.5	--	1
Aroclor 1268	ND		ug/kg	18.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	41		30-150
Decachlorobiphenyl	41		30-150
2,4,5,6-Tetrachloro-m-xylene	42		30-150
Decachlorobiphenyl	39		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-08	Date Collected:	07/12/12 08:37
Client ID:	CMU-A-6	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 19:58	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.6	--	1
Aroclor 1221	ND		ug/kg	57.6	--	1
Aroclor 1232	ND		ug/kg	57.6	--	1
Aroclor 1242	ND		ug/kg	57.6	--	1
Aroclor 1248	ND		ug/kg	38.4	--	1
Aroclor 1254	ND		ug/kg	57.6	--	1
Aroclor 1260	ND		ug/kg	38.4	--	1
Aroclor 1262	ND		ug/kg	19.2	--	1
Aroclor 1268	ND		ug/kg	19.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	48		30-150
Decachlorobiphenyl	107		30-150
2,4,5,6-Tetrachloro-m-xylene	45		30-150
Decachlorobiphenyl	99		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-09	Date Collected:	07/12/12 08:45
Client ID:	CMU-A-7	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 21:04	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	52.2	--	1
Aroclor 1221	ND		ug/kg	52.2	--	1
Aroclor 1232	ND		ug/kg	52.2	--	1
Aroclor 1242	ND		ug/kg	52.2	--	1
Aroclor 1248	ND		ug/kg	34.8	--	1
Aroclor 1254	ND		ug/kg	52.2	--	1
Aroclor 1260	ND		ug/kg	34.8	--	1
Aroclor 1262	ND		ug/kg	17.4	--	1
Aroclor 1268	ND		ug/kg	17.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	71		30-150
Decachlorobiphenyl	76		30-150
2,4,5,6-Tetrachloro-m-xylene	68		30-150
Decachlorobiphenyl	71		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-10	Date Collected:	07/12/12 08:50
Client ID:	CMU-A-8	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 21:18	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.4	--	1
Aroclor 1221	ND		ug/kg	58.4	--	1
Aroclor 1232	ND		ug/kg	58.4	--	1
Aroclor 1242	ND		ug/kg	58.4	--	1
Aroclor 1248	ND		ug/kg	38.9	--	1
Aroclor 1254	ND		ug/kg	58.4	--	1
Aroclor 1262	ND		ug/kg	19.4	--	1
Aroclor 1268	ND		ug/kg	19.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	97		30-150
Decachlorobiphenyl	110		30-150
2,4,5,6-Tetrachloro-m-xylene	93		30-150
Decachlorobiphenyl	103		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-10	Date Collected:	07/12/12 08:50
Client ID:	CMU-A-8	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 21:18	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	ND		ug/kg	38.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	97		30-150
Decachlorobiphenyl	110		30-150
2,4,5,6-Tetrachloro-m-xylene	93		30-150
Decachlorobiphenyl	103		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-11	Date Collected:	07/12/12 09:30
Client ID:	CMU-B-1	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 21:31	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.2	--	1
Aroclor 1221	ND		ug/kg	56.2	--	1
Aroclor 1232	ND		ug/kg	56.2	--	1
Aroclor 1242	ND		ug/kg	56.2	--	1
Aroclor 1248	ND		ug/kg	37.4	--	1
Aroclor 1254	ND		ug/kg	56.2	--	1
Aroclor 1260	112		ug/kg	37.4	--	1
Aroclor 1262	ND		ug/kg	18.7	--	1
Aroclor 1268	ND		ug/kg	18.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	101		30-150
Decachlorobiphenyl	102		30-150
2,4,5,6-Tetrachloro-m-xylene	94		30-150
Decachlorobiphenyl	95		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-12	Date Collected:	07/12/12 09:35
Client ID:	CMU-B-2	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/19/12 11:52
Analytical Date:	07/20/12 10:33	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/20/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/20/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	48.7	--	1
Aroclor 1221	ND		ug/kg	48.7	--	1
Aroclor 1232	ND		ug/kg	48.7	--	1
Aroclor 1242	ND		ug/kg	48.7	--	1
Aroclor 1248	ND		ug/kg	32.5	--	1
Aroclor 1254	ND		ug/kg	48.7	--	1
Aroclor 1260	55.4		ug/kg	32.5	--	1
Aroclor 1262	ND		ug/kg	16.2	--	1
Aroclor 1268	ND		ug/kg	16.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	100		30-150
Decachlorobiphenyl	93		30-150
2,4,5,6-Tetrachloro-m-xylene	91		30-150
Decachlorobiphenyl	84		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-13	Date Collected:	07/12/12 09:42
Client ID:	CMU-B-3	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 21:58	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.1	--	1
Aroclor 1221	ND		ug/kg	51.1	--	1
Aroclor 1232	ND		ug/kg	51.1	--	1
Aroclor 1242	ND		ug/kg	51.1	--	1
Aroclor 1248	ND		ug/kg	34.1	--	1
Aroclor 1254	ND		ug/kg	51.1	--	1
Aroclor 1260	ND		ug/kg	34.1	--	1
Aroclor 1262	ND		ug/kg	17.0	--	1
Aroclor 1268	ND		ug/kg	17.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	94		30-150
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	84		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-14	Date Collected:	07/12/12 09:50
Client ID:	CMU-B-4	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 22:11	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	52.9	--	1
Aroclor 1221	ND		ug/kg	52.9	--	1
Aroclor 1232	ND		ug/kg	52.9	--	1
Aroclor 1242	ND		ug/kg	52.9	--	1
Aroclor 1248	ND		ug/kg	35.3	--	1
Aroclor 1254	ND		ug/kg	52.9	--	1
Aroclor 1260	ND		ug/kg	35.3	--	1
Aroclor 1262	ND		ug/kg	17.6	--	1
Aroclor 1268	ND		ug/kg	17.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	103		30-150
Decachlorobiphenyl	113		30-150
2,4,5,6-Tetrachloro-m-xylene	99		30-150
Decachlorobiphenyl	108		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-15	Date Collected:	07/12/12 10:00
Client ID:	CMU-B-5	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 22:24	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	55.0	--	1
Aroclor 1221	ND		ug/kg	55.0	--	1
Aroclor 1232	ND		ug/kg	55.0	--	1
Aroclor 1242	ND		ug/kg	55.0	--	1
Aroclor 1248	ND		ug/kg	36.7	--	1
Aroclor 1254	ND		ug/kg	55.0	--	1
Aroclor 1262	ND		ug/kg	18.3	--	1
Aroclor 1268	ND		ug/kg	18.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	112		30-150
Decachlorobiphenyl	112		30-150
2,4,5,6-Tetrachloro-m-xylene	109		30-150
Decachlorobiphenyl	110		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-15	Date Collected:	07/12/12 10:00
Client ID:	CMU-B-5	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 22:24	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	ND		ug/kg	36.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	112		30-150
Decachlorobiphenyl	112		30-150
2,4,5,6-Tetrachloro-m-xylene	109		30-150
Decachlorobiphenyl	110		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-16	Date Collected:	07/12/12 10:10
Client ID:	CMU-B-6	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 22:37	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.2	--	1
Aroclor 1221	ND		ug/kg	51.2	--	1
Aroclor 1232	ND		ug/kg	51.2	--	1
Aroclor 1242	ND		ug/kg	51.2	--	1
Aroclor 1248	ND		ug/kg	34.1	--	1
Aroclor 1254	ND		ug/kg	51.2	--	1
Aroclor 1260	ND		ug/kg	34.1	--	1
Aroclor 1262	ND		ug/kg	17.1	--	1
Aroclor 1268	ND		ug/kg	17.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	91		30-150
Decachlorobiphenyl	98		30-150
2,4,5,6-Tetrachloro-m-xylene	85		30-150
Decachlorobiphenyl	91		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-17	Date Collected:	07/12/12 10:15
Client ID:	CMU-B-7	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 22:50	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	55.9	--	1
Aroclor 1221	ND		ug/kg	55.9	--	1
Aroclor 1232	ND		ug/kg	55.9	--	1
Aroclor 1242	ND		ug/kg	55.9	--	1
Aroclor 1248	ND		ug/kg	37.2	--	1
Aroclor 1254	ND		ug/kg	55.9	--	1
Aroclor 1260	ND		ug/kg	37.2	--	1
Aroclor 1262	ND		ug/kg	18.6	--	1
Aroclor 1268	ND		ug/kg	18.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	113		30-150
Decachlorobiphenyl	118		30-150
2,4,5,6-Tetrachloro-m-xylene	106		30-150
Decachlorobiphenyl	109		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-18	Date Collected:	07/12/12 10:30
Client ID:	CMU-B-8	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 17:25
Analytical Date:	07/18/12 23:04	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	53.4	--	1
Aroclor 1221	ND		ug/kg	53.4	--	1
Aroclor 1232	ND		ug/kg	53.4	--	1
Aroclor 1242	ND		ug/kg	53.4	--	1
Aroclor 1248	ND		ug/kg	35.6	--	1
Aroclor 1254	ND		ug/kg	53.4	--	1
Aroclor 1260	ND		ug/kg	35.6	--	1
Aroclor 1262	ND		ug/kg	17.8	--	1
Aroclor 1268	ND		ug/kg	17.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	98		30-150
Decachlorobiphenyl	105		30-150
2,4,5,6-Tetrachloro-m-xylene	95		30-150
Decachlorobiphenyl	104		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-19	Date Collected:	07/12/12 11:30
Client ID:	CMU-C-1	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/19/12 11:52
Analytical Date:	07/20/12 10:46	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/20/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/20/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	54.0	--	1
Aroclor 1221	ND		ug/kg	54.0	--	1
Aroclor 1232	ND		ug/kg	54.0	--	1
Aroclor 1242	ND		ug/kg	54.0	--	1
Aroclor 1248	ND		ug/kg	36.0	--	1
Aroclor 1254	ND		ug/kg	54.0	--	1
Aroclor 1260	268		ug/kg	36.0	--	1
Aroclor 1262	ND		ug/kg	18.0	--	1
Aroclor 1268	ND		ug/kg	18.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	98		30-150
Decachlorobiphenyl	88		30-150
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	78		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-20	Date Collected:	07/12/12 11:30
Client ID:	CMU-C-1_DUP	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/18/12 16:39	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	52.0	--	1
Aroclor 1221	ND		ug/kg	52.0	--	1
Aroclor 1232	ND		ug/kg	52.0	--	1
Aroclor 1242	ND		ug/kg	52.0	--	1
Aroclor 1248	ND		ug/kg	34.7	--	1
Aroclor 1254	ND		ug/kg	52.0	--	1
Aroclor 1260	243		ug/kg	34.7	--	1
Aroclor 1262	ND		ug/kg	17.3	--	1
Aroclor 1268	ND		ug/kg	17.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	89		30-150
Decachlorobiphenyl	94		30-150
2,4,5,6-Tetrachloro-m-xylene	85		30-150
Decachlorobiphenyl	87		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-21	Date Collected:	07/12/12 11:35
Client ID:	CMU-C-2	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/18/12 16:52	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.9	--	1
Aroclor 1221	ND		ug/kg	51.9	--	1
Aroclor 1232	ND		ug/kg	51.9	--	1
Aroclor 1242	ND		ug/kg	51.9	--	1
Aroclor 1248	ND		ug/kg	34.6	--	1
Aroclor 1254	ND		ug/kg	51.9	--	1
Aroclor 1260	78.4		ug/kg	34.6	--	1
Aroclor 1262	ND		ug/kg	17.3	--	1
Aroclor 1268	ND		ug/kg	17.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	87		30-150
2,4,5,6-Tetrachloro-m-xylene	76		30-150
Decachlorobiphenyl	82		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-22	Date Collected:	07/12/12 11:40
Client ID:	CMU-C-3	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/18/12 17:06	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	54.4	--	1
Aroclor 1221	ND		ug/kg	54.4	--	1
Aroclor 1232	ND		ug/kg	54.4	--	1
Aroclor 1242	ND		ug/kg	54.4	--	1
Aroclor 1248	ND		ug/kg	36.3	--	1
Aroclor 1254	ND		ug/kg	54.4	--	1
Aroclor 1260	45.1		ug/kg	36.3	--	1
Aroclor 1262	ND		ug/kg	18.1	--	1
Aroclor 1268	ND		ug/kg	18.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	76		30-150
Decachlorobiphenyl	97		30-150
2,4,5,6-Tetrachloro-m-xylene	72		30-150
Decachlorobiphenyl	88		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-23	Date Collected:	07/12/12 11:45
Client ID:	CMU-C-4	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/18/12 17:19	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	55.6	--	1
Aroclor 1221	ND		ug/kg	55.6	--	1
Aroclor 1232	ND		ug/kg	55.6	--	1
Aroclor 1242	ND		ug/kg	55.6	--	1
Aroclor 1248	ND		ug/kg	37.1	--	1
Aroclor 1254	ND		ug/kg	55.6	--	1
Aroclor 1260	59.2		ug/kg	37.1	--	1
Aroclor 1262	ND		ug/kg	18.6	--	1
Aroclor 1268	ND		ug/kg	18.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	99		30-150
Decachlorobiphenyl	102		30-150
2,4,5,6-Tetrachloro-m-xylene	95		30-150
Decachlorobiphenyl	97		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-24	Date Collected:	07/12/12 11:50
Client ID:	CMU-C-5	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/18/12 17:32	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.3	--	1
Aroclor 1221	ND		ug/kg	51.3	--	1
Aroclor 1232	ND		ug/kg	51.3	--	1
Aroclor 1242	ND		ug/kg	51.3	--	1
Aroclor 1248	ND		ug/kg	34.2	--	1
Aroclor 1254	ND		ug/kg	51.3	--	1
Aroclor 1262	ND		ug/kg	17.1	--	1
Aroclor 1268	ND		ug/kg	17.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	81		30-150
Decachlorobiphenyl	84		30-150
2,4,5,6-Tetrachloro-m-xylene	81		30-150
Decachlorobiphenyl	79		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-24	Date Collected:	07/12/12 11:50
Client ID:	CMU-C-5	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/18/12 17:32	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	ND		ug/kg	34.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	81		30-150
Decachlorobiphenyl	84		30-150
2,4,5,6-Tetrachloro-m-xylene	81		30-150
Decachlorobiphenyl	79		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-25	Date Collected:	07/12/12 11:55
Client ID:	CMU-C-6	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/18/12 17:45	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.0	--	1
Aroclor 1221	ND		ug/kg	57.0	--	1
Aroclor 1232	ND		ug/kg	57.0	--	1
Aroclor 1242	ND		ug/kg	57.0	--	1
Aroclor 1248	ND		ug/kg	38.0	--	1
Aroclor 1254	ND		ug/kg	57.0	--	1
Aroclor 1260	ND		ug/kg	38.0	--	1
Aroclor 1262	ND		ug/kg	19.0	--	1
Aroclor 1268	ND		ug/kg	19.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	64		30-150
Decachlorobiphenyl	66		30-150
2,4,5,6-Tetrachloro-m-xylene	61		30-150
Decachlorobiphenyl	62		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-26	Date Collected:	07/12/12 12:00
Client ID:	CMU-C-7	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/19/12 10:42	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.9	--	1
Aroclor 1221	ND		ug/kg	56.9	--	1
Aroclor 1232	ND		ug/kg	56.9	--	1
Aroclor 1242	ND		ug/kg	56.9	--	1
Aroclor 1248	ND		ug/kg	38.0	--	1
Aroclor 1254	ND		ug/kg	56.9	--	1
Aroclor 1262	ND		ug/kg	19.0	--	1
Aroclor 1268	ND		ug/kg	19.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	100		30-150
Decachlorobiphenyl	103		30-150
2,4,5,6-Tetrachloro-m-xylene	99		30-150
Decachlorobiphenyl	103		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-26	Date Collected:	07/12/12 12:00
Client ID:	CMU-C-7	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/19/12 10:42	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	38.1		ug/kg	38.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	100		30-150
Decachlorobiphenyl	103		30-150
2,4,5,6-Tetrachloro-m-xylene	99		30-150
Decachlorobiphenyl	103		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-27	Date Collected:	07/12/12 12:05
Client ID:	CMU-C-8	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/19/12 10:55	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	55.2	--	1
Aroclor 1221	ND		ug/kg	55.2	--	1
Aroclor 1232	ND		ug/kg	55.2	--	1
Aroclor 1242	ND		ug/kg	55.2	--	1
Aroclor 1248	ND		ug/kg	36.8	--	1
Aroclor 1254	ND		ug/kg	55.2	--	1
Aroclor 1260	68.7		ug/kg	36.8	--	1
Aroclor 1262	ND		ug/kg	18.4	--	1
Aroclor 1268	ND		ug/kg	18.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	99		30-150
Decachlorobiphenyl	99		30-150
2,4,5,6-Tetrachloro-m-xylene	95		30-150
Decachlorobiphenyl	98		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-28	Date Collected:	07/12/12 14:00
Client ID:	EQUIP BLANK-3	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	97,8082	Extraction Date:	07/14/12 00:35
Analytical Date:	07/17/12 08:32	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
		Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/l	0.250	--	1
Aroclor 1221	ND		ug/l	0.250	--	1
Aroclor 1232	ND		ug/l	0.250	--	1
Aroclor 1242	ND		ug/l	0.250	--	1
Aroclor 1248	ND		ug/l	0.250	--	1
Aroclor 1254	ND		ug/l	0.250	--	1
Aroclor 1260	ND		ug/l	0.250	--	1
Aroclor 1262	ND		ug/l	0.250	--	1
Aroclor 1268	ND		ug/l	0.250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	71		30-150
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	76		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-29	Date Collected:	07/12/12 13:00
Client ID:	CMU-D-5	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/19/12 11:08	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	54.0	--	1
Aroclor 1221	ND		ug/kg	54.0	--	1
Aroclor 1232	ND		ug/kg	54.0	--	1
Aroclor 1242	ND		ug/kg	54.0	--	1
Aroclor 1248	ND		ug/kg	36.0	--	1
Aroclor 1254	ND		ug/kg	54.0	--	1
Aroclor 1260	ND		ug/kg	36.0	--	1
Aroclor 1262	ND		ug/kg	18.0	--	1
Aroclor 1268	ND		ug/kg	18.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	106		30-150
Decachlorobiphenyl	108		30-150
2,4,5,6-Tetrachloro-m-xylene	98		30-150
Decachlorobiphenyl	92		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-30	Date Collected:	07/12/12 13:05
Client ID:	CMU-D-6	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/19/12 11:22	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	52.2	--	1
Aroclor 1221	ND		ug/kg	52.2	--	1
Aroclor 1232	ND		ug/kg	52.2	--	1
Aroclor 1242	ND		ug/kg	52.2	--	1
Aroclor 1248	ND		ug/kg	34.8	--	1
Aroclor 1254	ND		ug/kg	52.2	--	1
Aroclor 1260	ND		ug/kg	34.8	--	1
Aroclor 1262	ND		ug/kg	17.4	--	1
Aroclor 1268	ND		ug/kg	17.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	107		30-150
Decachlorobiphenyl	113		30-150
2,4,5,6-Tetrachloro-m-xylene	102		30-150
Decachlorobiphenyl	107		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-31	Date Collected:	07/12/12 13:10
Client ID:	CMU-E-5	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/19/12 11:35	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	50.2	--	1
Aroclor 1221	ND		ug/kg	50.2	--	1
Aroclor 1232	ND		ug/kg	50.2	--	1
Aroclor 1242	ND		ug/kg	50.2	--	1
Aroclor 1248	ND		ug/kg	33.5	--	1
Aroclor 1254	ND		ug/kg	50.2	--	1
Aroclor 1260	ND		ug/kg	33.5	--	1
Aroclor 1262	ND		ug/kg	16.8	--	1
Aroclor 1268	ND		ug/kg	16.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	91		30-150
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	88		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212415

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212415-32	Date Collected:	07/12/12 13:15
Client ID:	CMU-E-6	Date Received:	07/12/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 23:00
Analytical Date:	07/19/12 11:48	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.7	--	1
Aroclor 1221	ND		ug/kg	57.7	--	1
Aroclor 1232	ND		ug/kg	57.7	--	1
Aroclor 1242	ND		ug/kg	57.7	--	1
Aroclor 1248	ND		ug/kg	38.5	--	1
Aroclor 1254	ND		ug/kg	57.7	--	1
Aroclor 1260	53.2		ug/kg	38.5	--	1
Aroclor 1262	ND		ug/kg	19.2	--	1
Aroclor 1268	ND		ug/kg	19.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	99		30-150
Decachlorobiphenyl	105		30-150
2,4,5,6-Tetrachloro-m-xylene	95		30-150
Decachlorobiphenyl	100		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212415

Report Date: 07/20/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/17/12 06:19
Analyst: BA

Extraction Method: EPA 3510C
Extraction Date: 07/14/12 00:35
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/15/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/15/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 01,28 Batch: WG548400-1					
Aroclor 1016	ND		ug/l	0.250	--
Aroclor 1221	ND		ug/l	0.250	--
Aroclor 1232	ND		ug/l	0.250	--
Aroclor 1242	ND		ug/l	0.250	--
Aroclor 1248	ND		ug/l	0.250	--
Aroclor 1254	ND		ug/l	0.250	--
Aroclor 1260	ND		ug/l	0.250	--
Aroclor 1262	ND		ug/l	0.250	--
Aroclor 1268	ND		ug/l	0.250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	87		30-150
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	96		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212415

Report Date: 07/20/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/18/12 20:11
Analyst: KB

Extraction Method: EPA 3540C
Extraction Date: 07/17/12 16:25
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/18/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/18/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 02-11,13-18 Batch: WG549005-1					
Aroclor 1016	ND		ug/kg	57.2	--
Aroclor 1221	ND		ug/kg	57.2	--
Aroclor 1232	ND		ug/kg	57.2	--
Aroclor 1242	ND		ug/kg	57.2	--
Aroclor 1248	ND		ug/kg	38.2	--
Aroclor 1254	ND		ug/kg	57.2	--
Aroclor 1260	ND		ug/kg	38.2	--
Aroclor 1262	ND		ug/kg	19.1	--
Aroclor 1268	ND		ug/kg	19.1	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	75		30-150
Decachlorobiphenyl	79		30-150
2,4,5,6-Tetrachloro-m-xylene	98		30-150
Decachlorobiphenyl	75		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212415

Report Date: 07/20/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/18/12 17:59
Analyst: KB

Extraction Method: EPA 3540C
Extraction Date: 07/17/12 23:00
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/18/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/18/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 20-27,29-32 Batch: WG549059-1					
Aroclor 1016	ND		ug/kg	58.0	--
Aroclor 1221	ND		ug/kg	58.0	--
Aroclor 1232	ND		ug/kg	58.0	--
Aroclor 1242	ND		ug/kg	58.0	--
Aroclor 1248	ND		ug/kg	38.7	--
Aroclor 1254	ND		ug/kg	58.0	--
Aroclor 1260	ND		ug/kg	38.7	--
Aroclor 1262	ND		ug/kg	19.3	--
Aroclor 1268	ND		ug/kg	19.3	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	73		30-150
Decachlorobiphenyl	77		30-150
2,4,5,6-Tetrachloro-m-xylene	70		30-150
Decachlorobiphenyl	74		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212415

Report Date: 07/20/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/20/12 10:58
Analyst: KB

Extraction Method: EPA 3540C
Extraction Date: 07/19/12 11:52
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/20/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/20/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 12,19 Batch: WG549518-1					
Aroclor 1016	ND		ug/kg	54.2	--
Aroclor 1221	ND		ug/kg	54.2	--
Aroclor 1232	ND		ug/kg	54.2	--
Aroclor 1242	ND		ug/kg	54.2	--
Aroclor 1248	ND		ug/kg	36.1	--
Aroclor 1254	ND		ug/kg	54.2	--
Aroclor 1260	ND		ug/kg	36.1	--
Aroclor 1262	ND		ug/kg	18.0	--
Aroclor 1268	ND		ug/kg	18.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	106		30-150
Decachlorobiphenyl	87		30-150
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	78		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814
Lab Number: L1212415
Report Date: 07/20/12

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 01,28 Batch: WG548400-2 WG548400-3								
Aroclor 1016	82		76		40-140	8		20
Aroclor 1260	74		76		40-140	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	93		82		30-150
Decachlorobiphenyl	90		88		30-150
2,4,5,6-Tetrachloro-m-xylene	87		77		30-150
Decachlorobiphenyl	99		91		30-150

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 02-11,13-18 Batch: WG549005-2 WG549005-3								
Aroclor 1016	74		86		40-140	15		30
Aroclor 1260	92		94		40-140	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	92		98		30-150
Decachlorobiphenyl	102		104		30-150
2,4,5,6-Tetrachloro-m-xylene	87		92		30-150
Decachlorobiphenyl	95		97		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814
Lab Number: L1212415
Report Date: 07/20/12

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 20-27,29-32 Batch: WG549059-2 WG549059-3								
Aroclor 1016	72		83		40-140	14		30
Aroclor 1260	71		85		40-140	18		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	81		88		30-150
Decachlorobiphenyl	83		102		30-150
2,4,5,6-Tetrachloro-m-xylene	76		84		30-150
Decachlorobiphenyl	78		96		30-150

MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 12,19 Batch: WG549518-2 WG549518-3								
Aroclor 1016	92		92		40-140	0		30
Aroclor 1260	83		84		40-140	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	104		100		30-150
Decachlorobiphenyl	92		87		30-150
2,4,5,6-Tetrachloro-m-xylene	94		90		30-150
Decachlorobiphenyl	83		78		30-150

INORGANICS
&
MISCELLANEOUS

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-02
Client ID: CMU-A-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 08:00
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-03
Client ID: CMU-A-1_DUP
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 08:00
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-04
Client ID: CMU-A-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 08:07
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-05
Client ID: CMU-A-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 08:14
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-06
Client ID: CMU-A-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 08:20
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-07
Client ID: CMU-A-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 08:30
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-08
Client ID: CMU-A-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 08:37
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-09
Client ID: CMU-A-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 08:45
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-10
Client ID: CMU-A-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 08:50
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-11
Client ID: CMU-B-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 09:30
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-12
Client ID: CMU-B-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 09:35
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-13
Client ID: CMU-B-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 09:42
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-14
Client ID: CMU-B-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 09:50
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-15
Client ID: CMU-B-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 10:00
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-16
Client ID: CMU-B-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 10:10
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-17
Client ID: CMU-B-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 10:15
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-18
Client ID: CMU-B-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 10:30
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-19
Client ID: CMU-C-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 11:30
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-20
Client ID: CMU-C-1_DUP
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 11:30
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-21
Client ID: CMU-C-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 11:35
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:25	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-22
Client ID: CMU-C-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 11:40
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-23
Client ID: CMU-C-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 11:45
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-24
Client ID: CMU-C-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 11:50
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-25
Client ID: CMU-C-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 11:55
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-26
Client ID: CMU-C-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 12:00
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-27
Client ID: CMU-C-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 12:05
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-29
Client ID: CMU-D-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 13:00
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-30
Client ID: CMU-D-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 13:05
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-31
Client ID: CMU-E-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 13:10
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212415-32
Client ID: CMU-E-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/12/12 13:15
Date Received: 07/12/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 00:45	30,2540G	RD

Lab Duplicate Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02-21 QC Batch ID: WG548148-1 QC Sample: L1212415-02 Client ID: CMU-A-1						
Solids, Total	100	100	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 22-27,29-32 QC Batch ID: WG548149-1 QC Sample: L1212415-22 Client ID: CMU-C-3						
Solids, Total	100	100	%	0		20

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1212415-01A	Amber 1000ml unpreserved	A	7	5	Y	Absent	MCP-8082-10(365)
L1212415-01B	Amber 1000ml unpreserved	A	7	5	Y	Absent	MCP-8082-10(365)
L1212415-02A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-03A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-04A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-05A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-06A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-07A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-08A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-09A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-10A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-11A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-12A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-13A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-14A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-15A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-16A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-17A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-18A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)

*Values in parentheses indicate holding time in days

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212415
Report Date: 07/20/12

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1212415-19A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-20A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-21A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-22A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-23A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-24A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-25A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-26A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-27A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-28A	Amber 1000ml unpreserved	A	7	5	Y	Absent	MCP-8082-10(365)
L1212415-28B	Amber 1000ml unpreserved	A	7	5	Y	Absent	MCP-8082-10(365)
L1212415-29A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-30A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-31A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212415-32A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)

*Values in parentheses indicate holding time in days

Project Name:	MBTA/LECHMERE	**Lab Number:**	L1212415
Project Number:	P2814	**Report Date:**	07/20/12

GLOSSARY

Acronyms

EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
C	- Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D	- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E	- Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G	- The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H	- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I	- The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
M	- Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
NJ	- Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

Report Format: Data Usability Report

Project Name:	MBTA/LECHMERE	**Lab Number:**	L1212415
Project Number:	P2814	**Report Date:**	07/20/12

Data Qualifiers

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: MBTA/LECHMERE **Lab Number:** L1212415
Project Number: P2814 **Report Date:** 07/20/12

REFERENCES

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised May 11, 2012 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. ***NELAP Accredited Solid Waste/Soil.***

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223 P/A), E. Coli. – Colilert (SM9223 P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D, Fecal Coliform-EC Medium 9221E).

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterolert, E.Coli 9223.

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics, Acid Extractables (Phenols), Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2130B, 2320B, 2540C, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, SM2320B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-G, 4500NO3-F, 4500P-B, 4500P-E, 5210B, 5220D, 5310C, 9010B, 9040B, 9030B, 7470A, 7196A, 2340B, EPA 200.7, 6010B, 200.8, 6020, 245.1, 1311, 1312, 3005A, Enterolert, 9223D, 9222D. Organic Parameters: 608, 624, 625, 8081A, 8082, 8330, 8151A, 8260B, 8270C, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Inorganic Parameters: 9010B, 9012A, 9014A, 9030B, 9040B, 9045C, 6010B, 7471A, 7196A, 9050A, 1010, 1030, 9065, 1311, 1312, 3005A, 3050B. Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH, 8260B, 8270C, 8330, 8151A, 8081A, 8082, 3540C, 3546, 3580A, 3630C, 5030B, 5035.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
*Drinking Water (*Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

*Non-Potable Water (*Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn); 245.1, SM4500H,B, EPA 120.1,

SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.
Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B; Enterolert-QT: SM9222D-MF.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 245.2, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6010C, 6020, 6020A, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 350.2, 351.1, 353.2, 410.4, 420.1, 426C, 1664A, SW-846 9010B, 9030B, 9040B, SM426C, SM2120B, 2310B, 2320B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3510C, 3630C, 5030B, 8260B, 8270C, 8270D, 8330, EPA 624, 625, 608, SW-846 8082, 8081A, 8081B, 8151A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 6010C, 7196A, 7471A, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040B, 9045C, 9050, 9065,1311, 1312, 3005A, 3050B, 3060A. Organic Parameters: SW-846 3540C, 3546, 3550B, 3580A, 3630C, 5030B, 5035, 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330, 8151A, 8015B, 8082, 8082A, 8081A, 8081B.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.2, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-E, EPA 300.0, SM2120B, 2340B, SM4500F-BC, EPA 200.7, 200.8, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM510ABC, SM4500P-B5+E, 2540B, 2540C, 2540D, 2540G, EPA 120.1, SM2510B, SM15 426C, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, 350.2, SW-846 1312, 7470A, 5540C, SM4500H-B, 4500SO3-B, SM3500Cr-D, 4500CN-CE, EPA 245.1, 245.2, SW-846 9040B, 3005A, 3015, EPA 6010B, 6010C, 6020, 6020A, 7196A, 3060A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 1,4-Dioxane by NJ Modified 8270, 8015B, NJ OQA-QAM-025 Rev.7, NJ EPH.)

Solid & Chemical Materials (Inorganic Parameters: SW-846, 6010B, 6010C,6020, 6020A, 7196A, 3060A, 9010B, 9030B, 1010, 1030, 1311, 1312, 3005A, 3050B, 7471A, 7471B, 9014, 9012A, 9040B, 9045C, 9050A, 9065. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3630C, 5030B, 5035L, 5035H, NJ OQA-QAM-025 Rev.7, NJ EPH.)

New York Department of Health Certificate/Lab ID: 11148. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO3-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH3-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6010C, 6020, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, LACHAT 10-204-00-1-A, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 624, 8260B, 8270C, 8270D, 625, 608, 8081A, 8081B, 8151A, 8330, 8082, 8082A, EPA 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, EPA 6010B, 6010C, 7196A, 7471A, 7471B, 9012A, 9014, 9065, 9050A, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8015B, 8015C, 8081A, 8081B, 8151A, 8330, 8082 8082A, 3540C, 3546, 3580, 3580A, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666. Organic Parameters: MA-EPH, MA-VPH.

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-03671. ***NELAP Accredited.***
Drinking Water (Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 1312, 3005A, 200.7, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3050B, 3060A, 6010B, 6010C, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065, SM 4500NH3-H. Organic Parameters: 3540C, 3546, 3580A, 3630C, 5035, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. ***NELAP Accredited via NY-DOH.***
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2¯D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID: 460195. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 3005A,3015,1312,6010B,6010C,SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X. Organic Parameters: EPA 8260B)

Solid & Hazardous Waste (Inorganic Parameters: EPA 3050B, 1311, 1312, 6010B, 6010C, 9030B, 9010B, 9012A, 9014. Organic Parameters: EPA 5035, 5030B, 8260B, 8015B, 8015C.)

Department of Defense, L-A-B Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1. 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

The following analytes are not included in our current NELAP/TNI Scope of Accreditation:
EPA 8260B: Freon-113, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625:** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, Chloride in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix, SO4 in a soil matrix. **EPA 9071:** Total Petroleum Hydrocarbons, Oil & Grease

CHAIN OF CUSTODY

PAGE 1 OF 4

ALPHA ANALYTICAL — World Class Chemistry

8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 7/12/12

ALPHA Job #: L1212415

Project Information

Project Name: MBTA/Lechmere
Project Location: Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: P2814

Client Information

Client: Nover-Armstrong Assoc, Inc
Address: 124 Main St, Unit 2B
Carver, MA 02330
Phone: 508-866-8383
Email: malger@noverarmstrong.com

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

Use Soxhlet Extraction

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☒ PCB ☐ PEST Soxhlet; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCB	Sample Comments	TOTAL # BOTTLES
12415-01	EQUIP BLANK - 2	7/12/12	7:55am	DI Water	MA	2		2
-02	CMU-A-1		8:00am	Concrete Powder	MA	1		1
-03	CMU-A-1 DUP		8:00			1		1
-04	CMU-A-2		8:07			1		1
-05	CMU-A-3		8:14			1		1
-06	CMU-A-4		8:20			1		1
-07	CMU-A-5		8:30			1		1
-08	CMU-A-6		8:37			1		1
-09	CMU-A-7		8:45			1		1
-10	CMU-A-8		8:50			1		1
					Container Type	A		
					Preservative	A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H= $Na_2S_2O_3$
I= Ascorbic Acid
J= NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/12/12 3:30pm	[signature]	7/12/12

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 2 OF 4

ALPHA ANALYTICAL — World Class Chemistry

8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 7/12/12

ALPHA Job #: L1212415

Project Information

Project Name: MBTA/Lechmere
Project Location: Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: P2814

Client Information

Client: Nover-Armstrong Assoc., Inc.
Address: 124 Main St, Unit 2G
Carver, MA 02330
Phone: 508-866-8383
Email: malger@noverarmstrong.com

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

Use Soxhlet Extraction

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☒ PCB ☐ PEST Soxhlet; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCB	Sample Comments	Total # Bottles
12415-11	CMU-B-1	7/12/12	9:30	Concrete Powder	MA	1		1
-12	CMU-B-2		9:35			1		1
-13	CMU-B-3		9:42			1		1
-14	CMU-B-4		9:50			1		1
-15	CMU-B-5		10:00			1		1
-16	CMU-B-6		10:10			1		1
-17	CMU-B-7		10:15			1		1
-18	CMU-B-8		10:30			1		1
-19	CMU-C-1		11:30			1		1
-20	CMU-C-1_DUP		11:30			1		1
				Container Type		A		
				Preservative		1		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Matt Alger	7/12/12 3:30 pm	[illegible]	7/12/12 [illegible]

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 3 OF 4

Date Rec'd in Lab: 7/12/12

ALPHA Job #: L1212415

ALPHA ANALYTICAL — World Class Chemistry
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information

Project Name: MBTA/Lechmere
Project Location: Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: P2814

Client Information

Client: Naver-Armstrong Assoc.
Address: 124 Main St, Unit 266, Carver, MA
Phone: 508-866-8383
Email: malger@noverarmstrong.com

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

Use Soxhlet Extraction

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☒ PCB ☐ PEST Soxhlet; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCB	Sample Comments	TOTAL # BOTTLES
12415-21	CMU-C-2	7/12/12	11:35	Concrete Powder	MA	1		1
-22	CMU-C-3		11:40			1		1
-23	CMU-C-4		11:45			1		1
-24	CMU-C-5		11:50			1		1
-25	CMU-C-6		11:55			1		1
-26	CMU-C-7		12:00			1		1
-27	CMU-C-8		12:05			1		1
-28	EQUIP BLANK-3		14:00	DI Water		2		2
-29	CMU-D-5		13:00	Concrete Powder		1		1
-30	CMU-D-6		13:05			1		1
					Container Type	A		
					Preservative	A		

Container Type: P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle

Preservative: A= None, B= HCl, C= HNO_3, D= H_2SO_4, E= NaOH, F= MeOH, G= $NaHSO_4$, H= $Na_2S_2O_3$, I= Ascorbic Acid, J= NH_4Cl, K= Zn Acetate, O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/12/12 3:36pm	[signature]	7/12/12

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 4 OF 4

ALPHA ANALYTICAL — Water Class Chemistry

8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 7/12/12

ALPHA Job #: L1212415

Project Information

Project Name: MBTA / Lechmere
Project Location: Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☐ EMAIL

Billing Information

☒ Same as Client info PO #: P2814

Client Information

Client: Nover-Armstrong Assoc.
Address: 124 Main St, Unit 266, Carver MA 02330
Phone: 508-866-8383
Email: malger@noverarmstrong.com

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

Use Soxhlet Extraction

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☒ PCB ☐ PEST Soxhlet; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	☒ PCB	Sample Comments	TOTAL # BOTTLES
12415-31	CMU-E-5	7/12/12	13:10	Concrete Powder	MA	1		1
-32	CMU-E-6	1	13:15	1	1	1		1
					Container Type	A		
					Preservative	A		

Container Type: P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle

Preservative: A= None, B= HCl, C= HNO_3, D= H_2SO_4, E= NaOH, F= MeOH, G= $NaHSO_4$, H = $Na_2S_2O_3$, I= Ascorbic Acid, J = NH_4Cl, K= Zn Acetate, O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/12/12 3:30 pm	[signature]	7/12/12 15:30

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1212503
Client:	Nover-Armstrong Associates 124 Main Street Unit 2GG Carver, MA 02330
ATTN:	Matt Alger
Phone:	(508) 866-8383
Project Name:	MBTA/LECHMERE
Project Number:	P2814
Report Date:	07/20/12

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1212503-01	CMU-D-1	CAMBRIDGE	07/13/12 08:00
L1212503-02	CMU-D-2	CAMBRIDGE	07/13/12 08:05
L1212503-03	CMU-D-3	CAMBRIDGE	07/13/12 08:10
L1212503-04	CMU-D-4	CAMBRIDGE	07/13/12 08:15
L1212503-05	CMU-D-7	CAMBRIDGE	07/13/12 08:20
L1212503-06	CMU-D-8	CAMBRIDGE	07/13/12 08:25
L1212503-07	CMU-E-1	CAMBRIDGE	07/13/12 08:40
L1212503-08	CMU-E-2	CAMBRIDGE	07/13/12 08:45
L1212503-09	CMU-E-3	CAMBRIDGE	07/13/12 08:50
L1212503-10	CMU-E-4	CAMBRIDGE	07/13/12 08:55
L1212503-11	CMU-E-7	CAMBRIDGE	07/13/12 09:00
L1212503-12	CMU-E-8	CAMBRIDGE	07/13/12 09:05
L1212503-13	CRACK-2	CAMBRIDGE	07/13/12 09:10
L1212503-14	CMU-H-1	CAMBRIDGE	07/13/12 09:30
L1212503-15	CMU-H-1_DUP	CAMBRIDGE	07/13/12 09:30
L1212503-16	CMU-H-2	CAMBRIDGE	07/13/12 09:40
L1212503-17	CMU-H-3	CAMBRIDGE	07/13/12 09:45
L1212503-18	CMU-H-4	CAMBRIDGE	07/13/12 09:50
L1212503-19	CMU-H-5	CAMBRIDGE	07/13/12 09:55
L1212503-20	CMU-H-6	CAMBRIDGE	07/13/12 10:00

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is 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
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name: MBTA/LECHMERE **Lab Number:** L1212503
Project Number: P2814 **Report Date:** 07/20/12

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	MBTA/LECHMERE	**Lab Number:**	L1212503
Project Number:	P2814	**Report Date:**	07/20/12

Case Narrative (continued)

MCP Related Narratives

Report Submission

All MCP required questions were answered with affirmative responses; therefore, there are no relevant protocol-specific QC and/or performance standard non-conformances to report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Elizabeth Simmons

Elizabeth Simmons

Title: Technical Director/Representative

Date: 07/20/12

ORGANICS

PCBS

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-01	Date Collected:	07/13/12 08:00
Client ID:	CMU-D-1	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 16:34	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.7	--	1
Aroclor 1221	ND		ug/kg	58.7	--	1
Aroclor 1232	ND		ug/kg	58.7	--	1
Aroclor 1242	ND		ug/kg	58.7	--	1
Aroclor 1248	ND		ug/kg	39.1	--	1
Aroclor 1254	ND		ug/kg	58.7	--	1
Aroclor 1260	223		ug/kg	39.1	--	1
Aroclor 1262	ND		ug/kg	19.6	--	1
Aroclor 1268	ND		ug/kg	19.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	88		30-150
Decachlorobiphenyl	103		30-150
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	93		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-02	Date Collected:	07/13/12 08:05
Client ID:	CMU-D-2	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 16:48	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.2	--	1
Aroclor 1221	ND		ug/kg	56.2	--	1
Aroclor 1232	ND		ug/kg	56.2	--	1
Aroclor 1242	ND		ug/kg	56.2	--	1
Aroclor 1248	ND		ug/kg	37.4	--	1
Aroclor 1254	ND		ug/kg	56.2	--	1
Aroclor 1260	98.5		ug/kg	37.4	--	1
Aroclor 1262	ND		ug/kg	18.7	--	1
Aroclor 1268	ND		ug/kg	18.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	63		30-150
Decachlorobiphenyl	92		30-150
2,4,5,6-Tetrachloro-m-xylene	65		30-150
Decachlorobiphenyl	93		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-03	Date Collected:	07/13/12 08:10
Client ID:	CMU-D-3	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 17:01	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.1	--	1
Aroclor 1221	ND		ug/kg	58.1	--	1
Aroclor 1232	ND		ug/kg	58.1	--	1
Aroclor 1242	ND		ug/kg	58.1	--	1
Aroclor 1248	ND		ug/kg	38.8	--	1
Aroclor 1254	ND		ug/kg	58.1	--	1
Aroclor 1260	ND		ug/kg	38.8	--	1
Aroclor 1262	ND		ug/kg	19.4	--	1
Aroclor 1268	ND		ug/kg	19.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	70		30-150
Decachlorobiphenyl	93		30-150
2,4,5,6-Tetrachloro-m-xylene	73		30-150
Decachlorobiphenyl	77		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-04	Date Collected:	07/13/12 08:15
Client ID:	CMU-D-4	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 17:15	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.6	--	1
Aroclor 1221	ND		ug/kg	57.6	--	1
Aroclor 1232	ND		ug/kg	57.6	--	1
Aroclor 1242	ND		ug/kg	57.6	--	1
Aroclor 1248	ND		ug/kg	38.4	--	1
Aroclor 1254	ND		ug/kg	57.6	--	1
Aroclor 1260	ND		ug/kg	38.4	--	1
Aroclor 1262	ND		ug/kg	19.2	--	1
Aroclor 1268	ND		ug/kg	19.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	86		30-150
Decachlorobiphenyl	90		30-150
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	98		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-05	Date Collected:	07/13/12 08:20
Client ID:	CMU-D-7	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 17:29	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.4	--	1
Aroclor 1221	ND		ug/kg	57.4	--	1
Aroclor 1232	ND		ug/kg	57.4	--	1
Aroclor 1242	ND		ug/kg	57.4	--	1
Aroclor 1248	ND		ug/kg	38.2	--	1
Aroclor 1254	ND		ug/kg	57.4	--	1
Aroclor 1260	ND		ug/kg	38.2	--	1
Aroclor 1262	ND		ug/kg	19.1	--	1
Aroclor 1268	ND		ug/kg	19.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	95		30-150
2,4,5,6-Tetrachloro-m-xylene	95		30-150
Decachlorobiphenyl	100		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-06	Date Collected:	07/13/12 08:25
Client ID:	CMU-D-8	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 17:42	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.8	--	1
Aroclor 1221	ND		ug/kg	57.8	--	1
Aroclor 1232	ND		ug/kg	57.8	--	1
Aroclor 1242	ND		ug/kg	57.8	--	1
Aroclor 1248	ND		ug/kg	38.5	--	1
Aroclor 1254	ND		ug/kg	57.8	--	1
Aroclor 1260	ND		ug/kg	38.5	--	1
Aroclor 1262	ND		ug/kg	19.3	--	1
Aroclor 1268	ND		ug/kg	19.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	73		30-150
Decachlorobiphenyl	105		30-150
2,4,5,6-Tetrachloro-m-xylene	77		30-150
Decachlorobiphenyl	111		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-07	Date Collected:	07/13/12 08:40
Client ID:	CMU-E-1	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 17:56	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.5	--	1
Aroclor 1221	ND		ug/kg	57.5	--	1
Aroclor 1232	ND		ug/kg	57.5	--	1
Aroclor 1242	ND		ug/kg	57.5	--	1
Aroclor 1248	ND		ug/kg	38.3	--	1
Aroclor 1254	ND		ug/kg	57.5	--	1
Aroclor 1260	52.2		ug/kg	38.3	--	1
Aroclor 1262	ND		ug/kg	19.2	--	1
Aroclor 1268	ND		ug/kg	19.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	101		30-150
Decachlorobiphenyl	106		30-150
2,4,5,6-Tetrachloro-m-xylene	108		30-150
Decachlorobiphenyl	113		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-08	Date Collected:	07/13/12 08:45
Client ID:	CMU-E-2	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 18:10	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.2	--	1
Aroclor 1221	ND		ug/kg	58.2	--	1
Aroclor 1232	ND		ug/kg	58.2	--	1
Aroclor 1242	ND		ug/kg	58.2	--	1
Aroclor 1248	ND		ug/kg	38.8	--	1
Aroclor 1254	ND		ug/kg	58.2	--	1
Aroclor 1260	ND		ug/kg	38.8	--	1
Aroclor 1262	ND		ug/kg	19.4	--	1
Aroclor 1268	ND		ug/kg	19.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	110		30-150
2,4,5,6-Tetrachloro-m-xylene	103		30-150
Decachlorobiphenyl	111		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-09	Date Collected:	07/13/12 08:50
Client ID:	CMU-E-3	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 18:23	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.5	--	1
Aroclor 1221	ND		ug/kg	58.5	--	1
Aroclor 1232	ND		ug/kg	58.5	--	1
Aroclor 1242	ND		ug/kg	58.5	--	1
Aroclor 1248	ND		ug/kg	39.0	--	1
Aroclor 1254	ND		ug/kg	58.5	--	1
Aroclor 1260	ND		ug/kg	39.0	--	1
Aroclor 1262	ND		ug/kg	19.5	--	1
Aroclor 1268	ND		ug/kg	19.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	95		30-150
Decachlorobiphenyl	107		30-150
2,4,5,6-Tetrachloro-m-xylene	101		30-150
Decachlorobiphenyl	97		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-10	Date Collected:	07/13/12 08:55
Client ID:	CMU-E-4	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 18:37	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.8	--	1
Aroclor 1221	ND		ug/kg	58.8	--	1
Aroclor 1232	ND		ug/kg	58.8	--	1
Aroclor 1242	ND		ug/kg	58.8	--	1
Aroclor 1248	ND		ug/kg	39.2	--	1
Aroclor 1254	ND		ug/kg	58.8	--	1
Aroclor 1260	ND		ug/kg	39.2	--	1
Aroclor 1262	ND		ug/kg	19.6	--	1
Aroclor 1268	ND		ug/kg	19.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	91		30-150
Decachlorobiphenyl	107		30-150
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	109		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-11	Date Collected:	07/13/12 09:00
Client ID:	CMU-E-7	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 18:51	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.2	--	1
Aroclor 1221	ND		ug/kg	58.2	--	1
Aroclor 1232	ND		ug/kg	58.2	--	1
Aroclor 1242	ND		ug/kg	58.2	--	1
Aroclor 1248	ND		ug/kg	38.8	--	1
Aroclor 1254	ND		ug/kg	58.2	--	1
Aroclor 1260	48.2		ug/kg	38.8	--	1
Aroclor 1262	ND		ug/kg	19.4	--	1
Aroclor 1268	ND		ug/kg	19.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	80		30-150
Decachlorobiphenyl	108		30-150
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	112		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-12	Date Collected:	07/13/12 09:05
Client ID:	CMU-E-8	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:52
Analytical Date:	07/18/12 19:04	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.1	--	1
Aroclor 1221	ND		ug/kg	57.1	--	1
Aroclor 1232	ND		ug/kg	57.1	--	1
Aroclor 1242	ND		ug/kg	57.1	--	1
Aroclor 1248	ND		ug/kg	38.1	--	1
Aroclor 1254	ND		ug/kg	57.1	--	1
Aroclor 1260	49.9		ug/kg	38.1	--	1
Aroclor 1262	ND		ug/kg	19.0	--	1
Aroclor 1268	ND		ug/kg	19.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	106		30-150
Decachlorobiphenyl	111		30-150
2,4,5,6-Tetrachloro-m-xylene	113		30-150
Decachlorobiphenyl	111		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-13	Date Collected:	07/13/12 09:10
Client ID:	CRACK-2	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 13:00
Analytical Date:	07/18/12 19:18	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	99%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.0	--	1
Aroclor 1221	ND		ug/kg	58.0	--	1
Aroclor 1232	ND		ug/kg	58.0	--	1
Aroclor 1242	ND		ug/kg	58.0	--	1
Aroclor 1248	ND		ug/kg	38.7	--	1
Aroclor 1262	ND		ug/kg	19.4	--	1
Aroclor 1268	ND		ug/kg	19.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	86		30-150
Decachlorobiphenyl	88		30-150
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	106		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-13	Date Collected:	07/13/12 09:10
Client ID:	CRACK-2	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 13:00
Analytical Date:	07/18/12 19:18	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	99%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1254	224		ug/kg	58.0	--	1
Aroclor 1260	368		ug/kg	38.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	86		30-150
Decachlorobiphenyl	88		30-150
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	106		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-14	Date Collected:	07/13/12 09:30
Client ID:	CMU-H-1	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 13:00
Analytical Date:	07/18/12 19:32	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.7	--	1
Aroclor 1221	ND		ug/kg	56.7	--	1
Aroclor 1232	ND		ug/kg	56.7	--	1
Aroclor 1242	ND		ug/kg	56.7	--	1
Aroclor 1248	ND		ug/kg	37.8	--	1
Aroclor 1254	ND		ug/kg	56.7	--	1
Aroclor 1260	181		ug/kg	37.8	--	1
Aroclor 1262	ND		ug/kg	18.9	--	1
Aroclor 1268	ND		ug/kg	18.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	99		30-150
Decachlorobiphenyl	93		30-150
2,4,5,6-Tetrachloro-m-xylene	107		30-150
Decachlorobiphenyl	107		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-15	Date Collected:	07/13/12 09:30
Client ID:	CMU-H-1_DUP	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 13:00
Analytical Date:	07/18/12 19:45	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	55.9	--	1
Aroclor 1221	ND		ug/kg	55.9	--	1
Aroclor 1232	ND		ug/kg	55.9	--	1
Aroclor 1242	ND		ug/kg	55.9	--	1
Aroclor 1248	ND		ug/kg	37.2	--	1
Aroclor 1254	ND		ug/kg	55.9	--	1
Aroclor 1260	524		ug/kg	37.2	--	1
Aroclor 1262	ND		ug/kg	18.6	--	1
Aroclor 1268	ND		ug/kg	18.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	89		30-150
Decachlorobiphenyl	98		30-150
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	104		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-16	Date Collected:	07/13/12 09:40
Client ID:	CMU-H-2	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 13:00
Analytical Date:	07/18/12 19:59	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.9	--	1
Aroclor 1221	ND		ug/kg	56.9	--	1
Aroclor 1232	ND		ug/kg	56.9	--	1
Aroclor 1242	ND		ug/kg	56.9	--	1
Aroclor 1248	ND		ug/kg	38.0	--	1
Aroclor 1254	ND		ug/kg	56.9	--	1
Aroclor 1260	148		ug/kg	38.0	--	1
Aroclor 1262	ND		ug/kg	19.0	--	1
Aroclor 1268	ND		ug/kg	19.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	102		30-150
2,4,5,6-Tetrachloro-m-xylene	89		30-150
Decachlorobiphenyl	103		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-17	Date Collected:	07/13/12 09:45
Client ID:	CMU-H-3	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 13:00
Analytical Date:	07/18/12 20:13	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.5	--	1
Aroclor 1221	ND		ug/kg	56.5	--	1
Aroclor 1232	ND		ug/kg	56.5	--	1
Aroclor 1242	ND		ug/kg	56.5	--	1
Aroclor 1248	ND		ug/kg	37.7	--	1
Aroclor 1254	ND		ug/kg	56.5	--	1
Aroclor 1260	56.4		ug/kg	37.7	--	1
Aroclor 1262	ND		ug/kg	18.8	--	1
Aroclor 1268	ND		ug/kg	18.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	101		30-150
Decachlorobiphenyl	111		30-150
2,4,5,6-Tetrachloro-m-xylene	107		30-150
Decachlorobiphenyl	116		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-18	Date Collected:	07/13/12 09:50
Client ID:	CMU-H-4	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 13:00
Analytical Date:	07/18/12 21:21	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.6	--	1
Aroclor 1221	ND		ug/kg	58.6	--	1
Aroclor 1232	ND		ug/kg	58.6	--	1
Aroclor 1242	ND		ug/kg	58.6	--	1
Aroclor 1248	ND		ug/kg	39.1	--	1
Aroclor 1254	ND		ug/kg	58.6	--	1
Aroclor 1260	ND		ug/kg	39.1	--	1
Aroclor 1262	ND		ug/kg	19.5	--	1
Aroclor 1268	ND		ug/kg	19.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	77		30-150
Decachlorobiphenyl	107		30-150
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	113		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-19	Date Collected:	07/13/12 09:55
Client ID:	CMU-H-5	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 13:00
Analytical Date:	07/18/12 21:34	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.5	--	1
Aroclor 1221	ND		ug/kg	56.5	--	1
Aroclor 1232	ND		ug/kg	56.5	--	1
Aroclor 1242	ND		ug/kg	56.5	--	1
Aroclor 1248	ND		ug/kg	37.7	--	1
Aroclor 1254	ND		ug/kg	56.5	--	1
Aroclor 1260	67.9		ug/kg	37.7	--	1
Aroclor 1262	ND		ug/kg	18.8	--	1
Aroclor 1268	ND		ug/kg	18.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	73		30-150
Decachlorobiphenyl	108		30-150
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	113		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212503

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212503-20	Date Collected:	07/13/12 10:00
Client ID:	CMU-H-6	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 13:00
Analytical Date:	07/18/12 21:48	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.7	--	1
Aroclor 1221	ND		ug/kg	56.7	--	1
Aroclor 1232	ND		ug/kg	56.7	--	1
Aroclor 1242	ND		ug/kg	56.7	--	1
Aroclor 1248	ND		ug/kg	37.8	--	1
Aroclor 1254	ND		ug/kg	56.7	--	1
Aroclor 1260	184		ug/kg	37.8	--	1
Aroclor 1262	ND		ug/kg	18.9	--	1
Aroclor 1268	ND		ug/kg	18.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	100		30-150
Decachlorobiphenyl	118		30-150
2,4,5,6-Tetrachloro-m-xylene	107		30-150
Decachlorobiphenyl	125		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212503

Report Date: 07/20/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/18/12 20:26
Analyst: KB

Extraction Method: EPA 3540C
Extraction Date: 07/17/12 11:52
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/18/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/18/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 01-20 Batch: WG548897-1					
Aroclor 1016	ND		ug/kg	59.4	--
Aroclor 1221	ND		ug/kg	59.4	--
Aroclor 1232	ND		ug/kg	59.4	--
Aroclor 1242	ND		ug/kg	59.4	--
Aroclor 1248	ND		ug/kg	39.6	--
Aroclor 1254	ND		ug/kg	59.4	--
Aroclor 1260	ND		ug/kg	39.6	--
Aroclor 1262	ND		ug/kg	19.8	--
Aroclor 1268	ND		ug/kg	19.8	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	86		30-150
Decachlorobiphenyl	101		30-150
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	104		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814
Lab Number: L1212503
Report Date: 07/20/12

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 01-20 Batch: WG548897-2 WG548897-3								
Aroclor 1016	76		64		40-140	17		30
Aroclor 1260	80		72		40-140	11		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	95		80		30-150
Decachlorobiphenyl	104		96		30-150
2,4,5,6-Tetrachloro-m-xylene	99		83		30-150
Decachlorobiphenyl	108		100		30-150

INORGANICS
&
MISCELLANEOUS

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-01
Client ID: CMU-D-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:00
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-02
Client ID: CMU-D-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:05
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-03
Client ID: CMU-D-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:10
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-04
Client ID: CMU-D-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:15
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-05
Client ID: CMU-D-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:20
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-06
Client ID: CMU-D-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:25
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-07
Client ID: CMU-E-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:40
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-08
Client ID: CMU-E-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:45
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-09
Client ID: CMU-E-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:50
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-10
Client ID: CMU-E-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 08:55
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-11
Client ID: CMU-E-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 09:00
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-12
Client ID: CMU-E-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 09:05
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-13
Client ID: CRACK-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 09:10
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	99		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-14
Client ID: CMU-H-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 09:30
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-15
Client ID: CMU-H-1_DUP
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 09:30
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-16
Client ID: CMU-H-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 09:40
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-17
Client ID: CMU-H-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 09:45
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-18
Client ID: CMU-H-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 09:50
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-19
Client ID: CMU-H-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 09:55
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212503-20
Client ID: CMU-H-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:00
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 19:15	30,2540G	RD

Lab Duplicate Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG548361-1 QC Sample: L1212503-01 Client ID: CMU-D-1						
Solids, Total	100	100	%	0		20

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1212503-01A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-02A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-03A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-04A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-05A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-06A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-07A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-08A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-09A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-10A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-11A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-12A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-13A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-14A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-15A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-16A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-17A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-18A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212503-19A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)

*Values in parentheses indicate holding time in days

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212503
Report Date: 07/20/12

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1212503-20A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)

Container Comments

L1212503-20A

*Values in parentheses indicate holding time in days

Project Name:	MBTA/LECHMERE	**Lab Number:**	L1212503
Project Number:	P2814	**Report Date:**	07/20/12

GLOSSARY

Acronyms

EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
C	- Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D	- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E	- Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G	- The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H	- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I	- The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
M	- Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
NJ	- Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

Report Format: Data Usability Report

Project Name:	MBTA/LECHMERE	**Lab Number:**	L1212503
Project Number:	P2814	**Report Date:**	07/20/12

Data Qualifiers

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: MBTA/LECHMERE **Lab Number:** L1212503
Project Number: P2814 **Report Date:** 07/20/12

REFERENCES

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised May 11, 2012 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. ***NELAP Accredited Solid Waste/Soil.***

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223 P/A), E. Coli. – Colilert (SM9223 P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D, Fecal Coliform-EC Medium 9221E).

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterolert, E.Coli 9223.

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics, Acid Extractables (Phenols), Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2130B, 2320B, 2540C, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, SM2320B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-G, 4500NO3-F, 4500P-B, 4500P-E, 5210B, 5220D, 5310C, 9010B, 9040B, 9030B, 7470A, 7196A, 2340B, EPA 200.7, 6010B, 200.8, 6020, 245.1, 1311, 1312, 3005A, Enterolert, 9223D, 9222D. Organic Parameters: 608, 624, 625, 8081A, 8082, 8330, 8151A, 8260B, 8270C, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Inorganic Parameters: 9010B, 9012A, 9014A, 9030B, 9040B, 9045C, 6010B, 7471A, 7196A, 9050A, 1010, 1030, 9065, 1311, 1312, 3005A, 3050B. Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH, 8260B, 8270C, 8330, 8151A, 8081A, 8082, 3540C, 3546, 3580A, 3630C, 5030B, 5035.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
*Drinking Water (*Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

*Non-Potable Water (*Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn); 245.1, SM4500H,B, EPA 120.1,

SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.
Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B; Enterolert-QT: SM9222D-MF.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 245.2, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6010C, 6020, 6020A, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 350.2, 351.1, 353.2, 410.4, 420.1, 426C, 1664A, SW-846 9010B, 9030B, 9040B, SM426C, SM2120B, 2310B, 2320B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3510C, 3630C, 5030B, 8260B, 8270C, 8270D, 8330, EPA 624, 625, 608, SW-846 8082, 8081A, 8081B, 8151A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 6010C, 7196A, 7471A, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040B, 9045C, 9050, 9065,1311, 1312, 3005A, 3050B, 3060A. Organic Parameters: SW-846 3540C, 3546, 3550B, 3580A, 3630C, 5030B, 5035, 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330, 8151A, 8015B, 8082, 8082A, 8081A, 8081B.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.2, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-E, EPA 300.0, SM2120B, 2340B, SM4500F-BC, EPA 200.7, 200.8, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM510ABC, SM4500P-B5+E, 2540B, 2540C, 2540D, 2540G, EPA 120.1, SM2510B, SM15 426C, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, 350.2, SW-846 1312, 7470A, 5540C, SM4500H-B, 4500SO3-B, SM3500Cr-D, 4500CN-CE, EPA 245.1, 245.2, SW-846 9040B, 3005A, 3015, EPA 6010B, 6010C, 6020, 6020A, 7196A, 3060A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 1,4-Dioxane by NJ Modified 8270, 8015B, NJ OQA-QAM-025 Rev.7, NJ EPH.)

Solid & Chemical Materials (Inorganic Parameters: SW-846, 6010B, 6010C,6020, 6020A, 7196A, 3060A, 9010B, 9030B, 1010, 1030, 1311, 1312, 3005A, 3050B, 7471A, 7471B, 9014, 9012A, 9040B, 9045C, 9050A, 9065. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3630C, 5030B, 5035L, 5035H, NJ OQA-QAM-025 Rev.7, NJ EPH.)

New York Department of Health Certificate/Lab ID: 11148. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO3-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH3-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6010C, 6020, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, LACHAT 10-204-00-1-A, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 624, 8260B, 8270C, 8270D, 625, 608, 8081A, 8081B, 8151A, 8330, 8082, 8082A, EPA 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, EPA 6010B, 6010C, 7196A, 7471A, 7471B, 9012A, 9014, 9065, 9050A, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8015B, 8015C, 8081A, 8081B, 8151A, 8330, 8082 8082A, 3540C, 3546, 3580, 3580A, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666. Organic Parameters: MA-EPH, MA-VPH.

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-03671. ***NELAP Accredited.***
Drinking Water (Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 1312, 3005A, 200.7, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3050B, 3060A, 6010B, 6010C, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065, SM 4500NH3-H. Organic Parameters: 3540C, 3546, 3580A, 3630C, 5035, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. ***NELAP Accredited via NY-DOH.***
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2¯D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID: 460195. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 3005A,3015,1312,6010B,6010C,SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X. Organic Parameters: EPA 8260B)

Solid & Hazardous Waste (Inorganic Parameters: EPA 3050B, 1311, 1312, 6010B, 6010C, 9030B, 9010B, 9012A, 9014. Organic Parameters: EPA 5035, 5030B, 8260B, 8015B, 8015C.)

Department of Defense, L-A-B Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1. 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

The following analytes are not included in our current NELAP/TNI Scope of Accreditation:
EPA 8260B: Freon-113, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625:** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, Chloride in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix, SO4 in a soil matrix. **EPA 9071:** Total Petroleum Hydrocarbons, Oil & Grease

CHAIN OF CUSTODY

PAGE 1 OF 5

Date Rec'd in Lab: 7/13/12

ALPHA Job #: L1212503

ALPHA ANALYTICAL
Partic Class Chemistry
8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220
320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Project Information

Project Name: MBTA/Lechmere
Project Location: ~~P2814~~ Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: P2814

Client Information

Client: Nover Armstrong Assoc, Inc
Address: 124 Main St, Unit 266
Carver, MA 02330
Phone: 508-866-8383
Email: malger@noverarmstrong.com

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Additional Project Information:

Use Soxhlet Method

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☒ PCB ☐ PEST Soxhlet; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	☒ PCB	Sample Comments	TOTAL # BOTTLES
12503 01	CMU-D-1	7/13/12	8:00am	Concrete Powder	MA	1		1
02	CMU-D-2		8:05am			1		1
03	CMU-D-3		8:10am			1		1
04	CMU-D-4		8:15am			1		1
05	CMU-D-7		8:20am			1		1
06	CMU-D-8		8:25am			1		1
07	CMU-E-1		8:40am			1		1
08	CMU-E-2		8:45am			1		1
09	CMU-E-3		8:50am			1		1
10	CMU-E-4		8:55am			1		1
					Container Type	A		
					Preservative	A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/13/12 15:20	[signature]	7/13/12 15:20

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 2 OF 5

Date Rec'd in Lab: 7/13/12

ALPHA Job #: L1212503

ALPHA ANALYTICAL — World Class Chemistry

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Nover-Armstrong Assoc.
Address: 124 Main St, Unit 266
Carver, MA 02330
Phone: 508-866-8383
Email: malger@novearmstrong.com

Project Information

Project Name: MBTA/Ledmere
Project Location: Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO # P2814

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Additional Project Information:

Use Soxhlet Extraction

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☒ PCB ☐ PEST Soxhlet; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCB	Sample Comments	TOTAL # BOTTLES
12503-11	CMU-E-7	7/13/12	9:00am	Concrete powder	MA	1		1
-12	CMU-E-8		9:05am			1		1
-13	CRACK-2		9:10am			1		1
-14	CMU-H-1		9:30am			1		1
-15	CMU-H-1_DUP		9:30am			1		1
-16	CMU-H-2		9:40am			1		1
-17	CMU-H-3		9:45am			1		1
-18	CMU-H-4		9:50am			1		1
-19	CMU-H-5		9:55am			1		1
-20	CMU-H-6		10:00am			1		1
				Container Type		A		
				Preservative		A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/13/12 15:20	[signature]	7/13/12 1520

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1212504
Client:	Nover-Armstrong Associates 124 Main Street Unit 2GG Carver, MA 02330
ATTN:	Matt Alger
Phone:	(508) 866-8383
Project Name:	MBTA/LECHMERE
Project Number:	P2814
Report Date:	07/20/12

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1212504-01	EQUIP BLANK-4	CAMBRIDGE	07/13/12 09:20
L1212504-02	CMU-H-7	CAMBRIDGE	07/13/12 10:05
L1212504-03	CMU-H-8	CAMBRIDGE	07/13/12 10:10
L1212504-04	CMU-I-1	CAMBRIDGE	07/13/12 10:20
L1212504-05	CMU-I-2	CAMBRIDGE	07/13/12 10:25
L1212504-06	CMU-I-3	CAMBRIDGE	07/13/12 10:30
L1212504-07	CMU-I-4	CAMBRIDGE	07/13/12 10:35
L1212504-08	CMU-I-5	CAMBRIDGE	07/13/12 10:40
L1212504-09	CMU-I-6	CAMBRIDGE	07/13/12 10:45
L1212504-10	CMU-I-7	CAMBRIDGE	07/13/12 10:50
L1212504-11	CMU-I-8	CAMBRIDGE	07/13/12 10:55
L1212504-12	CRACK-3	CAMBRIDGE	07/13/12 10:25
L1212504-13	CMU-I-8_DUP	CAMBRIDGE	07/13/12 10:55
L1212504-14	CMU-J-1	CAMBRIDGE	07/13/12 11:00
L1212504-15	CMU-J-2	CAMBRIDGE	07/13/12 11:05
L1212504-16	CMU-J-3	CAMBRIDGE	07/13/12 11:10
L1212504-17	CMU-J-4	CAMBRIDGE	07/13/12 11:15
L1212504-18	CMU-J-5	CAMBRIDGE	07/13/12 11:20
L1212504-19	CMU-J-6	CAMBRIDGE	07/13/12 11:25
L1212504-20	CMU-J-7	CAMBRIDGE	07/13/12 11:30
L1212504-21	CMU-J-8	CAMBRIDGE	07/13/12 11:35
L1212504-22	CMU-J-8_DUP	CAMBRIDGE	07/13/12 11:35
L1212504-23	EQUIP BLANK-5	CAMBRIDGE	07/13/12 12:00
L1212504-24	CRACK-4	CAMBRIDGE	07/13/12 12:15

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is 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
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name: MBTA/LECHMERE **Lab Number:** L1212504
Project Number: P2814 **Report Date:** 07/20/12

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	MBTA/LECHMERE	**Lab Number:**	L1212504
Project Number:	P2814	**Report Date:**	07/20/12

Case Narrative (continued)

MCP Related Narratives

Report Submission

All MCP required questions were answered with affirmative responses; therefore, there are no relevant protocol-specific QC and/or performance standard non-conformances to report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative

Date: 07/20/12

ORGANICS

PCBS

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-01	Date Collected:	07/13/12 09:20
Client ID:	EQUIP BLANK-4	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	97,8082	Extraction Date:	07/14/12 00:35
Analytical Date:	07/17/12 09:26	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
		Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/l	0.250	--	1
Aroclor 1221	ND		ug/l	0.250	--	1
Aroclor 1232	ND		ug/l	0.250	--	1
Aroclor 1242	ND		ug/l	0.250	--	1
Aroclor 1248	ND		ug/l	0.250	--	1
Aroclor 1254	ND		ug/l	0.250	--	1
Aroclor 1260	ND		ug/l	0.250	--	1
Aroclor 1262	ND		ug/l	0.250	--	1
Aroclor 1268	ND		ug/l	0.250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	102		30-150
Decachlorobiphenyl	80		30-150
2,4,5,6-Tetrachloro-m-xylene	97		30-150
Decachlorobiphenyl	78		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-02	Date Collected:	07/13/12 10:05
Client ID:	CMU-H-7	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 22:02	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	55.9	--	1
Aroclor 1221	ND		ug/kg	55.9	--	1
Aroclor 1232	ND		ug/kg	55.9	--	1
Aroclor 1242	ND		ug/kg	55.9	--	1
Aroclor 1248	ND		ug/kg	37.2	--	1
Aroclor 1254	ND		ug/kg	55.9	--	1
Aroclor 1262	ND		ug/kg	18.6	--	1
Aroclor 1268	ND		ug/kg	18.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	90		30-150
2,4,5,6-Tetrachloro-m-xylene	82		30-150
Decachlorobiphenyl	99		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-02	Date Collected:	07/13/12 10:05
Client ID:	CMU-H-7	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 22:02	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	73.1		ug/kg	37.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	90		30-150
2,4,5,6-Tetrachloro-m-xylene	82		30-150
Decachlorobiphenyl	99		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-03	Date Collected:	07/13/12 10:10
Client ID:	CMU-H-8	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 22:15	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	55.8	--	1
Aroclor 1221	ND		ug/kg	55.8	--	1
Aroclor 1232	ND		ug/kg	55.8	--	1
Aroclor 1242	ND		ug/kg	55.8	--	1
Aroclor 1248	ND		ug/kg	37.2	--	1
Aroclor 1254	ND		ug/kg	55.8	--	1
Aroclor 1260	102		ug/kg	37.2	--	1
Aroclor 1262	ND		ug/kg	18.6	--	1
Aroclor 1268	ND		ug/kg	18.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	85		30-150
Decachlorobiphenyl	95		30-150
2,4,5,6-Tetrachloro-m-xylene	91		30-150
Decachlorobiphenyl	103		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-04	Date Collected:	07/13/12 10:20
Client ID:	CMU-I-1	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 22:29	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	59.3	--	1
Aroclor 1221	ND		ug/kg	59.3	--	1
Aroclor 1232	ND		ug/kg	59.3	--	1
Aroclor 1242	ND		ug/kg	59.3	--	1
Aroclor 1248	ND		ug/kg	39.5	--	1
Aroclor 1254	ND		ug/kg	59.3	--	1
Aroclor 1262	ND		ug/kg	19.8	--	1
Aroclor 1268	ND		ug/kg	19.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	90		30-150
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	92		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-04	Date Collected:	07/13/12 10:20
Client ID:	CMU-I-1	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 22:29	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	428		ug/kg	39.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	90		30-150
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	92		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-05	Date Collected:	07/13/12 10:25
Client ID:	CMU-I-2	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 22:43	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.9	--	1
Aroclor 1221	ND		ug/kg	58.9	--	1
Aroclor 1232	ND		ug/kg	58.9	--	1
Aroclor 1242	ND		ug/kg	58.9	--	1
Aroclor 1248	ND		ug/kg	39.3	--	1
Aroclor 1254	ND		ug/kg	58.9	--	1
Aroclor 1260	75.4		ug/kg	39.3	--	1
Aroclor 1262	ND		ug/kg	19.6	--	1
Aroclor 1268	ND		ug/kg	19.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	80		30-150
Decachlorobiphenyl	99		30-150
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	100		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-06	Date Collected:	07/13/12 10:30
Client ID:	CMU-I-3	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 22:56	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.7	--	1
Aroclor 1221	ND		ug/kg	58.7	--	1
Aroclor 1232	ND		ug/kg	58.7	--	1
Aroclor 1242	ND		ug/kg	58.7	--	1
Aroclor 1248	ND		ug/kg	39.1	--	1
Aroclor 1254	ND		ug/kg	58.7	--	1
Aroclor 1260	107		ug/kg	39.1	--	1
Aroclor 1262	ND		ug/kg	19.6	--	1
Aroclor 1268	ND		ug/kg	19.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	99		30-150
2,4,5,6-Tetrachloro-m-xylene	95		30-150
Decachlorobiphenyl	103		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-07	Date Collected:	07/13/12 10:35
Client ID:	CMU-I-4	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 23:10	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.7	--	1
Aroclor 1221	ND		ug/kg	58.7	--	1
Aroclor 1232	ND		ug/kg	58.7	--	1
Aroclor 1242	ND		ug/kg	58.7	--	1
Aroclor 1248	ND		ug/kg	39.1	--	1
Aroclor 1254	ND		ug/kg	58.7	--	1
Aroclor 1260	103		ug/kg	39.1	--	1
Aroclor 1262	ND		ug/kg	19.6	--	1
Aroclor 1268	ND		ug/kg	19.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	93		30-150
Decachlorobiphenyl	99		30-150
2,4,5,6-Tetrachloro-m-xylene	99		30-150
Decachlorobiphenyl	106		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-08	Date Collected:	07/13/12 10:40
Client ID:	CMU-I-5	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 23:23	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.7	--	1
Aroclor 1221	ND		ug/kg	57.7	--	1
Aroclor 1232	ND		ug/kg	57.7	--	1
Aroclor 1242	ND		ug/kg	57.7	--	1
Aroclor 1248	ND		ug/kg	38.5	--	1
Aroclor 1254	ND		ug/kg	57.7	--	1
Aroclor 1260	40.0		ug/kg	38.5	--	1
Aroclor 1262	ND		ug/kg	19.2	--	1
Aroclor 1268	ND		ug/kg	19.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	85		30-150
Decachlorobiphenyl	95		30-150
2,4,5,6-Tetrachloro-m-xylene	89		30-150
Decachlorobiphenyl	100		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-09	Date Collected:	07/13/12 10:45
Client ID:	CMU-I-6	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 23:37	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.7	--	1
Aroclor 1221	ND		ug/kg	56.7	--	1
Aroclor 1232	ND		ug/kg	56.7	--	1
Aroclor 1242	ND		ug/kg	56.7	--	1
Aroclor 1248	ND		ug/kg	37.8	--	1
Aroclor 1254	ND		ug/kg	56.7	--	1
Aroclor 1260	89.2		ug/kg	37.8	--	1
Aroclor 1262	ND		ug/kg	18.9	--	1
Aroclor 1268	ND		ug/kg	18.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	102		30-150
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	106		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-10	Date Collected:	07/13/12 10:50
Client ID:	CMU-I-7	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/18/12 23:51	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.7	--	1
Aroclor 1221	ND		ug/kg	56.7	--	1
Aroclor 1232	ND		ug/kg	56.7	--	1
Aroclor 1242	ND		ug/kg	56.7	--	1
Aroclor 1248	ND		ug/kg	37.8	--	1
Aroclor 1254	ND		ug/kg	56.7	--	1
Aroclor 1260	57.5		ug/kg	37.8	--	1
Aroclor 1262	ND		ug/kg	18.9	--	1
Aroclor 1268	ND		ug/kg	18.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	100		30-150
2,4,5,6-Tetrachloro-m-xylene	98		30-150
Decachlorobiphenyl	102		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-11	Date Collected:	07/13/12 10:55
Client ID:	CMU-I-8	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/19/12 00:04	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.6	--	1
Aroclor 1221	ND		ug/kg	57.6	--	1
Aroclor 1232	ND		ug/kg	57.6	--	1
Aroclor 1242	ND		ug/kg	57.6	--	1
Aroclor 1248	ND		ug/kg	38.4	--	1
Aroclor 1254	ND		ug/kg	57.6	--	1
Aroclor 1260	100		ug/kg	38.4	--	1
Aroclor 1262	ND		ug/kg	19.2	--	1
Aroclor 1268	ND		ug/kg	19.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	98		30-150
Decachlorobiphenyl	108		30-150
2,4,5,6-Tetrachloro-m-xylene	105		30-150
Decachlorobiphenyl	116		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-12	Date Collected:	07/13/12 10:25
Client ID:	CRACK-3	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/19/12 00:18	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.7	--	1
Aroclor 1221	ND		ug/kg	58.7	--	1
Aroclor 1232	ND		ug/kg	58.7	--	1
Aroclor 1242	ND		ug/kg	58.7	--	1
Aroclor 1248	ND		ug/kg	39.1	--	1
Aroclor 1254	ND		ug/kg	58.7	--	1
Aroclor 1260	80.9		ug/kg	39.1	--	1
Aroclor 1262	ND		ug/kg	19.6	--	1
Aroclor 1268	ND		ug/kg	19.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	107		30-150
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	112		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-13	Date Collected:	07/13/12 10:55
Client ID:	CMU-I-8_DUP	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 10:09
Analytical Date:	07/19/12 00:31	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.1	--	1
Aroclor 1221	ND		ug/kg	57.1	--	1
Aroclor 1232	ND		ug/kg	57.1	--	1
Aroclor 1242	ND		ug/kg	57.1	--	1
Aroclor 1248	ND		ug/kg	38.1	--	1
Aroclor 1254	ND		ug/kg	57.1	--	1
Aroclor 1260	112		ug/kg	38.1	--	1
Aroclor 1262	ND		ug/kg	19.0	--	1
Aroclor 1268	ND		ug/kg	19.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	100		30-150
Decachlorobiphenyl	110		30-150
2,4,5,6-Tetrachloro-m-xylene	105		30-150
Decachlorobiphenyl	117		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-14	Date Collected:	07/13/12 11:00
Client ID:	CMU-J-1	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:38
Analytical Date:	07/19/12 00:45	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.6	--	1
Aroclor 1221	ND		ug/kg	56.6	--	1
Aroclor 1232	ND		ug/kg	56.6	--	1
Aroclor 1242	ND		ug/kg	56.6	--	1
Aroclor 1248	ND		ug/kg	37.7	--	1
Aroclor 1254	ND		ug/kg	56.6	--	1
Aroclor 1260	449		ug/kg	37.7	--	1
Aroclor 1262	ND		ug/kg	18.9	--	1
Aroclor 1268	ND		ug/kg	18.9	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	94		30-150
Decachlorobiphenyl	106		30-150
2,4,5,6-Tetrachloro-m-xylene	100		30-150
Decachlorobiphenyl	108		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-15	Date Collected:	07/13/12 11:05
Client ID:	CMU-J-2	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:38
Analytical Date:	07/19/12 00:59	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.9	--	1
Aroclor 1221	ND		ug/kg	57.9	--	1
Aroclor 1232	ND		ug/kg	57.9	--	1
Aroclor 1242	ND		ug/kg	57.9	--	1
Aroclor 1248	ND		ug/kg	38.6	--	1
Aroclor 1254	ND		ug/kg	57.9	--	1
Aroclor 1262	ND		ug/kg	19.3	--	1
Aroclor 1268	ND		ug/kg	19.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	98		30-150
Decachlorobiphenyl	109		30-150
2,4,5,6-Tetrachloro-m-xylene	104		30-150
Decachlorobiphenyl	112		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-15	Date Collected:	07/13/12 11:05
Client ID:	CMU-J-2	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:38
Analytical Date:	07/19/12 00:59	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	500		ug/kg	38.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	98		30-150
Decachlorobiphenyl	109		30-150
2,4,5,6-Tetrachloro-m-xylene	104		30-150
Decachlorobiphenyl	112		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-16	Date Collected:	07/13/12 11:10
Client ID:	CMU-J-3	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:38
Analytical Date:	07/19/12 02:07	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	98%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.0	--	1
Aroclor 1221	ND		ug/kg	57.0	--	1
Aroclor 1232	ND		ug/kg	57.0	--	1
Aroclor 1242	ND		ug/kg	57.0	--	1
Aroclor 1248	ND		ug/kg	38.0	--	1
Aroclor 1254	ND		ug/kg	57.0	--	1
Aroclor 1260	68.4		ug/kg	38.0	--	1
Aroclor 1262	ND		ug/kg	19.0	--	1
Aroclor 1268	ND		ug/kg	19.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	57		30-150
Decachlorobiphenyl	61		30-150
2,4,5,6-Tetrachloro-m-xylene	59		30-150
Decachlorobiphenyl	63		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-17	Date Collected:	07/13/12 11:15
Client ID:	CMU-J-4	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:38
Analytical Date:	07/19/12 02:20	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.5	--	1
Aroclor 1221	ND		ug/kg	58.5	--	1
Aroclor 1232	ND		ug/kg	58.5	--	1
Aroclor 1242	ND		ug/kg	58.5	--	1
Aroclor 1248	ND		ug/kg	39.0	--	1
Aroclor 1254	ND		ug/kg	58.5	--	1
Aroclor 1260	60.3		ug/kg	39.0	--	1
Aroclor 1262	ND		ug/kg	19.5	--	1
Aroclor 1268	ND		ug/kg	19.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	100		30-150
Decachlorobiphenyl	111		30-150
2,4,5,6-Tetrachloro-m-xylene	105		30-150
Decachlorobiphenyl	117		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-18	Date Collected:	07/13/12 11:20
Client ID:	CMU-J-5	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:38
Analytical Date:	07/19/12 02:34	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.2	--	1
Aroclor 1221	ND		ug/kg	58.2	--	1
Aroclor 1232	ND		ug/kg	58.2	--	1
Aroclor 1242	ND		ug/kg	58.2	--	1
Aroclor 1248	ND		ug/kg	38.8	--	1
Aroclor 1254	ND		ug/kg	58.2	--	1
Aroclor 1260	57.5		ug/kg	38.8	--	1
Aroclor 1262	ND		ug/kg	19.4	--	1
Aroclor 1268	ND		ug/kg	19.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	103		30-150
Decachlorobiphenyl	109		30-150
2,4,5,6-Tetrachloro-m-xylene	109		30-150
Decachlorobiphenyl	119		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-19	Date Collected:	07/13/12 11:25
Client ID:	CMU-J-6	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:38
Analytical Date:	07/19/12 02:47	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	56.1	--	1
Aroclor 1221	ND		ug/kg	56.1	--	1
Aroclor 1232	ND		ug/kg	56.1	--	1
Aroclor 1242	ND		ug/kg	56.1	--	1
Aroclor 1248	ND		ug/kg	37.4	--	1
Aroclor 1254	ND		ug/kg	56.1	--	1
Aroclor 1260	128		ug/kg	37.4	--	1
Aroclor 1262	ND		ug/kg	18.7	--	1
Aroclor 1268	ND		ug/kg	18.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	104		30-150
2,4,5,6-Tetrachloro-m-xylene	98		30-150
Decachlorobiphenyl	108		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-20	Date Collected:	07/13/12 11:30
Client ID:	CMU-J-7	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:38
Analytical Date:	07/19/12 03:01	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.4	--	1
Aroclor 1221	ND		ug/kg	57.4	--	1
Aroclor 1232	ND		ug/kg	57.4	--	1
Aroclor 1242	ND		ug/kg	57.4	--	1
Aroclor 1248	ND		ug/kg	38.2	--	1
Aroclor 1254	ND		ug/kg	57.4	--	1
Aroclor 1260	91.4		ug/kg	38.2	--	1
Aroclor 1262	ND		ug/kg	19.1	--	1
Aroclor 1268	ND		ug/kg	19.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	100		30-150
Decachlorobiphenyl	106		30-150
2,4,5,6-Tetrachloro-m-xylene	106		30-150
Decachlorobiphenyl	111		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-21	Date Collected:	07/13/12 11:35
Client ID:	CMU-J-8	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 11:38
Analytical Date:	07/19/12 03:15	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.8	--	1
Aroclor 1221	ND		ug/kg	58.8	--	1
Aroclor 1232	ND		ug/kg	58.8	--	1
Aroclor 1242	ND		ug/kg	58.8	--	1
Aroclor 1248	ND		ug/kg	39.2	--	1
Aroclor 1254	ND		ug/kg	58.8	--	1
Aroclor 1260	96.8		ug/kg	39.2	--	1
Aroclor 1262	ND		ug/kg	19.6	--	1
Aroclor 1268	ND		ug/kg	19.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	101		30-150
Decachlorobiphenyl	107		30-150
2,4,5,6-Tetrachloro-m-xylene	108		30-150
Decachlorobiphenyl	113		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-22	Date Collected:	07/13/12 11:35
Client ID:	CMU-J-8_DUP	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 14:43
Analytical Date:	07/19/12 23:15	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.4	--	1
Aroclor 1221	ND		ug/kg	58.4	--	1
Aroclor 1232	ND		ug/kg	58.4	--	1
Aroclor 1242	ND		ug/kg	58.4	--	1
Aroclor 1248	ND		ug/kg	38.9	--	1
Aroclor 1254	ND		ug/kg	58.4	--	1
Aroclor 1260	88.0		ug/kg	38.9	--	1
Aroclor 1262	ND		ug/kg	19.4	--	1
Aroclor 1268	ND		ug/kg	19.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	111		30-150
Decachlorobiphenyl	113		30-150
2,4,5,6-Tetrachloro-m-xylene	103		30-150
Decachlorobiphenyl	102		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-23	Date Collected:	07/13/12 12:00
Client ID:	EQUIP BLANK-5	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	97,8082	Extraction Date:	07/14/12 00:35
Analytical Date:	07/17/12 09:39	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/15/12
		Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/15/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/l	0.250	--	1
Aroclor 1221	ND		ug/l	0.250	--	1
Aroclor 1232	ND		ug/l	0.250	--	1
Aroclor 1242	ND		ug/l	0.250	--	1
Aroclor 1248	ND		ug/l	0.250	--	1
Aroclor 1254	ND		ug/l	0.250	--	1
Aroclor 1260	ND		ug/l	0.250	--	1
Aroclor 1262	ND		ug/l	0.250	--	1
Aroclor 1268	ND		ug/l	0.250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	106		30-150
Decachlorobiphenyl	104		30-150
2,4,5,6-Tetrachloro-m-xylene	102		30-150
Decachlorobiphenyl	101		30-150

Project Name: MBTA/LECHMERE **Lab Number:** L1212504

Project Number: P2814 **Report Date:** 07/20/12

SAMPLE RESULTS

Lab ID:	L1212504-24	Date Collected:	07/13/12 12:15
Client ID:	CRACK-4	Date Received:	07/13/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/17/12 14:43
Analytical Date:	07/19/12 23:28	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.8	--	1
Aroclor 1221	ND		ug/kg	57.8	--	1
Aroclor 1232	ND		ug/kg	57.8	--	1
Aroclor 1242	ND		ug/kg	57.8	--	1
Aroclor 1248	ND		ug/kg	38.5	--	1
Aroclor 1254	ND		ug/kg	57.8	--	1
Aroclor 1260	ND		ug/kg	38.5	--	1
Aroclor 1262	ND		ug/kg	19.3	--	1
Aroclor 1268	ND		ug/kg	19.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	119		30-150
Decachlorobiphenyl	118		30-150
2,4,5,6-Tetrachloro-m-xylene	112		30-150
Decachlorobiphenyl	108		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212504

Report Date: 07/20/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/17/12 06:19
Analyst: BA

Extraction Method: EPA 3510C
Extraction Date: 07/14/12 00:35
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/15/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/15/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 01,23 Batch: WG548400-1					
Aroclor 1016	ND		ug/l	0.250	--
Aroclor 1221	ND		ug/l	0.250	--
Aroclor 1232	ND		ug/l	0.250	--
Aroclor 1242	ND		ug/l	0.250	--
Aroclor 1248	ND		ug/l	0.250	--
Aroclor 1254	ND		ug/l	0.250	--
Aroclor 1260	ND		ug/l	0.250	--
Aroclor 1262	ND		ug/l	0.250	--
Aroclor 1268	ND		ug/l	0.250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	87		30-150
Decachlorobiphenyl	87		30-150
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	96		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212504

Report Date: 07/20/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/19/12 01:12
Analyst: KB

Extraction Method: EPA 3540C
Extraction Date: 07/17/12 10:09
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/18/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/18/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 02-21 Batch: WG548862-1					
Aroclor 1016	ND		ug/kg	59.6	--
Aroclor 1221	ND		ug/kg	59.6	--
Aroclor 1232	ND		ug/kg	59.6	--
Aroclor 1242	ND		ug/kg	59.6	--
Aroclor 1248	ND		ug/kg	39.8	--
Aroclor 1254	ND		ug/kg	59.6	--
Aroclor 1260	ND		ug/kg	39.8	--
Aroclor 1262	ND		ug/kg	19.9	--
Aroclor 1268	ND		ug/kg	19.9	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	97		30-150
2,4,5,6-Tetrachloro-m-xylene	95		30-150
Decachlorobiphenyl	103		30-150

Project Name: MBTA/LECHMERE

Project Number: P2814

Lab Number: L1212504

Report Date: 07/20/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/19/12 23:41
Analyst: KB

Extraction Method: EPA 3540C
Extraction Date: 07/17/12 14:43
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/18/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/18/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 22,24 Batch: WG548941-1					
Aroclor 1016	ND		ug/kg	59.0	--
Aroclor 1221	ND		ug/kg	59.0	--
Aroclor 1232	ND		ug/kg	59.0	--
Aroclor 1242	ND		ug/kg	59.0	--
Aroclor 1248	ND		ug/kg	39.4	--
Aroclor 1254	ND		ug/kg	59.0	--
Aroclor 1260	ND		ug/kg	39.4	--
Aroclor 1262	ND		ug/kg	19.7	--
Aroclor 1268	ND		ug/kg	19.7	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	117		30-150
Decachlorobiphenyl	120		30-150
2,4,5,6-Tetrachloro-m-xylene	111		30-150
Decachlorobiphenyl	111		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814
Lab Number: L1212504
Report Date: 07/20/12

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 01,23 Batch: WG548400-2 WG548400-3								
Aroclor 1016	82		76		40-140	8		20
Aroclor 1260	74		76		40-140	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	93		82		30-150
Decachlorobiphenyl	90		88		30-150
2,4,5,6-Tetrachloro-m-xylene	87		77		30-150
Decachlorobiphenyl	99		91		30-150

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 02-21 Batch: WG548862-2 WG548862-3								
Aroclor 1016	70		74		40-140	6		30
Aroclor 1260	72		78		40-140	8		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	83		87		30-150
Decachlorobiphenyl	90		97		30-150
2,4,5,6-Tetrachloro-m-xylene	85		90		30-150
Decachlorobiphenyl	94		101		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814
Lab Number: L1212504
Report Date: 07/20/12

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 22,24 Batch: WG548941-2 WG548941-3								
Aroclor 1016	75		69		40-140	8		30
Aroclor 1260	86		83		40-140	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	119		108		30-150
Decachlorobiphenyl	120		111		30-150
2,4,5,6-Tetrachloro-m-xylene	111		99		30-150
Decachlorobiphenyl	111		100		30-150

INORGANICS
&
MISCELLANEOUS

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-02
Client ID: CMU-H-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:05
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-03
Client ID: CMU-H-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:10
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-04
Client ID: CMU-I-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:20
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-05
Client ID: CMU-I-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:25
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-06
Client ID: CMU-I-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:30
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-07
Client ID: CMU-I-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:35
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-08
Client ID: CMU-I-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:40
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-09
Client ID: CMU-I-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:45
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-10
Client ID: CMU-I-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:50
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-11
Client ID: CMU-I-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:55
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-12
Client ID: CRACK-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:25
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-13
Client ID: CMU-I-8_DUP
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 10:55
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-14
Client ID: CMU-J-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 11:00
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-15
Client ID: CMU-J-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 11:05
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-16
Client ID: CMU-J-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 11:10
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	98		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-17
Client ID: CMU-J-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 11:15
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-18
Client ID: CMU-J-5
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 11:20
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-19
Client ID: CMU-J-6
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 11:25
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-20
Client ID: CMU-J-7
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 11:30
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-21
Client ID: CMU-J-8
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 11:35
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/13/12 18:50	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-22
Client ID: CMU-J-8_DUP
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 11:35
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/17/12 00:05	30,2540G	RD

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

SAMPLE RESULTS

Lab ID: L1212504-24
Client ID: CRACK-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/13/12 12:15
Date Received: 07/13/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/17/12 00:05	30,2540G	RD

Lab Duplicate Analysis
Batch Quality Control

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02-21 QC Batch ID: WG548359-1 QC Sample: L1212504-02 Client ID: CMU-H-7						
Solids, Total	100	100	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 22,24 QC Batch ID: WG548767-1 QC Sample: L1212278-01 Client ID: DUP Sample						
Solids, Total	48	48	%	0		20

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1212504-01A	Amber 1000ml unpreserved	A	7	4	Y	Absent	MCP-8082-10(365)
L1212504-01B	Amber 1000ml unpreserved	A	7	4	Y	Absent	MCP-8082-10(365)
L1212504-02A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-03A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-04A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-05A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-06A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-07A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-08A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-09A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-10A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-11A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-12A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-13A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-14A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-15A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-16A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-17A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-18A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)

*Values in parentheses indicate holding time in days

Project Name: MBTA/LECHMERE
Project Number: P2814

Lab Number: L1212504
Report Date: 07/20/12

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1212504-19A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-20A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-21A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-22A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212504-23A	Amber 1000ml unpreserved	A	7	4	Y	Absent	MCP-8082-10(365)
L1212504-23B	Amber 1000ml unpreserved	A	7	4	Y	Absent	MCP-8082-10(365)
L1212504-24A	Amber 120ml unpreserved	A	N/A	4	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)

*Values in parentheses indicate holding time in days

Project Name:	MBTA/LECHMERE	**Lab Number:**	L1212504
Project Number:	P2814	**Report Date:**	07/20/12

GLOSSARY

Acronyms

EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
C	- Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D	- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E	- Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G	- The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H	- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I	- The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
M	- Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
NJ	- Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

Report Format: Data Usability Report

Project Name:	MBTA/LECHMERE	**Lab Number:**	L1212504
Project Number:	P2814	**Report Date:**	07/20/12

Data Qualifiers

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: MBTA/LECHMERE **Lab Number:** L1212504
Project Number: P2814 **Report Date:** 07/20/12

REFERENCES

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised May 11, 2012 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. ***NELAP Accredited Solid Waste/Soil.***

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223 P/A), E. Coli. – Colilert (SM9223 P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D, Fecal Coliform-EC Medium 9221E).

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterolert, E.Coli 9223.

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics, Acid Extractables (Phenols), Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2130B, 2320B, 2540C, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, SM2320B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-G, 4500NO3-F, 4500P-B, 4500P-E, 5210B, 5220D, 5310C, 9010B, 9040B, 9030B, 7470A, 7196A, 2340B, EPA 200.7, 6010B, 200.8, 6020, 245.1, 1311, 1312, 3005A, Enterolert, 9223D, 9222D. Organic Parameters: 608, 624, 625, 8081A, 8082, 8330, 8151A, 8260B, 8270C, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Inorganic Parameters: 9010B, 9012A, 9014A, 9030B, 9040B, 9045C, 6010B, 7471A, 7196A, 9050A, 1010, 1030, 9065, 1311, 1312, 3005A, 3050B. Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH, 8260B, 8270C, 8330, 8151A, 8081A, 8082, 3540C, 3546, 3580A, 3630C, 5030B, 5035.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
*Drinking Water (*Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

*Non-Potable Water (*Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn); 245.1, SM4500H,B, EPA 120.1,

SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.
Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B; Enterolert-QT: SM9222D-MF.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 245.2, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6010C, 6020, 6020A, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 350.2, 351.1, 353.2, 410.4, 420.1, 426C, 1664A, SW-846 9010B, 9030B, 9040B, SM426C, SM2120B, 2310B, 2320B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3510C, 3630C, 5030B, 8260B, 8270C, 8270D, 8330, EPA 624, 625, 608, SW-846 8082, 8081A, 8081B, 8151A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 6010C, 7196A, 7471A, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040B, 9045C, 9050, 9065,1311, 1312, 3005A, 3050B, 3060A. Organic Parameters: SW-846 3540C, 3546, 3550B, 3580A, 3630C, 5030B, 5035, 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330, 8151A, 8015B, 8082, 8082A, 8081A, 8081B.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.2, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-E, EPA 300.0, SM2120B, 2340B, SM4500F-BC, EPA 200.7, 200.8, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM510ABC, SM4500P-B5+E, 2540B, 2540C, 2540D, 2540G, EPA 120.1, SM2510B, SM15 426C, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, 350.2, SW-846 1312, 7470A, 5540C, SM4500H-B, 4500SO3-B, SM3500Cr-D, 4500CN-CE, EPA 245.1, 245.2, SW-846 9040B, 3005A, 3015, EPA 6010B, 6010C, 6020, 6020A, 7196A, 3060A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 1,4-Dioxane by NJ Modified 8270, 8015B, NJ OQA-QAM-025 Rev.7, NJ EPH.)

Solid & Chemical Materials (Inorganic Parameters: SW-846, 6010B, 6010C,6020, 6020A, 7196A, 3060A, 9010B, 9030B, 1010, 1030, 1311, 1312, 3005A, 3050B, 7471A, 7471B, 9014, 9012A, 9040B, 9045C, 9050A, 9065. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3630C, 5030B, 5035L, 5035H, NJ OQA-QAM-025 Rev.7, NJ EPH.)

New York Department of Health Certificate/Lab ID: 11148. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO3-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH3-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6010C, 6020, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, LACHAT 10-204-00-1-A, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 624, 8260B, 8270C, 8270D, 625, 608, 8081A, 8081B, 8151A, 8330, 8082, 8082A, EPA 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, EPA 6010B, 6010C, 7196A, 7471A, 7471B, 9012A, 9014, 9065, 9050A, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8015B, 8015C, 8081A, 8081B, 8151A, 8330, 8082 8082A, 3540C, 3546, 3580, 3580A, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666. Organic Parameters: MA-EPH, MA-VPH.

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-03671. ***NELAP Accredited.***
Drinking Water (Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 1312, 3005A, 200.7, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3050B, 3060A, 6010B, 6010C, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065, SM 4500NH3-H. Organic Parameters: 3540C, 3546, 3580A, 3630C, 5035, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. ***NELAP Accredited via NY-DOH.***
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2¯D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID: 460195. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 3005A,3015,1312,6010B,6010C,SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X. Organic Parameters: EPA 8260B)

Solid & Hazardous Waste (Inorganic Parameters: EPA 3050B, 1311, 1312, 6010B, 6010C, 9030B, 9010B, 9012A, 9014. Organic Parameters: EPA 5035, 5030B, 8260B, 8015B, 8015C.)

Department of Defense, L-A-B Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1. 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

The following analytes are not included in our current NELAP/TNI Scope of Accreditation:
EPA 8260B: Freon-113, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625:** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, Chloride in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix, SO4 in a soil matrix. **EPA 9071:** Total Petroleum Hydrocarbons, Oil & Grease

CHAIN OF CUSTODY

PAGE 3 OF 5

Date Rec'd in Lab: 7/13/12

ALPHA Job #: L1212504

ALPHA ANALYTICAL — World Class Chemistry
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Naver-Armstrong Assoc.
Address: 124 Main St, Unit 2G
Carver MA 02330
Phone: 508-866-8383
Email: malger@noverarmstrong.com

Project Information

Project Name: MBTA/Lechmere
Project Location: ~~P281~~ Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #: P2814

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☑ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Additional Project Information:

Use Soxhlet Extraction

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☑ PCB ☐ PEST Soxhlet; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO — Filtration: ☐ Field ☐ Lab to do; Preservation: ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCB	Sample Comments	TOTAL # BOTTLES
12501 01	EQUIP BLANK-4	7/13/12	9:20 am	DI water	MA	2		2
02	CMU-H-7		10:05 am	Concrete Powder		1		1
03	CMU-H-8		10:10 am			1		1
04	CMU-I-1		10:20 am			1		1
05	CMU-I-2		10:25 am			1		1
06	CMU-I-3		10:30 am			1		1
07	CMU-I-4		10:35 am			1		1
08	CMU-I-5		10:40 am			1		1
09	CMU-I-6		10:45 am			1		1
10	CMU-I-7		10:50 am			1		1
				Container Type		A		
				Preservative		A		

Container Type: P= Plastic; A= Amber glass; V= Vial; G= Glass; B= Bacteria cup; C= Cube; O= Other; E= Encore; D= BOD Bottle

Preservative: A= None; B= HCl; C= HNO_3; D= H_2SO_4; E= NaOH; F= MeOH; G= $NaHSO_4$; H = $Na_2S_2O_3$; I= Ascorbic Acid; J = NH_4Cl; K= Zn Acetate; O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7/13/12 15:20	[signature]	7/13/12 1520

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO. 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 4 OF 5

Date Rec'd in Lab: 7/13/12

ALPHA Job #: L1212504

ALPHA ANALYTICAL
World Class Chemistry
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information

Project Name: MBTA/Lechmere
Project Location: Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: P2814

Client Information

Client: Nover-Armstrong Assoc.
Address: 124 Main St, Unit 2GG, Carver, MA 02330
Phone: 508-866-8383
Email: malger@noverarmstrong.com

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods
☒ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

Use Soxhlet Extraction

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☒ PCB ☐ PEST Soxhlet; TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCB	Sample Comments	Total # Bottles
12504-11	CMU-I-8	7/13/12	10:55	Concrete powder	MA	1		1
-12	CRACK-3		10:25am			1		1
-13	CMU-I-8_DUP		10:55			1		1
-14	CMU-J-1		11:00			1		1
-15	CMU-J-2		11:05			1		1
-16	CMU-J-3		11:10			1		1
-17	CMU-J-4		11:15			1		1
-18	CMU-J-5		11:20			1		1
-19	CMU-J-6		11:25			1		1
-20	CMU-J-7		11:30			1		1
					Container Type	A		
					Preservative	A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	7/13/12 15:20	[illegible]	7/13/12 15:20

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 5 OF 5

Date Rec'd in Lab: 7/13/12

ALPHA Job #: L1212504

ALPHA Analytical — World Class Chemistry
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Nover-Armstrong Assoc.
Address: 124 Main St, Unit 26A, Carver, MA 02330
Phone: 508-866-8383
Email: malger@noveramcmp.com

Project Information

Project Name: MBTA / Lechmere
Project Location: Cambridge
Project #: P2814
Project Manager: Matt Alger
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #: P2814

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program TSCA Criteria

Additional Project Information:

Use Soxhlet Extraction

ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2; SVOC: ☐ ABN ☐ PAH; METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15; METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13; EPH: ☐ Ranges & Targets ☐ Ranges Only; VPH: ☐ Ranges & Targets ☐ Ranges Only; ☒ PCB ☐ PEST; TPH: ☐ Quant Only ☐ Fingerprint

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	PCB	Sample Comments	TOTAL # BOTTLES
12504-21	CMU-J-8	7/13/12	11:35am	Concrete powder	MA	1		1
-22	CMU-J-8_DUP		11:35am	Concrete powder		1		1
-23	EQUIP BLANK-5		12:00pm	DI water		2		2
-24	CRACK-4		12:15pm	Concrete powder		1		1
	Container Type					A		
	Preservative					A		

Container Type: P= Plastic, A= Amber glass, V= Vial, G= Glass, B= Bacteria cup, C= Cube, O= Other, E= Encore, D= BOD Bottle

Preservative: A= None, B= HCl, C= HNO_3, D= H_2SO_4, E= NaOH, F= MeOH, G= $NaHSO_4$, H = $Na_2S_2O_3$, I= Ascorbic Acid, J = NH_4Cl, K= Zn Acetate, O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	7/13/12 15:20	[illegible]	7/13/12 15:20

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1212650
Client:	Nover-Armstrong Associates 124 Main Street Unit 2GG Carver, MA 02330
ATTN:	Matt Alger
Phone:	(508) 866-8383
Project Name:	21 WATER ST.
Project Number:	P2814
Report Date:	07/25/12

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1212650-01	EQUIPMENT BLANK	CAMBRIDGE	07/17/12 07:40
L1212650-02	FLOOR-2-1 (CAULK)	CAMBRIDGE	07/17/12 07:40
L1212650-03	FLOOR-2-2 (CAULK)	CAMBRIDGE	07/17/12 07:40
L1212650-04	FLOOR 2-3	CAMBRIDGE	07/17/12 07:50
L1212650-05	FLOOR 2-4	CAMBRIDGE	07/17/12 08:00
L1212650-06	WALL-4-1	CAMBRIDGE	07/17/12 08:20
L1212650-07	WALL-4-2	CAMBRIDGE	07/17/12 08:30
L1212650-08	WALL-4-3	CAMBRIDGE	07/17/12 08:40
L1212650-09	WALL-4-4	CAMBRIDGE	07/17/12 08:50
L1212650-10	WALL-4-4 (DUP)	CAMBRIDGE	07/17/12 08:50
L1212650-11	WALL-1-1	CAMBRIDGE	07/17/12 09:10
L1212650-12	WALL-1-2	CAMBRIDGE	07/17/12 09:20
L1212650-13	WALL-1-3	CAMBRIDGE	07/17/12 09:30
L1212650-14	WALL-1-4	CAMBRIDGE	07/17/12 09:40
L1212650-15	WALL-3-1 (CAULK)	CAMBRIDGE	07/17/12 10:00
L1212650-16	WALL-3-2 (CAULK)	CAMBRIDGE	07/17/12 10:10
L1212650-17	WALL-3-3	CAMBRIDGE	07/17/12 10:20
L1212650-18	WALL-3-4	CAMBRIDGE	07/17/12 10:30

Project Name: 21 WATER ST. **Lab Number:** L1212650

Project Number: P2814 **Report Date:** 07/25/12

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is 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
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	NO
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name: 21 WATER ST. **Lab Number:** L1212650
Project Number: P2814 **Report Date:** 07/25/12

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: 21 WATER ST. **Lab Number:** L1212650
Project Number: P2814 **Report Date:** 07/25/12

Case Narrative (continued)

MCP Related Narratives

PCBs

L1212650-13 has elevated detection limits due to the dilution required by matrix interferences encountered during the concentration of the sample.

In reference to question G:

L1212650-13, -15, and -16: One or more of the target analytes did not achieve the requested CAM reporting limits.

In reference to question H:

The surrogate recoveries for L1212650-15 and -16 are below the acceptance criteria for 2,4,5,6-Tetrachloro-m-xylene and Decachlorobiphenyl (all 0%) due to the dilutions required to quantitate the samples. Re-extractions were not required; therefore, the results of the original analyses are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom

Title: Technical Director/Representative Date: 07/25/12

ORGANICS

PCBS

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-01	Date Collected:	07/17/12 07:40
Client ID:	EQUIPMENT BLANK	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	97,8082	Extraction Date:	07/19/12 08:23
Analytical Date:	07/22/12 20:44	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/19/12
		Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/19/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/l	0.250	--	1
Aroclor 1221	ND		ug/l	0.250	--	1
Aroclor 1232	ND		ug/l	0.250	--	1
Aroclor 1242	ND		ug/l	0.250	--	1
Aroclor 1248	ND		ug/l	0.250	--	1
Aroclor 1254	ND		ug/l	0.250	--	1
Aroclor 1260	ND		ug/l	0.250	--	1
Aroclor 1262	ND		ug/l	0.250	--	1
Aroclor 1268	ND		ug/l	0.250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	91		30-150
Decachlorobiphenyl	79		30-150
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	73		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-02	Date Collected:	07/17/12 07:40
Client ID:	FLOOR-2-1 (CAULK)	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 04:47	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.5	--	1
Aroclor 1221	ND		ug/kg	58.5	--	1
Aroclor 1232	ND		ug/kg	58.5	--	1
Aroclor 1242	ND		ug/kg	58.5	--	1
Aroclor 1248	ND		ug/kg	39.0	--	1
Aroclor 1254	ND		ug/kg	58.5	--	1
Aroclor 1262	ND		ug/kg	19.5	--	1
Aroclor 1268	ND		ug/kg	19.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	80		30-150
Decachlorobiphenyl	69		30-150
2,4,5,6-Tetrachloro-m-xylene	81		30-150
Decachlorobiphenyl	73		30-150

Project Name: 21 WATER ST. **Lab Number:** L1212650

Project Number: P2814 **Report Date:** 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-02	Date Collected:	07/17/12 07:40
Client ID:	FLOOR-2-1 (CAULK)	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 04:47	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	1520		ug/kg	39.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	80		30-150
Decachlorobiphenyl	69		30-150
2,4,5,6-Tetrachloro-m-xylene	81		30-150
Decachlorobiphenyl	73		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-03	Date Collected:	07/17/12 07:40
Client ID:	FLOOR-2-2 (CAULK)	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 05:00	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.9	--	1
Aroclor 1221	ND		ug/kg	57.9	--	1
Aroclor 1232	ND		ug/kg	57.9	--	1
Aroclor 1242	ND		ug/kg	57.9	--	1
Aroclor 1248	ND		ug/kg	38.6	--	1
Aroclor 1254	ND		ug/kg	57.9	--	1
Aroclor 1260	651		ug/kg	38.6	--	1
Aroclor 1262	ND		ug/kg	19.3	--	1
Aroclor 1268	ND		ug/kg	19.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	66		30-150
Decachlorobiphenyl	61		30-150
2,4,5,6-Tetrachloro-m-xylene	64		30-150
Decachlorobiphenyl	60		30-150

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-04	Date Collected:	07/17/12 07:50
Client ID:	FLOOR 2-3	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 05:13	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	98%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	52.2	--	1
Aroclor 1221	ND		ug/kg	52.2	--	1
Aroclor 1232	ND		ug/kg	52.2	--	1
Aroclor 1242	ND		ug/kg	52.2	--	1
Aroclor 1248	ND		ug/kg	34.8	--	1
Aroclor 1254	ND		ug/kg	52.2	--	1
Aroclor 1260	114		ug/kg	34.8	--	1
Aroclor 1262	ND		ug/kg	17.4	--	1
Aroclor 1268	ND		ug/kg	17.4	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	76		30-150
Decachlorobiphenyl	66		30-150
2,4,5,6-Tetrachloro-m-xylene	75		30-150
Decachlorobiphenyl	66		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-05	Date Collected:	07/17/12 08:00
Client ID:	FLOOR 2-4	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/24/12 11:13
Analytical Date:	07/25/12 12:34	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/25/12
Percent Solids:	98%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/25/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	54.8	--	1
Aroclor 1221	ND		ug/kg	54.8	--	1
Aroclor 1232	ND		ug/kg	54.8	--	1
Aroclor 1242	ND		ug/kg	54.8	--	1
Aroclor 1248	ND		ug/kg	36.5	--	1
Aroclor 1254	ND		ug/kg	54.8	--	1
Aroclor 1260	336		ug/kg	36.5	--	1
Aroclor 1262	ND		ug/kg	18.2	--	1
Aroclor 1268	ND		ug/kg	18.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	67		30-150
Decachlorobiphenyl	58		30-150
2,4,5,6-Tetrachloro-m-xylene	61		30-150
Decachlorobiphenyl	57		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-06	Date Collected:	07/17/12 08:20
Client ID:	WALL-4-1	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 05:40	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	52.7	--	1
Aroclor 1221	ND		ug/kg	52.7	--	1
Aroclor 1232	ND		ug/kg	52.7	--	1
Aroclor 1242	ND		ug/kg	52.7	--	1
Aroclor 1248	ND		ug/kg	35.1	--	1
Aroclor 1254	ND		ug/kg	52.7	--	1
Aroclor 1260	ND		ug/kg	35.1	--	1
Aroclor 1262	ND		ug/kg	17.6	--	1
Aroclor 1268	ND		ug/kg	17.6	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	78		30-150
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	77		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-07	Date Collected:	07/17/12 08:30
Client ID:	WALL-4-2	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 05:53	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.6	--	1
Aroclor 1221	ND		ug/kg	51.6	--	1
Aroclor 1232	ND		ug/kg	51.6	--	1
Aroclor 1242	ND		ug/kg	51.6	--	1
Aroclor 1248	ND		ug/kg	34.4	--	1
Aroclor 1254	ND		ug/kg	51.6	--	1
Aroclor 1260	ND		ug/kg	34.4	--	1
Aroclor 1262	ND		ug/kg	17.2	--	1
Aroclor 1268	ND		ug/kg	17.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	80		30-150
Decachlorobiphenyl	75		30-150
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	74		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-08	Date Collected:	07/17/12 08:40
Client ID:	WALL-4-3	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 06:06	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.0	--	1
Aroclor 1221	ND		ug/kg	51.0	--	1
Aroclor 1232	ND		ug/kg	51.0	--	1
Aroclor 1242	ND		ug/kg	51.0	--	1
Aroclor 1248	ND		ug/kg	34.0	--	1
Aroclor 1254	ND		ug/kg	51.0	--	1
Aroclor 1260	ND		ug/kg	34.0	--	1
Aroclor 1262	ND		ug/kg	17.0	--	1
Aroclor 1268	ND		ug/kg	17.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	96		30-150
2,4,5,6-Tetrachloro-m-xylene	94		30-150
Decachlorobiphenyl	95		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-09	Date Collected:	07/17/12 08:50
Client ID:	WALL-4-4	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 06:19	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	53.4	--	1
Aroclor 1221	ND		ug/kg	53.4	--	1
Aroclor 1232	ND		ug/kg	53.4	--	1
Aroclor 1242	ND		ug/kg	53.4	--	1
Aroclor 1248	ND		ug/kg	35.6	--	1
Aroclor 1254	ND		ug/kg	53.4	--	1
Aroclor 1260	55.8		ug/kg	35.6	--	1
Aroclor 1262	ND		ug/kg	17.8	--	1
Aroclor 1268	ND		ug/kg	17.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	80		30-150
2,4,5,6-Tetrachloro-m-xylene	82		30-150
Decachlorobiphenyl	79		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-10	Date Collected:	07/17/12 08:50
Client ID:	WALL-4-4 (DUP)	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 06:32	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	53.5	--	1
Aroclor 1221	ND		ug/kg	53.5	--	1
Aroclor 1232	ND		ug/kg	53.5	--	1
Aroclor 1242	ND		ug/kg	53.5	--	1
Aroclor 1248	ND		ug/kg	35.6	--	1
Aroclor 1254	ND		ug/kg	53.5	--	1
Aroclor 1260	ND		ug/kg	35.6	--	1
Aroclor 1262	ND		ug/kg	17.8	--	1
Aroclor 1268	ND		ug/kg	17.8	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	91		30-150
2,4,5,6-Tetrachloro-m-xylene	94		30-150
Decachlorobiphenyl	90		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-11	Date Collected:	07/17/12 09:10
Client ID:	WALL-1-1	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 06:45	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	55.0	--	1
Aroclor 1221	ND		ug/kg	55.0	--	1
Aroclor 1232	ND		ug/kg	55.0	--	1
Aroclor 1242	ND		ug/kg	55.0	--	1
Aroclor 1248	ND		ug/kg	36.7	--	1
Aroclor 1254	ND		ug/kg	55.0	--	1
Aroclor 1260	142		ug/kg	36.7	--	1
Aroclor 1262	ND		ug/kg	18.3	--	1
Aroclor 1268	ND		ug/kg	18.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	93		30-150
Decachlorobiphenyl	94		30-150
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	92		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-12	Date Collected:	07/17/12 09:20
Client ID:	WALL-1-2	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 06:58	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	51.6	--	1
Aroclor 1221	ND		ug/kg	51.6	--	1
Aroclor 1232	ND		ug/kg	51.6	--	1
Aroclor 1242	ND		ug/kg	51.6	--	1
Aroclor 1248	ND		ug/kg	34.4	--	1
Aroclor 1254	ND		ug/kg	51.6	--	1
Aroclor 1260	170		ug/kg	34.4	--	1
Aroclor 1262	ND		ug/kg	17.2	--	1
Aroclor 1268	ND		ug/kg	17.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	108		30-150
Decachlorobiphenyl	106		30-150
2,4,5,6-Tetrachloro-m-xylene	105		30-150
Decachlorobiphenyl	105		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-13	Date Collected:	07/17/12 09:30
Client ID:	WALL-1-3	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 07:11	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	113	--	2
Aroclor 1221	ND		ug/kg	113	--	2
Aroclor 1232	ND		ug/kg	113	--	2
Aroclor 1242	ND		ug/kg	113	--	2
Aroclor 1248	ND		ug/kg	75.3	--	2
Aroclor 1254	ND		ug/kg	113	--	2
Aroclor 1260	264		ug/kg	75.3	--	2
Aroclor 1262	ND		ug/kg	37.7	--	2
Aroclor 1268	ND		ug/kg	37.7	--	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	85		30-150
2,4,5,6-Tetrachloro-m-xylene	86		30-150
Decachlorobiphenyl	82		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-14	Date Collected:	07/17/12 09:40
Client ID:	WALL-1-4	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 07:25	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.0	--	1
Aroclor 1221	ND		ug/kg	58.0	--	1
Aroclor 1232	ND		ug/kg	58.0	--	1
Aroclor 1242	ND		ug/kg	58.0	--	1
Aroclor 1248	ND		ug/kg	38.7	--	1
Aroclor 1254	ND		ug/kg	58.0	--	1
Aroclor 1260	140		ug/kg	38.7	--	1
Aroclor 1262	ND		ug/kg	19.3	--	1
Aroclor 1268	ND		ug/kg	19.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	81		30-150
Decachlorobiphenyl	84		30-150
2,4,5,6-Tetrachloro-m-xylene	79		30-150
Decachlorobiphenyl	84		30-150

Project Name: 21 WATER ST. **Lab Number:** L1212650

Project Number: P2814 **Report Date:** 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-15 D	Date Collected:	07/17/12 10:00
Client ID:	WALL-3-1 (CAULK)	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3580A
Analytical Method:	97,8082	Extraction Date:	07/18/12 07:37
Analytical Date:	07/24/12 11:26	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	1030000	--	400
Aroclor 1221	ND		ug/kg	1030000	--	400
Aroclor 1232	ND		ug/kg	1030000	--	400
Aroclor 1242	ND		ug/kg	1030000	--	400
Aroclor 1248	ND		ug/kg	690000	--	400
Aroclor 1254	ND		ug/kg	1030000	--	400
Aroclor 1262	ND		ug/kg	345000	--	400
Aroclor 1268	ND		ug/kg	345000	--	400

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: 21 WATER ST. **Lab Number:** L1212650

Project Number: P2814 **Report Date:** 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-15 D	Date Collected:	07/17/12 10:00
Client ID:	WALL-3-1 (CAULK)	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3580A
Analytical Method:	97,8082	Extraction Date:	07/18/12 07:37
Analytical Date:	07/24/12 11:26	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	18400000		ug/kg	690000	--	400

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: 21 WATER ST. **Lab Number:** L1212650

Project Number: P2814 **Report Date:** 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-16 D	Date Collected:	07/17/12 10:10
Client ID:	WALL-3-2 (CAULK)	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3580A
Analytical Method:	97,8082	Extraction Date:	07/18/12 07:37
Analytical Date:	07/24/12 11:39	Cleanup Method1:	EPA 3665A
Analyst:	KB	Cleanup Date1:	07/18/12
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/18/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	1040000	--	400
Aroclor 1221	ND		ug/kg	1040000	--	400
Aroclor 1232	ND		ug/kg	1040000	--	400
Aroclor 1242	ND		ug/kg	1040000	--	400
Aroclor 1248	ND		ug/kg	696000	--	400
Aroclor 1254	ND		ug/kg	1040000	--	400
Aroclor 1260	22500000		ug/kg	696000	--	400
Aroclor 1262	ND		ug/kg	348000	--	400
Aroclor 1268	ND		ug/kg	348000	--	400

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150
Decachlorobiphenyl	**0**	Q	30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-17	Date Collected:	07/17/12 10:20
Client ID:	WALL-3-3	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/22/12 15:33
Analytical Date:	07/24/12 07:38	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/23/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/23/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	57.2	--	1
Aroclor 1221	ND		ug/kg	57.2	--	1
Aroclor 1232	ND		ug/kg	57.2	--	1
Aroclor 1242	ND		ug/kg	57.2	--	1
Aroclor 1248	ND		ug/kg	38.2	--	1
Aroclor 1254	ND		ug/kg	57.2	--	1
Aroclor 1260	491		ug/kg	38.2	--	1
Aroclor 1262	ND		ug/kg	19.1	--	1
Aroclor 1268	ND		ug/kg	19.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	92		30-150
Decachlorobiphenyl	92		30-150
2,4,5,6-Tetrachloro-m-xylene	90		30-150
Decachlorobiphenyl	90		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-18	Date Collected:	07/17/12 10:30
Client ID:	WALL-3-4	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/24/12 11:13
Analytical Date:	07/25/12 12:47	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/25/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/25/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1016	ND		ug/kg	58.6	--	1
Aroclor 1221	ND		ug/kg	58.6	--	1
Aroclor 1232	ND		ug/kg	58.6	--	1
Aroclor 1242	ND		ug/kg	58.6	--	1
Aroclor 1248	ND		ug/kg	39.1	--	1
Aroclor 1254	922		ug/kg	58.6	--	1
Aroclor 1262	ND		ug/kg	19.5	--	1
Aroclor 1268	ND		ug/kg	19.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	70		30-150
2,4,5,6-Tetrachloro-m-xylene	75		30-150
Decachlorobiphenyl	67		30-150

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID:	L1212650-18	Date Collected:	07/17/12 10:30
Client ID:	WALL-3-4	Date Received:	07/17/12
Sample Location:	CAMBRIDGE	Field Prep:	Not Specified
Matrix:	Solid	Extraction Method:	EPA 3540C
Analytical Method:	97,8082	Extraction Date:	07/24/12 11:13
Analytical Date:	07/25/12 12:47	Cleanup Method1:	EPA 3665A
Analyst:	BA	Cleanup Date1:	07/25/12
Percent Solids:	100%	Cleanup Method2:	EPA 3660B
		Cleanup Date2:	07/25/12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Polychlorinated Biphenyls - Westborough Lab						
Aroclor 1260	854		ug/kg	39.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	78		30-150
Decachlorobiphenyl	70		30-150
2,4,5,6-Tetrachloro-m-xylene	75		30-150
Decachlorobiphenyl	67		30-150

Project Name: 21 WATER ST.

Project Number: P2814

Lab Number: L1212650

Report Date: 07/25/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/18/12 16:29
Analyst: KB

Extraction Method: EPA 3580A
Extraction Date: 07/18/12 07:36
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/18/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/18/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 15-16 Batch: WG549108-1					
Aroclor 1016	ND		ug/kg	2650	--
Aroclor 1221	ND		ug/kg	2650	--
Aroclor 1232	ND		ug/kg	2650	--
Aroclor 1242	ND		ug/kg	2650	--
Aroclor 1248	ND		ug/kg	1770	--
Aroclor 1254	ND		ug/kg	2650	--
Aroclor 1260	ND		ug/kg	1770	--
Aroclor 1262	ND		ug/kg	885	--
Aroclor 1268	ND		ug/kg	885	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	120		30-150
Decachlorobiphenyl	113		30-150
2,4,5,6-Tetrachloro-m-xylene	112		30-150
Decachlorobiphenyl	109		30-150

Project Name: 21 WATER ST.

Project Number: P2814

Lab Number: L1212650

Report Date: 07/25/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/22/12 20:07
Analyst: BA

Extraction Method: EPA 3510C
Extraction Date: 07/19/12 08:23
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/19/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/19/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 01 Batch: WG549417-1					
Aroclor 1016	ND		ug/l	0.250	--
Aroclor 1221	ND		ug/l	0.250	--
Aroclor 1232	ND		ug/l	0.250	--
Aroclor 1242	ND		ug/l	0.250	--
Aroclor 1248	ND		ug/l	0.250	--
Aroclor 1254	ND		ug/l	0.250	--
Aroclor 1260	ND		ug/l	0.250	--
Aroclor 1262	ND		ug/l	0.250	--
Aroclor 1268	ND		ug/l	0.250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	96		30-150
Decachlorobiphenyl	89		30-150
2,4,5,6-Tetrachloro-m-xylene	83		30-150
Decachlorobiphenyl	74		30-150

Project Name: 21 WATER ST.

Project Number: P2814

Lab Number: L1212650

Report Date: 07/25/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/24/12 04:08
Analyst: BA

Extraction Method: EPA 3540C
Extraction Date: 07/22/12 15:33
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/23/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/23/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 02-04,06-14,17 Batch: WG550067-1					
Aroclor 1016	ND		ug/kg	52.8	--
Aroclor 1221	ND		ug/kg	52.8	--
Aroclor 1232	ND		ug/kg	52.8	--
Aroclor 1242	ND		ug/kg	52.8	--
Aroclor 1248	ND		ug/kg	35.2	--
Aroclor 1254	ND		ug/kg	52.8	--
Aroclor 1260	ND		ug/kg	35.2	--
Aroclor 1262	ND		ug/kg	17.6	--
Aroclor 1268	ND		ug/kg	17.6	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	95		30-150
Decachlorobiphenyl	98		30-150
2,4,5,6-Tetrachloro-m-xylene	93		30-150
Decachlorobiphenyl	95		30-150

Project Name: 21 WATER ST.

Project Number: P2814

Lab Number: L1212650

Report Date: 07/25/12

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8082
Analytical Date: 07/25/12 13:00
Analyst: BA

Extraction Method: EPA 3540C
Extraction Date: 07/24/12 11:13
Cleanup Method1: EPA 3665A
Cleanup Date1: 07/25/12
Cleanup Method2: EPA 3660B
Cleanup Date2: 07/25/12

Parameter	Result	Qualifier	Units	RL	MDL
MCP Polychlorinated Biphenyls - Westborough Lab for sample(s): 05,18 Batch: WG550450-1					
Aroclor 1016	ND		ug/kg	57.2	--
Aroclor 1221	ND		ug/kg	57.2	--
Aroclor 1232	ND		ug/kg	57.2	--
Aroclor 1242	ND		ug/kg	57.2	--
Aroclor 1248	ND		ug/kg	38.2	--
Aroclor 1254	ND		ug/kg	57.2	--
Aroclor 1260	ND		ug/kg	38.2	--
Aroclor 1262	ND		ug/kg	19.1	--
Aroclor 1268	ND		ug/kg	19.1	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	85		30-150
Decachlorobiphenyl	77		30-150
2,4,5,6-Tetrachloro-m-xylene	84		30-150
Decachlorobiphenyl	76		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 15-16 Batch: WG549108-2 WG549108-3								
Aroclor 1016	126		115		40-140	9		30
Aroclor 1260	108		98		40-140	10		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	126		114		30-150
Decachlorobiphenyl	116		105		30-150
2,4,5,6-Tetrachloro-m-xylene	117		105		30-150
Decachlorobiphenyl	113		101		30-150

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 01 Batch: WG549417-2 WG549417-3								
Aroclor 1016	92		92		40-140	1		20
Aroclor 1260	85		84		40-140	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	97		94		30-150
Decachlorobiphenyl	95		92		30-150
2,4,5,6-Tetrachloro-m-xylene	86		84		30-150
Decachlorobiphenyl	78		75		30-150

Lab Control Sample Analysis
Batch Quality Control

Project Name: 21 WATER ST.
Project Number: P2814
Lab Number: L1212650
Report Date: 07/25/12

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 02-04,06-14,17 Batch: WG550067-2 WG550067-3								
Aroclor 1016	89		80		40-140	11		30
Aroclor 1260	82		74		40-140	10		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	100		91		30-150
Decachlorobiphenyl	95		88		30-150
2,4,5,6-Tetrachloro-m-xylene	96		87		30-150
Decachlorobiphenyl	94		85		30-150

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Polychlorinated Biphenyls - Westborough Lab Associated sample(s): 05,18 Batch: WG550450-2 WG550450-3								
Aroclor 1016	77		94		40-140	20		30
Aroclor 1260	65		74		40-140	13		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	83		94		30-150
Decachlorobiphenyl	77		86		30-150
2,4,5,6-Tetrachloro-m-xylene	81		92		30-150
Decachlorobiphenyl	76		85		30-150

INORGANICS
&
MISCELLANEOUS

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-04
Client ID: FLOOR 2-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 07:50
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	98		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-05
Client ID: FLOOR 2-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 08:00
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	98		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-06
Client ID: WALL-4-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 08:20
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-07
Client ID: WALL-4-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 08:30
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-08
Client ID: WALL-4-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 08:40
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-09
Client ID: WALL-4-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 08:50
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-10
Client ID: WALL-4-4 (DUP)
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 08:50
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-11
Client ID: WALL-1-1
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 09:10
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-12
Client ID: WALL-1-2
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 09:20
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-13
Client ID: WALL-1-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 09:30
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-14
Client ID: WALL-1-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 09:40
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-17
Client ID: WALL-3-3
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 10:20
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

SAMPLE RESULTS

Lab ID: L1212650-18
Client ID: WALL-3-4
Sample Location: CAMBRIDGE
Matrix: Solid

Date Collected: 07/17/12 10:30
Date Received: 07/17/12
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	100		%	0.10	NA	1	-	07/18/12 00:30	30,2540G	RD

Lab Duplicate Analysis
Batch Quality Control

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 04-14,17-18 QC Batch ID: WG549064-1 QC Sample: L1212650-04 Client ID: FLOOR 2-3						
Solids, Total	98	98	%	0		20

Project Name: 21 WATER ST.
Project Number: P2814

Lab Number: L1212650
Report Date: 07/25/12

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1212650-01A	Amber 1000ml unpreserved	A	7	5	Y	Absent	MCP-8082-10(365)
L1212650-01B	Amber 1000ml unpreserved	A	7	5	Y	Absent	MCP-8082-10(365)
L1212650-02A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	MCP-8082LL-10-3540C(365)
L1212650-03A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS100(),MCP-8082LL-10-3540C(365)
L1212650-04A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-05A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-06A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-07A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-08A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-09A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-10A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-11A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-12A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-13A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-14A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-15A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS100(),MCP-8082LL-10-3540C(365)
L1212650-16A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS100(),MCP-8082LL-10-3540C(365)
L1212650-17A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)
L1212650-18A	Amber 120ml unpreserved	A	N/A	5	Y	Absent	TS(7),MCP-8082LL-10-3540C(365)

*Values in parentheses indicate holding time in days

Project Name:	21 WATER ST.	**Lab Number:**	L1212650
Project Number:	P2814	**Report Date:**	07/25/12

GLOSSARY

Acronyms

EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
C	- Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D	- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E	- Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G	- The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H	- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I	- The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
M	- Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
NJ	- Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

Report Format: Data Usability Report

Project Name: 21 WATER ST. **Lab Number:** L1212650

Project Number: P2814 **Report Date:** 07/25/12

Data Qualifiers

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: 21 WATER ST. **Lab Number:** L1212650
Project Number: P2814 **Report Date:** 07/25/12

REFERENCES

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised May 11, 2012 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. ***NELAP Accredited Solid Waste/Soil.***

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223 P/A), E. Coli. – Colilert (SM9223 P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D, Fecal Coliform-EC Medium 9221E).

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterolert, E.Coli 9223.

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics, Acid Extractables (Phenols), Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2130B, 2320B, 2540C, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, SM2320B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-G, 4500NO3-F, 4500P-B, 4500P-E, 5210B, 5220D, 5310C, 9010B, 9040B, 9030B, 7470A, 7196A, 2340B, EPA 200.7, 6010B, 200.8, 6020, 245.1, 1311, 1312, 3005A, Enterolert, 9223D, 9222D. Organic Parameters: 608, 624, 625, 8081A, 8082, 8330, 8151A, 8260B, 8270C, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Inorganic Parameters: 9010B, 9012A, 9014A, 9030B, 9040B, 9045C, 6010B, 7471A, 7196A, 9050A, 1010, 1030, 9065, 1311, 1312, 3005A, 3050B. Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH, 8260B, 8270C, 8330, 8151A, 8081A, 8082, 3540C, 3546, 3580A, 3630C, 5030B, 5035.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
*Drinking Water (*Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

*Non-Potable Water (*Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn); 245.1, SM4500H,B, EPA 120.1,

SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.
Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B; Enterolert-QT: SM9222D-MF.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 245.2, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6010C, 6020, 6020A, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 350.2, 351.1, 353.2, 410.4, 420.1, 426C, 1664A, SW-846 9010B, 9030B, 9040B, SM426C, SM2120B, 2310B, 2320B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3510C, 3630C, 5030B, 8260B, 8270C, 8270D, 8330, EPA 624, 625, 608, SW-846 8082, 8081A, 8081B, 8151A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 6010C, 7196A, 7471A, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040B, 9045C, 9050, 9065,1311, 1312, 3005A, 3050B, 3060A. Organic Parameters: SW-846 3540C, 3546, 3550B, 3580A, 3630C, 5030B, 5035, 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330, 8151A, 8015B, 8082, 8082A, 8081A, 8081B.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.2, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-E, EPA 300.0, SM2120B, 2340B, SM4500F-BC, EPA 200.7, 200.8, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM510ABC, SM4500P-B5+E, 2540B, 2540C, 2540D, 2540G, EPA 120.1, SM2510B, SM15 426C, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, 350.2, SW-846 1312, 7470A, 5540C, SM4500H-B, 4500SO3-B, SM3500Cr-D, 4500CN-CE, EPA 245.1, 245.2, SW-846 9040B, 3005A, 3015, EPA 6010B, 6010C, 6020, 6020A, 7196A, 3060A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 1,4-Dioxane by NJ Modified 8270, 8015B, NJ OQA-QAM-025 Rev.7, NJ EPH.)

Solid & Chemical Materials (Inorganic Parameters: SW-846, 6010B, 6010C,6020, 6020A, 7196A, 3060A, 9010B, 9030B, 1010, 1030, 1311, 1312, 3005A, 3050B, 7471A, 7471B, 9014, 9012A, 9040B, 9045C, 9050A, 9065. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3630C, 5030B, 5035L, 5035H, NJ OQA-QAM-025 Rev.7, NJ EPH.)

New York Department of Health Certificate/Lab ID: 11148. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO3-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH3-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6010C, 6020, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, LACHAT 10-204-00-1-A, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 624, 8260B, 8270C, 8270D, 625, 608, 8081A, 8081B, 8151A, 8330, 8082, 8082A, EPA 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, EPA 6010B, 6010C, 7196A, 7471A, 7471B, 9012A, 9014, 9065, 9050A, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8015B, 8015C, 8081A, 8081B, 8151A, 8330, 8082 8082A, 3540C, 3546, 3580, 3580A, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666. Organic Parameters: MA-EPH, MA-VPH.

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-03671. ***NELAP Accredited.***
Drinking Water (Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 1312, 3005A, 200.7, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3050B, 3060A, 6010B, 6010C, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065, SM 4500NH3-H. Organic Parameters: 3540C, 3546, 3580A, 3630C, 5035, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260B, 8270C, 8270D, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. ***NELAP Accredited via NY-DOH.***
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2¯D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID: 460195. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 3005A,3015,1312,6010B,6010C,SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X. Organic Parameters: EPA 8260B)

Solid & Hazardous Waste (Inorganic Parameters: EPA 3050B, 1311, 1312, 6010B, 6010C, 9030B, 9010B, 9012A, 9014. Organic Parameters: EPA 5035, 5030B, 8260B, 8015B, 8015C.)

Department of Defense, L-A-B Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1. 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

The following analytes are not included in our current NELAP/TNI Scope of Accreditation:
EPA 8260B: Freon-113, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625:** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, Chloride in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix, SO4 in a soil matrix. **EPA 9071:** Total Petroleum Hydrocarbons, Oil & Grease

CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193

MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 7/17/12

ALPHA Job #: L1212650

Client Information

Client: Nunn-Armstrong Assoc.
Address: 124 Main St.
Carver, MA 02330
Phone: 508-866-8383
Fax: 508-866-9878
Email: mlaeparmstrong.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: 21 Water St.
Project Location: Cambridge
Project #: P2814
Project Manager: M. Alger
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: 7/24/12 Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info PO #: P2814

Regulatory Requirements/Report Limits

State /Fed Program Criteria TSCA

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTO

☒ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☒ No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)
☐ Yes ☒ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

If MS is required, indicate in Sample Specific Comments which samples and what tests MS to be performed.
(Note: All *CAM* methods for inorganic analyses require MS every 20 soil samples)

use soxhlet method Rep is concrete powder

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS PCBs - soxhlet	Sample Specific Comments	TOTAL # BOTTLES
12650-01	EQUIPMENT BLANK	7/17/12	7:45AM	WATER	BL	X		2
-02	FLOOR-2-1 (GBWK)	7/17/12	7:40AM	CAULK		X		1
-03	FLOOR-2-2 (CAULK)		7:40AM	CAULK		X		1
-04	FLOOR-2-3		7:50AM	CP		X		1
-05	FLOOR-2-4		8:00AM	CP		X		1
-06	WALL-4-1		8:30AM	CP		X		1
-07	WALL-4-2		8:30	CP		X		1
-08	WALL-4-3		8:40	CP		X		1
-09	WALL-4-4		8:50	CP		X		1
-10	WALL-4-4 (DUP)		8:50	CP		X		1

Container Type	A
Preservative	A

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP *or* CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[illegible] 7-17-12	1220	[illegible]	7/17/12 1229

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 18-Jan-2010)

CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 7/17/12

ALPHA Job #: L1212650

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Nevir-Armstrong Assoc
Address: 124 Main St
Cenvr MA 02330
Phone: 508-866-8383
Fax: 508-866-9898
Email: mla@nevirarmstrong.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: 21 Water St
Project Location: Cambridge
Project #: P2814
Project Manager: M. Alger
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: 7/24/12 Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info PO #: P2814

Regulatory Requirements/Report Limits

State /Fed Program Criteria TSCA

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTO

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)
☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:
If MS is required, indicate in Sample Specific Comments which samples and what tests MS to be performed.
(Note: All *CAM* methods for inorganic analyses require MS every 20 soil samples)

* = CP is concrete powder use Soxhlet method

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS PCB's - Soxhlet	Sample Specific Comments	TOTAL # BOTTLES
12650-11	Wall-1-1	7-17-12	910	CP	BL	X		1
-12	Wall-1-2	↓	920	CP	BL	X		1
-13	Wall-1-3	↓	930	CP	BL	X		1
-14	Wall-1-4	↓	940	CP	BL	X		1
-15	Wall-3-1 (caulk)	↓	1000	caulk	BL	X	anticipating high results	1
-16	Wall-3-2 (caulk)	↓	1010	caulk	BL	X	anticipating high results	1
-17	Wall-3-3	↓	1020	CP	BL	X		1
-18	Wall-3-4	↓	1030	CP	BL	X		1

Container Type	A
Preservative	A

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP *or* CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	7-17-12/1220	[signature]	7/17/12 1220

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 18-Jan-2010)

APPENDIX D – SITE SPECIFIC QAPP ADDENDUM A1

NOVER-ARMSTRONG ASSOCIATES, INC.

124 Main Street, Unit 2GG
Carver, Massachusetts 02330
Telephone 508.866.8383
Facsimile 508.866.9898

SDO-certified DBE & WBE
www.noverarmstrong.com

environmental consultants & engineers

SITE-SPECIFIC QAPP ADDENDUM A1

for

Analysis of PCBs in Building Materials
MBTA Tire Maintenance Facility
21 Water Street / 183 Monsignor O'Brien Highway
Cambridge, Massachusetts

EPA QA RFA 11102

Prepared by: Nover-Armstrong Associates, Inc. (Nover-Armstrong)
124 Main Street, Unit 2GG, Carver, MA 02330
Matthew Alger, Nover-Armstrong Quality Assurance Coordinator

Date Prepared: June 2012 (Revision 1.2)

Contents

Section 1 – Project Management
1.1 Introduction 6
1.2 Project Organization and Responsibility 6
1.3 Problem Definition 8
1.4 Project Description and Timeline 9

Section 2 – Measurement Data Acquisition
2.1 Sampling Design and Site Figures 11
2.2 Sampling and Analytical Methods Requirements 12
2.3 Method and SOP Reference Table 13
2.4 Field Equipment Calibration and Corrective Action 13
2.5 Laboratory Equipment Calibration and Corrective Action 14
2.6 Sample Handling and Custody Requirements 14
2.7 Analytical Sensitivity and Project Criteria 16
2.8 Field Quality Control Requirements 16
2.9 Laboratory Quality Control Requirements 17
2.10 Data Management and Documentation 17

Section 3 – Assessment and Oversight
3.1 Assessments and Response Actions 18
3.2 Project Reports 19

Section 4 – Data Evaluation
4.1 Field Data Evaluation 19
4.2 Laboratory Data Evaluation 20
4.3 Data Usability and Project Evaluation 23

Section 5 – References

Figures

Figure 1-1: Project Organizational Chart
Figure 1-2: Site Location
Figure 2-1: CMU Sampling Groups
Figure 2-2: Individual Window Sampling Scheme
Figure 2-3: Floor and Wall Material Sampling Locations
Figure 4-1: MassDEP Presumptive Certainty and REDUA Concept

Tables

Table 2-1: Sampling and Analytical Methods Requirements Table
Table 2-2: Site-Specific Method and SOP Reference Table
Table 2-3: Field Equipment List
Table 2-4: Field Quality Control Requirements Table

Appendices

Appendix A - Site-Specific Standard Operating Procedures
Appendix B - Analytical Method Sensitivity and Project Criteria Table
Appendix C - QAPP Project Personnel Log Sheet

List of Acronyms

ASTM	American Society for Testing Materials
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGI	Combustible Gas and Oxygen Detector
COC	Chain of Custody
COPC	Contaminant of Potential Concern
DEP	Department of Environmental Protection
DOD	Department of Defense
DQO	Data Quality Objectives
EHP	Environmental Health Program
ELAP	Environmental Laboratory Accreditation Program
EMD	Environmental Monitoring Database
EPA	Environmental Protection Agency
FID	Flame ionization detector
FSS	Federal Sites Section of the Hazardous Waste Remediation Bureau
HASP	Health and Safety Plan
ID	Inside Diameter
LFS	Low Flow Sampling
MCL	Massachusetts Certified Lab
MCP	Massachusetts Contingency Plan
MDL	Method Detection Limits
NAPL	Non-Aqueous Phase Liquid
NCP	National Contingency Plan
NIST	National Institute of Standard & Technology
NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NPL	National Priorities List
NTU	Nephelometric Turbidity Units
OD	Outside Diameter
ORCB	Oil Remediation & Compliance Bureau
ORP	Oxygen Reduction Potential
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PEHB	Permitting & Environmental Health Bureau
PIC	Public Information Center
PID	Photoionization Detector
PM	Project Manager
POE	Point of Entry
PQO	Project Quality Objectives
PRP	Potentially Responsible Party
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAC	Quality Assurance Coordinator
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	Quality Control

List of Acronyms - Continued

QMP	Quality Management Plan
QSM	Quality Systems Manual
RDL	Reporting Detection Limits
RI/FS	Remedial Investigation and Feasibility Study
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SOP	Standard Operation Procedure
SRP	Site Remediation Program
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WMD	Waste Management Division

Section 1 – Project Management

1.1 Introduction

The Brownfields Revitalization and Environmental Restoration Act of 2001 authorizes federal funding for the assessment and cleanup of contaminated properties through the USEPA's Brownfields grant program. The USEPA requires that a Quality Assurance Project Plan (QAPP) is prepared and approved by the USEPA prior to the commencement of federally funded projects involving the collection and use of environmental data.

This Site-Specific QAPP Addendum has been prepared in accordance the USEPA's Brownfields program. Assessment activities will be completed consistent with USEPA requirements and processes described in Massachusetts General Laws Chapter 21E (MGL Ch. 21E) and 310 Code of Massachusetts Regulations (CMR) 40.0000 – Massachusetts Contingency Plan (MCP).

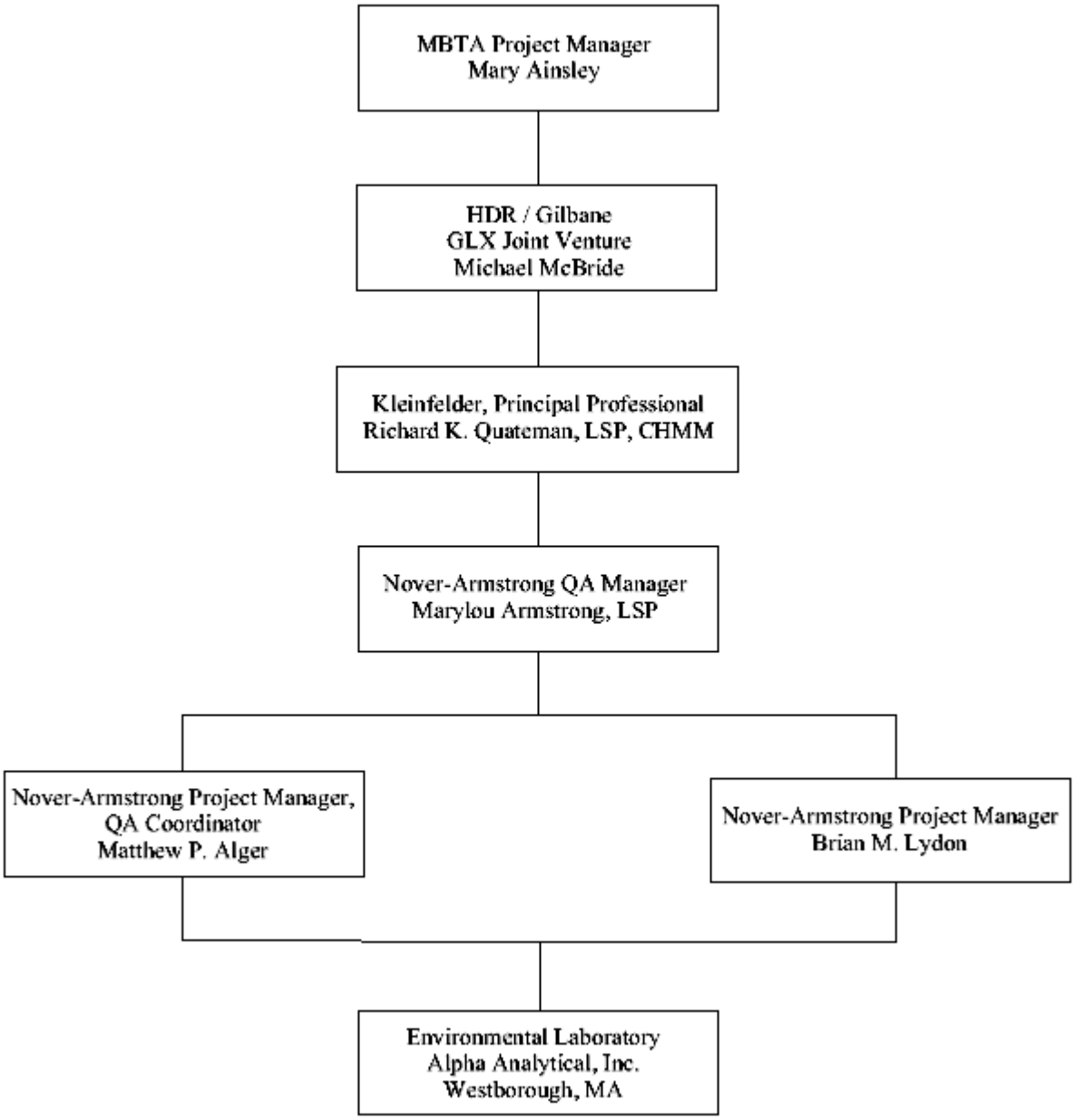
Site-Specific QAPP Addendum A1, Revision 1.2 (June 2012) for the MBTA Tire Maintenance Facility has been prepared in association with the *Generic Quality Assurance Project Plan for Nover-Armstrong Associates, Inc., Revision 1.1 (July 2011)*, RFA 11102, which was approved by the USEPA in August 2011. The work described in this Site-Specific QAPP Addendum will be performed in accordance with the processes and procedures described in the Generic QAPP.

This Site-Specific QAPP Addendum has been prepared to ensure that all sample collection and data generation activities associated with the current project yield data that are of adequate quality for their intended use.

1.2 Project Organization and Responsibility

Figure 1-1 represents a graphic illustration of the project organization and communication pathways. These are considered to be general pathways of communication and do not restrict communication between all parties, as necessary.

Figure 1-1: Project Organizational Chart



- The Quality Assurance Manager (QAM) is the key Nover-Armstrong individual responsible for quality assurance (QA). The QAM is a company Principal and communicates directly with the QA Coordinator (QAC).
- The QA Coordinator reports to the QA Manager and is the liaison between the QA Manager and all other Nover-Armstrong personnel. The QA Coordinator reviews analytical reports received from state-certified laboratories for quality control.

- The Nover-Armstrong Principals interact directly with the Project Managers, the QA Coordinator, and the QA Manager.
- The Project Managers report to the Principals and coordinate activities with the QA Coordinator and QA Manager.
- The analytical laboratory sends reports to the QA Coordinator, after having audited the results in accordance with their Standard Operation Procedures (SOPs).

Nover-Armstrong field sampling personnel shall have received training in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 (e) including annual refresher courses. All training shall be documented. Training records shall be maintained by the employer of the staff and be available upon request. Standard safety practices shall be employed, and appropriate protective clothing shall be worn during all site visits.

Appropriate and effective health and safety practices shall be integrated into all daily operations to promote safe and healthful working conditions. At minimum, procedures shall comply with OSHA and other applicable local, State, and federal laws and regulations.

1.3 Problem Definition

The Green Line Extension Project (GLX) will provide light rail service from the relocated Lechmere Station using a two-branch operation. The existing Lechmere Station, the terminus of the existing alignment, will be relocated to 21 Water Street / 183 Monsignor O'Brien Highway in Cambridge, the current location of the MBTA Tire Maintenance Facility (the site). The current site building will be demolished as part of the project. Refer to Figure 1-2: Site Location.

Nover-Armstrong completed an Initial Hazardous Materials Survey at the site in November 2011. The MBTA Tire Maintenance Facility consists of an approximate 11,914 square foot concrete block building that is scheduled to be demolished as part of the GLX project. The site is currently owned by the Massachusetts Bay Transportation Authority (MBTA). As part of the Initial Hazardous Materials Survey, building materials were inspected for potential presence of polychlorinated biphenyls (PCBs). Visual inspection revealed window caulking, floor caulking, wall caulking, and wall mortar that were considered potential PCB sources. There are forty (40) windows throughout the facility. Building materials were observed to be in poor to good condition, with areas of isolated damage. The building material samples were submitted to Alpha Analytical, Inc. (Alpha) and analyzed for PCBs via EPA Method 3540C (Soxhlet Extraction Method).

Concentrations of PCBs were detected in all window caulking samples, all floor caulking samples, one wall caulking sample, and two of three wall mortar samples. PCB concentrations ranged from 110,000 parts per million (ppm) to 993,000 ppm in the window caulking samples. Lower PCB concentrations ranging from 0.172 ppm to 40.4 ppm were detected in floor caulking, wall caulking, and wall mortar samples.

Review of the analytical laboratory report revealed that 16.2 ppm PCBs was also detected in the Method Blank sample. Nover-Armstrong contacted Glen Breland of Alpha relative to the detection of PCBs in the Method Blank. Mr. Breland stated that the Method Blank was run as part of the sample batch. During the soxhlet extraction and / or blow down process, the Method Blank (and potentially some of the building material samples) was contaminated from the window caulking samples containing very high PCB concentrations run at the beginning of the batch. Therefore, samples containing less than 16 ppm PCBs may not contain PCBs or may have concentrations less than the concentrations reported by Alpha

in their laboratory report. A screening process will be used by Alpha for samples collected as part of this Site-Specific QAPP Addendum to identify samples with high PCB concentrations prior to Soxhlet extraction in order prevent cross-contamination. This screening process is described further in Section 2.9 and Appendix A.

Analytical results revealed window caulking, floor caulking, wall caulking, and wall mortar containing PCB concentrations. Nover-Armstrong recommended additional assessment of building materials and ground surfaces surrounding the windows and surrounding impacted floor and wall samples, per TCSA requirements. Due to the detection of PCBs within the Method Blank sample, Nover-Armstrong recommended re-sampling and analysis of the building materials with PCB concentrations between 1 and 50 ppm to determine / confirm the presence of PCBs.

Site-Specific QAPP Addendum A1 is being implemented for the analysis of PCBs in concrete masonry units (CMU) surrounding the windows of the facility and in building materials (concrete, caulking, and mortar) surrounding impacted floor and wall samples. The goal of this project is to identify potential PCB impacts from window caulking, floor caulking, wall caulking, and/or wall mortar leaching into building materials adjacent to the previously-identified PCB-impacted areas and to assess the limits of PCB contamination, if identified. Additional assessment and/or remediation work may be required based on the outcome of this project. One or more QAPP Addenda will be prepared for any such additional work (if required). Potential additional assessment of ground surfaces surrounding the windows will be addressed in a separate Site-Specific QAPP Addendum, if required.

1.4 Project Description and Timeline

Project Description

In accordance with EPA Protocols, Nover-Armstrong will conduct concrete sampling & analysis to assess limits of PCB contamination in CMUs surrounding building windows and in building materials (concrete, caulking, and mortar) surrounding impacted floor and wall samples.

- Ten windows to be sampled (representing 25 % of windows).
- Eight samples per window area will be obtained using EPA Sampling Protocols (including Level C PPE). Samples will be obtained from all four sides of each window at a distance from the window equaling approximately one-half of a CMU length.
- Four samples will be obtained using EPA Sampling Protocols from areas surrounding each of four building material sampling locations previously identified during the November 2011 Initial Hazardous Materials Survey as containing PCBs. These samples were identified as WALL-1, WALL-3, WALL-4, and FLOOR-2. Samples will be obtained from all four sides of each location at a distance of six to twelve inches.
- A minimum of 96 samples will be analyzed for PCBs (Soxhlet Method – SW846 3540C/8082).
- Up to ten additional samples may be collected and analyzed, as deemed appropriate based on field observations, along cracked, rusted areas in line with the windows to assess for potential PCB migration through the concrete.
- No field screening will be performed.
- Sampling equipment will be decontaminated between sample collections.
- Up to six Duplicate Samples (frequency of 1 duplicate per 20 samples) & six Equipment Blanks (frequency of 1 blank per 20 samples or 1 blank per day, whichever is more frequent) will be collected for QA/QC purposes.
- Analytical results will be compared against applicable USEPA regulatory standards.

- Soil surfaces outside of the building will be visually inspected to evaluate the potential presence of visible caulk waste (pieces / debris) and/or caulk paint waste (chips / flakes). This visual inspection information, along with the analytical data, may be used to assess whether PCBs weeping out of the caulk and/or deteriorating caulk materials could have reached the soil outside of the building.

Timeline

Building Material Sampling / Analysis for PCBs (Field Activities)	July 9-13, 2012
Laboratory Analytical Results Available for Review	July 20, 2012
Written Deliverable with Results & Findings	July 27, 2012

Section 2 – Measurement Data Acquisition

2.1 Sampling Design and Site Figures

CMUs Surrounding Windows

As outlined in Section 1.4, Nover-Armstrong will collect concrete samples from CMUs adjacent to selected windows at the site. The samples will be collected in ten groups (Groups A through J), as depicted in Figure 2-1. Each group is comprised of eight grab sampling points. The spatial distribution of samples collected from CMUs surrounding individual windows is depicted in Figure 2-2. The samples will be obtained from all four sides of each window at a distance from the window equaling approximately one-half of a CMU length. As noted in Section 1.4, up to ten additional samples may be collected, as deemed appropriate based on field observations, along cracked, rusted areas in line with the windows to assess for potential PCB migration through the concrete.

The concrete samples will obtained following the guidance provided in the USEPA Region 1 *Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), Revision 4 (May 2011), EIASOP_POROUSSAMPLING* and in accordance with the Code of Federal Regulations (CFR) 40 CFR 761 . Refer to Appendix A – Standard Operating Procedures.

A rotary impact hammer equipped with a one-inch diameter carbide drill bit will be used to generate a fine concrete powder, which will be collected into appropriate containers provided by the laboratory. Samples will be collected from each sampling location at a depth of 0-1.0 inch into the exterior concrete wall surface. Samples will be collected at ½-inch depth intervals. Thus, the initial surface sample will be collected from 0-0.5 inches. The second sample will be collected from 0.5-1.0 inches. A ½-inch deep hole generates approximately 10 grams (20 mL) of powder. According to Ms. Leslie Coon of Alpha, a minimum of approximately 50 grams of concrete powder is required for PCB and total solids analysis. Therefore, two to three 1-inch holes located closely adjacent to each other will be needed to generate sufficient sample volume for a PCB determination. Level C Personal Protective Equipment (PPE) will be utilized during sampling activities to minimize exposure to concrete dust.

A total of up to 90 concrete grab samples from surrounding the windows, not including field quality control samples, will be submitted for laboratory analysis of PCBs (Soxhlet Extraction Method – SW846 3540C/8082).

Building Materials Surrounding Previously-Identified PCB-Impacted Sample Locations

As outlined in Section 1.4, Nover-Armstrong will collect four samples from areas surrounding each of four building material sampling locations previously identified during the November 2011 Initial Hazardous Materials Survey as containing PCBs. These samples were identified as WALL-1, WALL-3, WALL-4, and FLOOR-2. Refer to Figure 2-3 for sampling locations. The samples will be obtained from all four sides of each sampling location at a horizontal distance of six inches from the previous (November 2011) sample, except for two floor caulking samples collected from the floor seam near FLOOR-2, which will be obtained at a horizontal distance of twelve inches from the November 2011 sample. The building material samples will consist of concrete, caulking, or mortar, depending on the sampling location.

The building material samples will obtained following the guidance provided in the USEPA Region 1 *Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), Revision 4 (May 2011), EIASOP_POROUSSAMPLING* and in accordance with the Code of Federal Regulations (CFR) 40 CFR 761 . Refer to Appendix A – Standard Operating Procedures.

For concrete and mortar samples, a rotary impact hammer equipped with a one-inch diameter carbide drill bit will be used to generate a fine concrete and/or mortar powder, which will be collected into appropriate containers provided by the laboratory. Samples will be collected from each sampling location at a depth of 0-1.0 inch into the wall and/or floor surface. Samples will be collected at ½-inch depth intervals, as described above, to generate approximately 50 grams of concrete and/or mortar powder for analysis. Level C Personal Protective Equipment (PPE) will be utilized during sampling activities to minimize exposure to concrete and/or mortar dust.

For caulking samples, a chisel or sharp knife will be used to generate representative samples.

A total of up to 16 grab samples from surrounding the previously-identified PCB-impacted sample locations, not including field quality control samples, will be submitted for laboratory analysis of PCBs (Soxhlet Extraction Method – SW846 3540C/8082).

2.2 Sampling and Analytical Methods Requirements

Table 2-1 lists the Sampling and Analytical Methods Requirements table that will be used for this site-specific QAPP addendum. The table is designed to provide a detailed summary of samples being collected for the project. Refer to Appendix A – Standard Operating Procedures.

Table 2-1: Sampling and Analytical Methods Requirements Table

Sample Description			QA/QC		SOPs			Container			Preservation	
Parameter	**Matrix**	**Samples**	**Dupl.**	**Equip. Blank**	**Field Sampling SOP**	**Method**	**Lab SOP**	**#**	**Size**	**Type**	**Sample Preservation**	**Hold Time**
Polychlorinated Biphenyls (PCBs)	Concrete Powder	106	6	6	EIASOP_ POROUS SAMPLI NG	Soxhlet Method – SW846 3540C/ 8082	1954; 2129	1	120 mL	Glass Jar w/ Teflon-lined cap	4º C	None

2.3 Method and SOP Reference Table

Table 2-2: Site-Specific Method and SOP Reference Table

SOP Number	Procedure Name	Revision Number	Revision Date	SOP Author	Analytical Method Name	Analytical Method Number	Method Revision Number	Method Revision Date
EIASOP_POROUSSAMPLING	Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs)	4	05.2011	USEPA	N/A	N/A	N/A	N/A
SOP.NAA_C.01.1	Field Documentation	1	07.2011	Nover-Armstrong Assoc., Inc.	N/A	N/A	N/A	N/A
SOP.NAA_C.05.1	Equipment Decontamination	1	07.2011	Nover-Armstrong Assoc., Inc.	N/A	N/A	N/A	N/A
SOP.NAA_C.07.1	Chain of Custody Sample Handling & Shipping	1	07.2011	Nover-Armstrong Assoc., Inc.	N/A	N/A	N/A	N/A
2129	PCBs by Capillary Column Gas Chromatography	2	4.27.2012	Alpha Analytical, Inc.	PCBs by Capillary Column Gas Chromatography	USEPA SW-846 Method 8082	Update III	1997
1954	Soxhlet Extraction	2	5.10.2012	Alpha Analytical, Inc.	Soxhlet Extraction	USEPA SW-846 Method 3540C	Update III	1997

Notes: N/A - Not Applicable

2.4 Field Equipment Calibration and Corrective Action

Table 2-3 lists the equipment needed for Site-Specific QAPP Addendum A1. The field equipment that will be used for the building material sampling does not require calibration. The impact hammer will be checked on a daily basis to ensure proper function. The PPE will be inspected before and after each use to ensure its integrity and effectiveness. Sampling equipment shall be cleaned (decontaminated) before use to minimize the potential for cross-contamination and whenever possible, new/unused sampling equipment shall be utilized.

Table 2-3: Field Equipment List

Equipment Type	Model
Makita 6 Amp 5/8" Hammer Drill	HP1640
Dewalt Premium Percussion 1" x 12" Carbide Drill Bit	DW5249
Hilti TE-C ½" Carbide Hammer Drill Bit	385080
North Safety Silicone Half Mask	7700 Series
North Safety Air-purifying Filters	7580P100
Spoon, chisel & knife (for sample collection)	N/A
Decontamination supplies	Refer to SOP.NAA_C.05.1

All pertinent manufacturers' equipment manuals and any manufacturer-provided repair kits will be on-site at all times during the sampling event. All instrumentation necessary for health and safety purposes shall be maintained, tested and inspected according to the manufacturer's instructions.

See Appendix A for the Nover-Armstrong Decontamination SOP (SOP.NAA_C.05.1) and the guidelines for decontamination provided in the USEPA SOP (EIASOP_POROUSSAMPLING). Disposable sampling equipment shall be discarded after completing the sampling task and not reused. Decontamination of equipment will generate potentially contaminated rinse liquids that will need to be containerized on-site until proper disposal arrangements are made. The rinse liquids will be stored at the site in an industrial-type 55-gallon DOT-approved steel drum secured with a locking bolt ring. The rinse liquids will be tested prior to off-site disposal to determine if they must be transported to a hazardous waste facility. If it is determined that the rinse liquids are not contaminated, they will be disposed of on-site.

The rinse liquids will be tested at the conclusion of the sampling event (approximate three to five day duration). Analytical turnaround time for the rinse liquid sample will be ten business days. Following receipt of analytical results, the rinse liquids will either be disposed on-site or approval will be obtained for acceptance at a disposal facility. A licensed waste disposal contractor will be hired to transport the rinse liquids to the disposal facility. Therefore, the rinse liquids could remain on-site for up to one month from generation to disposal.

2.5 Laboratory Equipment Calibration and Corrective Action

The SOPs provided in Appendix A contain the laboratory equipment calibration QA/QC information.

2.6 Sample Handling and Custody Requirements

The USEPA Region 1 *Standard Operating Procedure for Sampling Porous Surfaces for Polychlorinated Biphenyls (PCBs), Revision 4 (May 2011), EIASOP_POROUSSAMPLING*, which is provided in

Appendix A contains detailed sample handling instructions for the building material samples that will be collected by Nover-Armstrong for PCB analysis.

Analytical services shall be provided by Alpha Analytical, Inc. (Alpha) of Westborough, MA. Alpha is currently accredited under the National Environmental Laboratory Accreditation Conference (NELAC) standards and has its own quality assurance manual and standard operating procedures (SOPs) that meet the NELAC standards. Alpha is accredited for the specific matrix / method / analyte for which testing is required and maintains its own separate quality assurance manual.

The building material samples will be collected into 120 mL amber jars with teflon-lined caps. Containers shall be obtained from the analytical lab and shall be clean and free of contamination. The jars will not contain chemical preservatives. Care shall be taken during sampling to ensure that material is not spilled onto the outer surface of containers, and that lids are placed on tightly after sampling. At least 50 grams of sample material will be collected, in accordance with laboratory requirements. Containers shall be labeled with the date and time sampled, sample location, collectors initials, sample number, project name or number, preservative and any other pertinent information. Information shall be documented in field notebooks/worksheets and chain of custody forms. Alpha does not require sample preservation or a specific holding time for samples being analyzed for PCBs; however, the laboratory does require samples to be cooled to 4°C using ice prior to delivery. Refer to Section 2.2, Table 2-1 Sampling and Analytical Methods Requirements Table.

See Appendix A for the Nover-Armstrong Chain of Custody Sample Handling & Shipping SOP (SOP.NAA_C.07.1). Samples and empty sample containers shall remain in the sample collector's view at all times, unless locked in a vehicle or other secure place. It is the sampler's responsibility to ensure that the samples are not tampered with prior to their delivery to the analytical lab. The Chain of Custody (COC) form shall be completed to provide documentation tracing sample possession and handling from the time of collection through delivery to the analytical lab, and shall accompany the samples at all times. The COC is a legal document that may be used for litigation purposes. The current COC used by Alpha is attached within the Chain of Custody Sample Handling & Shipping SOP in Appendix A. The completed original COC shall be attached to the analytical report which is submitted to Nover-Armstrong, and becomes part of the permanent project record.

Samples shall be properly packaged in a cooler for shipment to maintain sample integrity and delivered to the analytical laboratory along with a separate signed COC form enclosed in each sample cooler. As noted, samples will be cooled to approximately 4°C using ice prior to delivery to the analytical laboratory.

Lab personnel shall log the samples into their computer in accordance with their standard operating procedure. The samples shall be inspected by qualified laboratory personnel. A Sample Receipt Checklist shall be used to document the receipt of the samples and shall include checks for breakage, correct container, temperature of the cooler, holding times, and for other factors that may affect quality. The samples shall be compared to their description on the COC form, and discrepancies in the number or the designations of the samples shall be noted on the form and shall be brought to the attention of the person who relinquished the samples to the lab. If necessary, the contact person on the chain of custody may be contacted for further instruction. Since samples may be held in the lab untouched until discrepancies are resolved, there could be an impact on sample holding times.

The COC form shall be signed and the date and time shall be recorded to formally accept the samples into laboratory custody. The analytical laboratory shall assign laboratory numbers to the samples, and these numbers shall be recorded on the chain of custody forms.

2.7 Analytical Sensitivity and Project Criteria

Refer to Appendix B for an Analytical Method Sensitivity and Project Criteria Table for analytical methods that are routinely performed by Alpha, including the methods that will be utilized for this project. The table includes routine analytes, MDLs, RDLs, regulatory standards, etc. As of the date of this site-specific QAPP addendum, the current state and/or federal standards have been incorporated into this table and the reporting limits and standards have been reviewed for accuracy.

2.8 Field Quality Control Requirements

The following are field quality control samples that will be utilized for this project:

- Equipment Blanks

  Equipment blanks consist of a sample of distilled/deionized (analyte-free) water which has been poured around and through sample collection equipment to determine if contamination has occurred due to improper cleaning and/or contamination of equipment. They shall be handled like any other sample and submitted with the other samples for analysis. The frequency shall be one equipment blank per 20 samples collected or one equipment blank per day sampling, whichever is more frequent.

- Duplicate samples

  Duplicate samples shall be collected for each batch of samples collected per matrix, per analysis. A batch is a sample delivery group that is analyzed together (a batch may not exceed 20 samples). The duplicates shall be collected at the same time, in the same manner as their corresponding routine samples and shall be identified in the field notes and logged on the chain of custody forms.

Table 2-4: Field Quality Control Requirements Table

QC Sample	Frequency	Acceptance Criteria	Corrective Action
Field Duplicate	1 duplicate per batch 20 samples	Duplicate concentrations are within +/- 50% for solid samples	Flag in project report
Equipment Blank	1 equipment blank per batch 20 samples or 1 equipment blank per day sampling, whichever is more frequent	No contaminants are detected	Flag in project report

Notes:

- Duplicate samples are not intended to be blind duplicate samples. They will be designated with a “DUP” after the sample designation (i.e. CMU-1_DUP).

- Equipment blank samples will be designated as "EQUIP BLANK". Note that a comment is required on the chain of custody indicating what the equipment blank is for (i.e. impact hammer drill bit).

2.9 Laboratory Quality Control Requirements

The SOPs provided in Appendix A contain the laboratory quality control procedures routinely performed for each parameter and matrix. A screening process will be used by Alpha for samples collected as part of this Site-Specific QAPP Addendum to identify samples with high PCB concentrations prior to Soxhlet extraction in order prevent cross-contamination.

2.10 Data Management and Documentation

All Nover-Armstrong Project Managers will be required to review this site specific QAPP addendum and sign the "QAPP Project Personnel Log Sheet" which documents that they have reviewed this QAPP and will follow the procedures as described. The "QAPP Project Personnel Log Sheet" is found in Appendix C.

Field personnel shall use field logbooks and/or pre-printed work sheets to accurately document all field activities: on-site conditions; field measurements; sample collection information; field instrument and calibration information; and other pertinent site-related information during monitoring activities. Refer to Appendix A for Nover-Armstrong's Field Documentation SOP (SOP.NAA_C.01.1). The field notes shall include a description of field conditions that includes, as a minimum:

- Site location;
- Date, start, and finish times of the work and weather conditions;
- Name and initials of person making entry;
- Names of other personnel present, if any;
- Names of visitors, if any;
- Purpose and summary of proposed work effort;
- Details of any deviation from the field operations plan or standard operating procedures, including who authorized the deviation;
- Field observations;
- Sampling equipment used (including make model and serial number);
- Fixed laboratory sample identification number, sample type (grab), time of sampling, sample analysis, and sample locations shown on a near-scale map relative to a fixed landmark;
- Sample handling, packaging, labeling, and shipping information (including destination);
- Location, description and unique identifier for all photographs taken in association with the field activity; and
- Any other pertinent information.

Information recorded in other site documents, *e.g.*, sampling logs, will not be repeated in logbooks except in summary form. Any corrections to the logbook or other written documentation shall be initialed and dated. All corrections shall be shown as a single line through the original. The unused bottom portion of each page shall be lined-out, initialed, and dated.

All site related reports and project plans including QAPPs, laboratory reports, site sampling reports, and annual reports shall be submitted and maintained in electronic project files and reviewed by the appropriate Project Manager to evaluate the usability of the data and assure compliance with the elements of this QAPP.

All electronic copies of company files are saved on the Nover-Armstrong server as they are generated. The data on the server is backed up daily and retained indefinitely.

Section 3 – Assessment and Oversight

3.1 Assessments and Response Actions

Data Assessment

All data generated shall be reviewed by the contractor and the Project Manager to ensure that the data has met the objectives and requirements of this QAPP and that the results are technically valid, reliable, and usable. Sampling and analytical results shall be reviewed to determine if:

- Corrective action is necessary;
- The sampling plan should be revised; or
- The site should be re-sampled.

In order to ensure that the data has met the objectives and requirements of this QAPP and that the results are technically valid, reliable and usable, data shall be reviewed and compared with relevant documentation such as:

- Available Historical data;
- Laboratory MDL and RDL;
- Standards established by the MassDEP and EPA;
- Current MassDEP and EPA policies; and
- Other pertinent documents as needed.

If data of questionable quality is reported or other quality control issues are uncovered, the Project Manager shall report the issues to the QA Coordinator and/or QA Manager. The Project Manager, with input from quality assurance personnel, shall determine the usefulness of data in question and at minimum shall summarize that data concerns in the report for which the data was generated.

The need for corrective action, including the collection of new or additional samples, shall be determined based on the data quality objectives for the project and with input from quality assurance and other appropriate personnel.

The laboratories provide the necessary Analytical Method Report Certification Forms, case narratives, and QA/QC data reporting. The lab certifies that the required QA/QC procedures were followed, and all performance/acceptance standards for the required QA/QC procedures were achieved or discussed.

It is the Project Manager's responsibility to ensure that all sampling procedures and techniques are conducted in accordance with the QAPP and any site specific QAPPs. This can best be assured by the use of field audits.

Nover-Armstrong quality assurance personnel shall periodically conduct separate field audits, review field methods, analytical procedures and/or document tracking and record keeping practices, to assure compliance with the elements of this QAPP.

Corrective Action

Corrective actions must be taken as soon as possible when data or field procedures are found to be of questionable quality. Any suspected problems shall be brought to the attention of the Nover-Armstrong Project Manager and the QA Coordinator.

The need for corrective action may be identified in many ways. The corrective action steps are:

- Identification and definition of the problem;
- Investigation of the problem;
- Determination of the cause of the problem and appropriate corrective action (this may include the need for additional training);
- Implementation of the corrective action;
- Verification that the problem has been corrected;
- Modification of procedures, as necessary, to prevent recurrence; and document the events.

3.2 Project Reports

Technical reports documenting the findings of site sampling work shall be generated by Nover-Armstrong. One technical report detailing the analytical results for PCBs in CMUs surrounding the windows of the facility will be generated for Site-Specific QAPP Addendum A1.

The report will include the following information:

- Summary of sampling activities;
- A copy of the complete laboratory report, including the chain of custody forms and applicable data validation reports;
- A list of equipment used;
- A copy of all field sampling logs;
- Site map;
- Data summary tables of the compounds of concern detected at each sampling location during the current sampling event;
- A Quality Assurance/Quality Control Section;
- Recommendations for any remedial action; and
- Recommendations for future modifications to the current monitoring program or to the site-specific QAPP, if appropriate.

Section 4 – Data Evaluation

4.1 Field Data Evaluation

The primary QA objective for all projects is to assure that all measurements are representative of actual site conditions and that all data resulting from field, sampling, and analytical activities be comparable and generated in a scientifically valid and legally defensible manner. It is important that the data collected are of known and documented quality. Any party generating data under this program has the responsibility to implement minimum procedures to assure that the precision, accuracy, completeness, and representativeness of its data are known and documented. The use of accepted, published sampling and

analysis methods, as well as the use of standardized units, aid in ensuring the comparability of the data. The Standard Operating Procedures (SOPs), as included in Appendix A of this project plan, have been developed to meet this objective.

4.2 Laboratory Data Evaluation

Data quality objectives (DQOs) are qualitative or quantitative statements developed by the data user to specify the quality of the data needed from a particular activity to support specific decisions. The DQOs are the starting point in designing a sampling program. The DQO development process matches sampling and analytical capabilities to the data targeted for specific uses and ensures that the quality of the data meets project requirements. The DQOs for this project are to identify potential PCB impacts from window caulking, floor caulking, wall caulking, and/or wall mortar leaching into building materials adjacent to the previously-identified PCB-impacted areas and to assess the limits of PCB contamination, if identified. Additional assessment and/or remediation work may be required based on the outcome of this project. One or more QAPP Addenda will be prepared for any such additional work (if required). Potential additional assessment of ground surfaces surrounding the windows will be addressed in a separate Site-Specific QAPP Addendum, if required.

Nover-Armstrong will accept the limits of precision and accuracy for analytes that have been established by the QA Office of the state-certified laboratory. The laboratories provide the necessary Analytical Method Report Certification Forms, case narratives, and QA/QC data reporting. In an effort to verify that the data collected were suitable for use in Site Characterization, the Project Manager and QA Coordinator will review the laboratory analytical reports generated as part of the assessment activities. This review will include the report narratives, surrogate recovery results, and the Analytical Method Report Certification Forms included in the data package.

Nover-Armstrong will accept the Method Detection Limits (MDL) and the Reportable Detection Limits (RDL) established by the state-certified laboratory. It is the Project Manager's responsibility to ensure that the laboratory's quality assurance program, including the MDL's, RDL's and limits of precision and accuracy for any quality control sample, support their DQOs and PQOs. Refer to Appendix B for a summary table of analytical test methods, laboratory RDLs/MDLs and regulatory action limits for all compounds tested on site.

The MassDEP *Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols* (CAM) (Policy #WSC-10-320) provides a series of required protocols for the acquisition, analysis, and reporting of analytical data in support of MCP decisions (a) to satisfy the broad quality assurance (QA) and quality control (QC) requirements of 310 CMR 40.0017 and 40.0191 regarding the scientific defensibility, precision and accuracy, and reporting of analytical data and (b) to meet the requirements and specifications for those parties who wish to obtain "Presumptive Certainty" for analytical data that may be used in a data usability and representativeness assessment, as required in 310 CMR 40.1056(2)(k) for Response Action Outcome (RAO) submittals, consistent with the guidance described in MassDEP Policy #WSC-07-350, *MCP Representativeness Evaluations and Data Usability Assessments*.

Nover-Armstrong's laboratory data evaluation standards and protocols will adhere to the MassDEP CAM and other MassDEP policies. The following paragraphs consist of MassDEP's definition of "Presumptive Certainty," the procedures required to obtain "Presumptive Certainty," and the role of "Presumptive Certainty" in a data usability and representativeness assessment.

The term "Presumptive Certainty" as used in Sections I through IX of the CAM describes a particular status for analytical or environmental monitoring data used in support of MCP Response Action submittals. Obtaining "Presumptive Certainty" status is just one of a number of options available to satisfy the data quality requirements for MCP submittals described in 310 CMR 40.0017, 40.0191 and 40.1056(2)(k). It should be clearly understood that exercising the "Presumptive Certainty" option is discretionary. However, *parties who elect not to utilize the "Presumptive Certainty" option have an obligation, pursuant to 310 CMR 40.0017 and 40.0191(2)(c), to demonstrate and document an overall level of QA/QC (laboratory and field), data usability, and data representativeness adequate for the intended use of the data.*

In order to achieve "Presumptive Certainty" for analytical data, parties must:

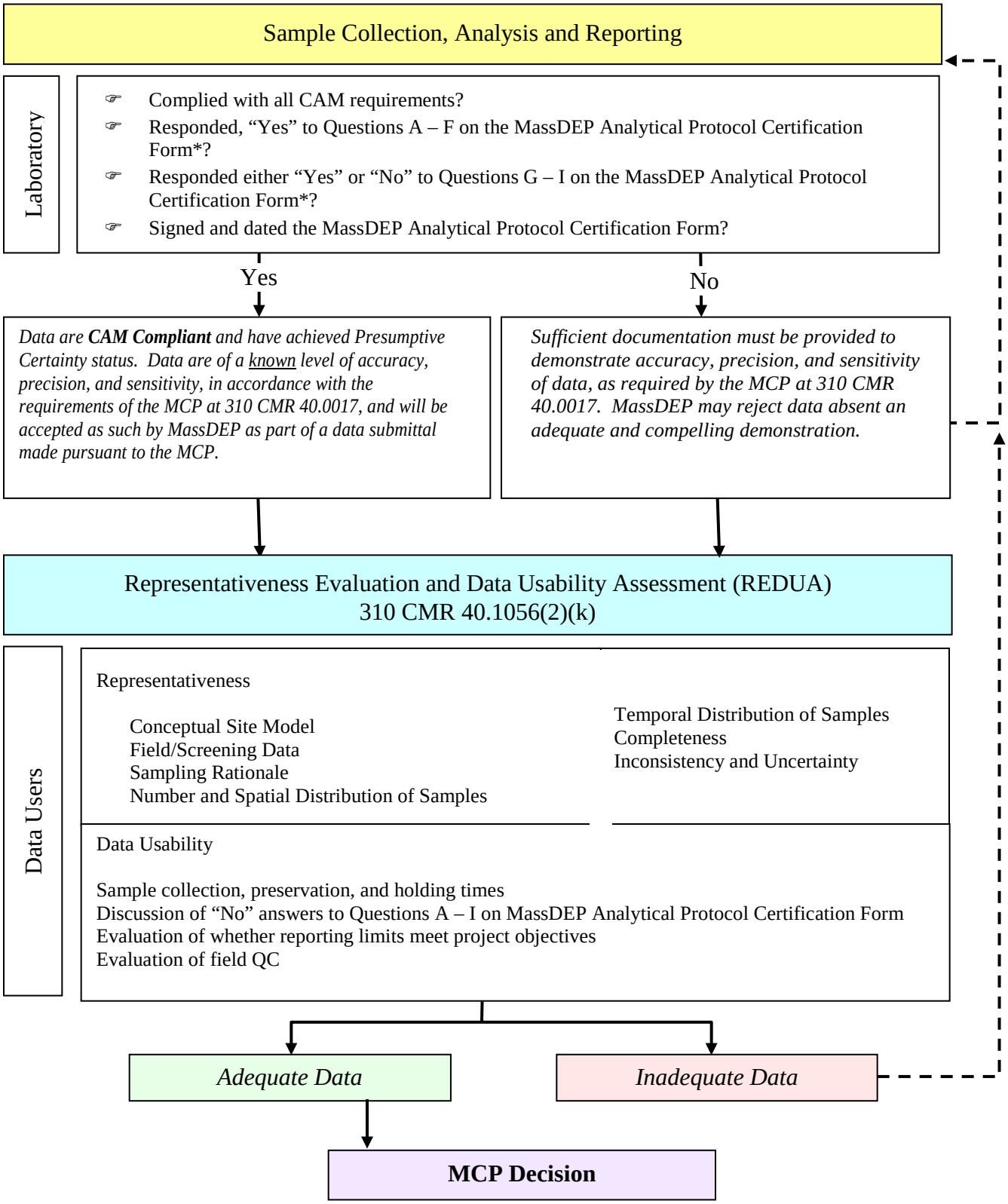
(a) Use the analytical method specified for the selected CAM protocol;
(b) Incorporate **all** required analytical QC elements specified for the selected CAM protocol;
(c) Implement, as necessary, required corrective actions and analytical response actions for **all** non-conforming analytical performance standards;
(d) Evaluate and narrate, as necessary, **all** identified CAM protocol non-compliances; and
(e) Comply with **all** the reporting requirements specified in WSC-CAM-VII A, including retention of reported and unreported analytical data and information for a period of ten (10) years.

In achieving "Presumptive Certainty" status, parties will be assured that analytical data sets:

- ✓ Satisfy the broad QA/QC requirements of 310 CMR 40.0017 and 40.0191 regarding the scientific defensibility, precision and accuracy, and reporting of analytical data; and
- ✓ May be used in a data usability and representativeness assessment, as required in 310 CMR 40.1056(2)(k) for RAO submittals, consistent with the guidance described in MassDEP Policy #WSC-07-350, *MCP Representativeness Evaluations and Data Usability Assessments*.

A logic diagram detailing the "Presumptive Certainty" approach is presented in Figure 4-1 (from MassDEP Policy #WSC-10-320).

Figure 4-1: MassDEP Presumptive Certainty and REDUA Concept



As indicated in Figure 4-1, use of the CAM and achievement of a "Presumptive Certainty" status will produce an analytical data set that will be accepted by agency reviewers for subsequent evaluation of data usability and representativeness.

It is stressed that "Presumptive Certainty" requirements are to be considered minimum requirements. Efforts that go beyond these minimum requirements (e.g., including additional points in a calibration curve) are considered compliant with the "Presumptive Certainty" concept and provisions, and need not be identified and discussed as an "exception."

The most recent version of the CAM is posted on the MassDEP's web site at http://www.mass.gov/dep/cleanup/laws/qaqcdocs.htm#I.

4.3 Data Usability and Project Evaluation

Data usability refers to the extent to which a data set can adequately meet specific site characterization needs and data quality objectives. For parties who elect to follow the specifications in the CAM, data will be considered usable for all subsequent data usability evaluations if all provisions and standards of the MCP Analytical Methods are met, including percent recovery limits for (any) method surrogate spikes and achievement of necessary (site-specific) Reporting Limits.

The overall project will be evaluated by the Nover-Armstrong Project Manager and QA Coordinator, at a minimum. The evaluation will include tabulation of data, comparison of data to state and/or federal standards, graphical representations of data and sampling locations, data usability and representativeness evaluation, interpretation of trends and anomalies, and formulation of conclusions. The evaluation will include a determination as to whether or not the project objectives were achieved and what additional actions may be required at the site.

Section 5 – References

United States Environmental Protection Agency (USEPA). 2001. *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5).

United States Environmental Protection Agency (USEPA). 2002. *EPA Guidance for Quality Assurance Project Plans* (EPA QA/G-5).

United States Environmental Protection Agency (USEPA). 2007. *Guidance for Preparing Standard Operating Procedures (SOPs)* (EPA QA/G-6).

United States Environmental Protection Agency (USEPA). 2000. *Guidance for Data Quality Assessment: Practical Methods for Data Analysis* (EPA QA/G-9).

United States Environmental Protection Agency (USEPA) Region 1. 2010. *Quality Assurance Project Plan Program Guidance*.

United States Environmental Protection Agency (USEPA) Region 1. 2009. *Planning and Documenting Brownfields Projects, Generic Quality Assurance Project Plans, and Site-specific QAPP Addenda*.

United States Environmental Protection Agency (USEPA). 2005. *Polychlorinated Biphenyl (PCB) Site Revitalization Guidance Under the Toxic Substances Control Act (TSCA).*

Code of Federal Regulations (CFR) 40 CFR 761

United States Environmental Protection Agency (USEPA). 2008. *Revitalizing Contaminated Sites: Addressing Liability Concerns (The Revitalization Handbook).*

Massachusetts Department of Environmental Protection (MassDEP). 2010. *Compendium of Quality Control Requirements and Performance Standards for Selected Analytical Protocols* (WSC-10-320).

Massachusetts Department of Environmental Protection (MassDEP). 2007. *MCP Representativeness Evaluations and Data Usability Assessments* (WSC-07-350).

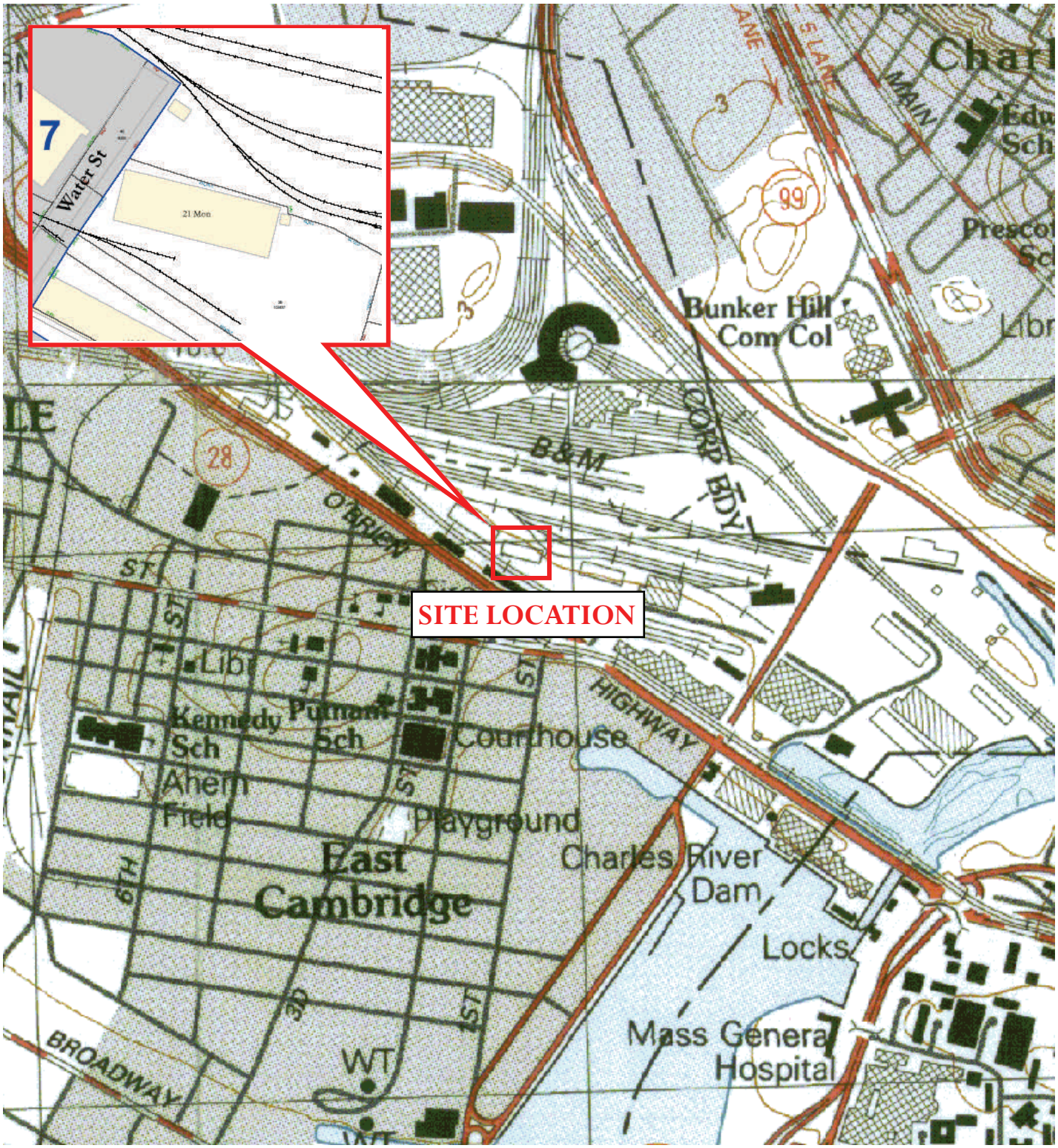


Figure 1-2: Site Location

MBTA Tire Maintenance Facility

21 Water Street, Cambridge, Massachusetts

NAA File P2814

Figure 2-1: CMU Sampling Groups

MBTA Tire Maintenance Facility
21 Water Street
Cambridge, Massachusetts
NAA File P2814

NOVER-ARMSTRONG ASSOCIATES, INC.

NOTES:
1. EACH SAMPLE WILL BE COLLECTED BY DRILLING 0-1" INTO THE EXTERIOR CONCRETE WALL SURFACE SURROUNDING THE WINDOW.

APPROXIMATE SAMPLING LOCATION

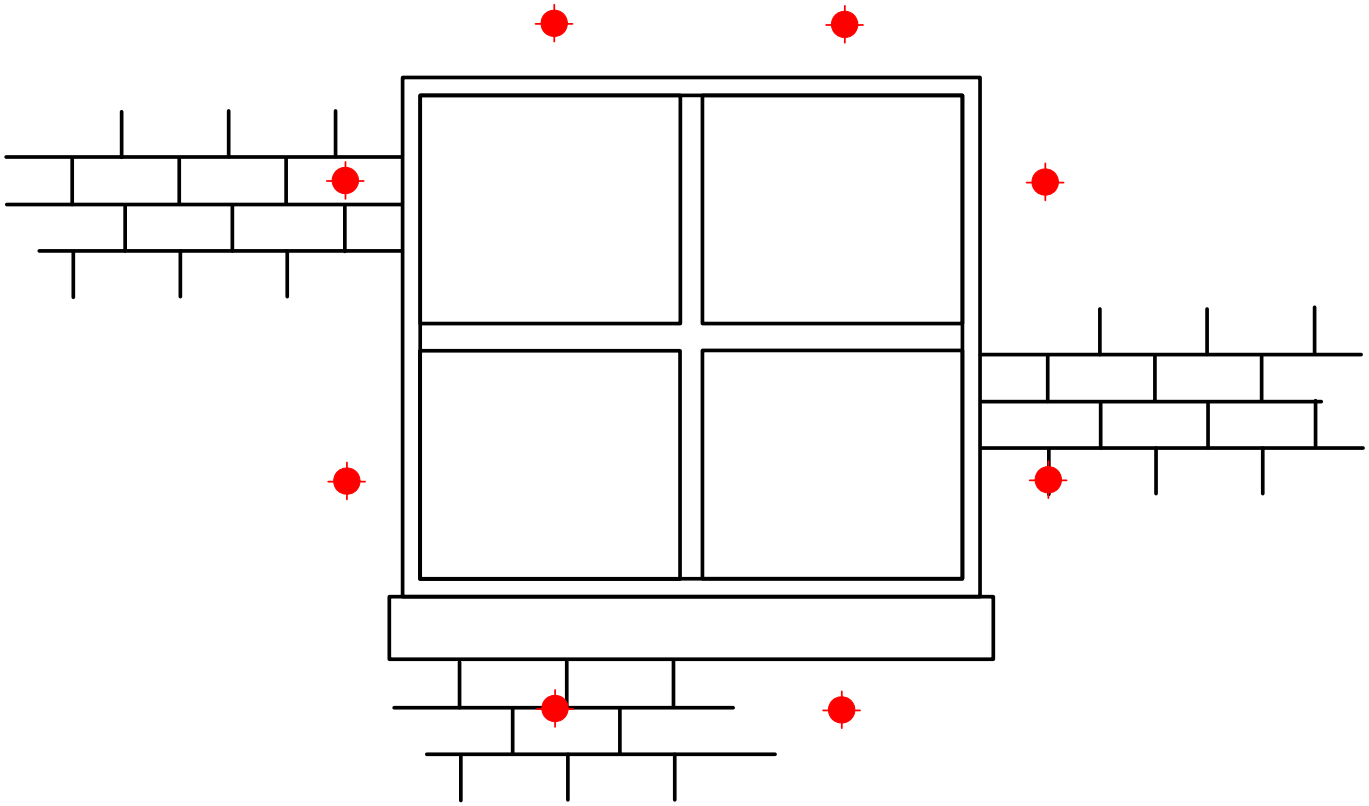
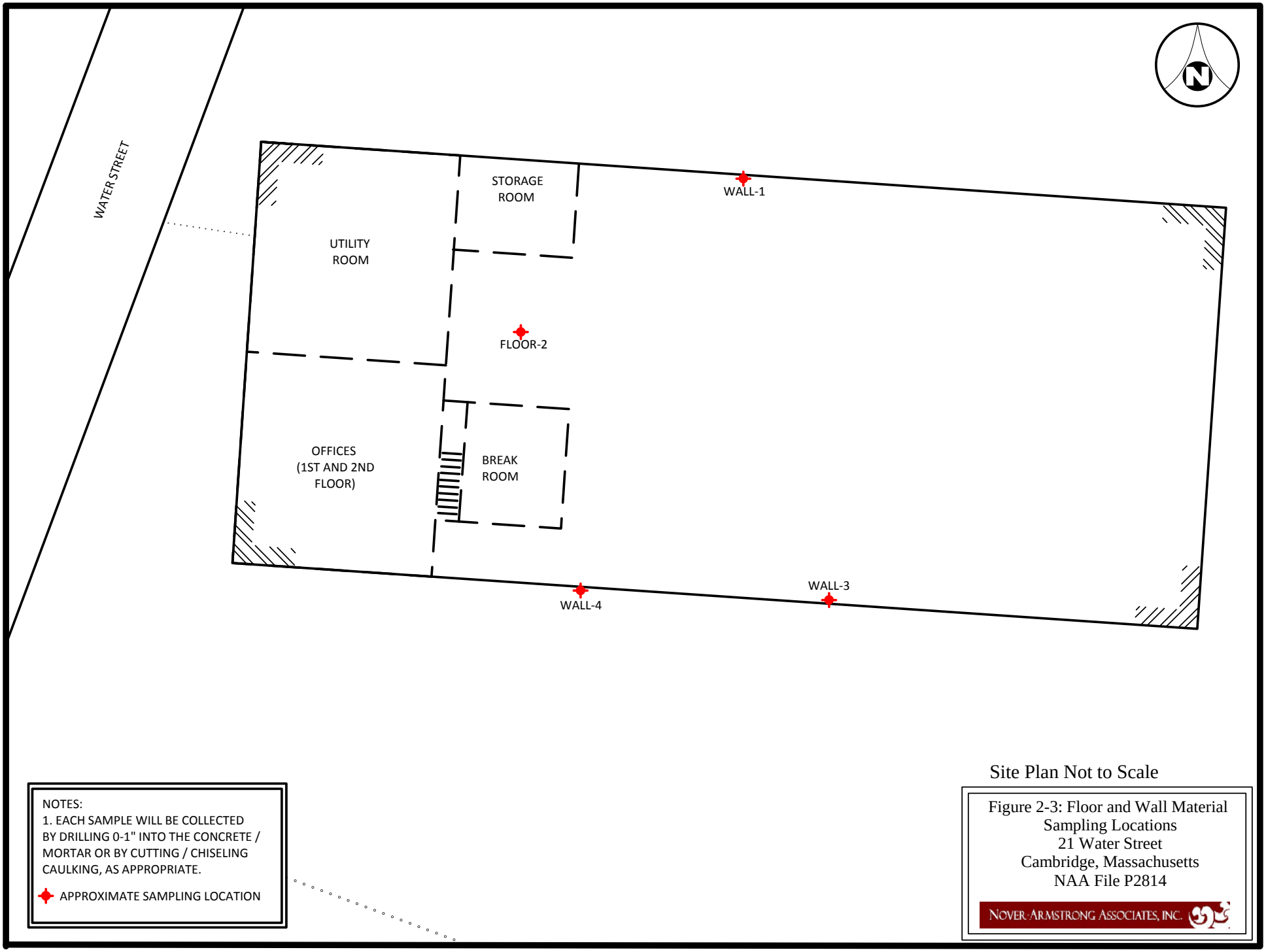


Figure 2-2: Individual Window Sampling Scheme
21 Water Street
Cambridge, Massachusetts
NAA File P2814

NOVER-ARMSTRONG ASSOCIATES, INC.

Site Plan Not to Scale


WATER STREET
STORAGE ROOM
WALL-1
UTILITY ROOM
FLOOR-2
OFFICES (1ST AND 2ND FLOOR)
BREAK ROOM
WALL-4
WALL-3
NOTES:
1. EACH SAMPLE WILL BE COLLECTED BY DRILLING 0-1" INTO THE CONCRETE / MORTAR OR BY CUTTING / CHISELING CAULKING, AS APPROPRIATE.
APPROXIMATE SAMPLING LOCATION
Site Plan Not to Scale
Figure 2-3: Floor and Wall Material Sampling Locations
21 Water Street
Cambridge, Massachusetts
NAA File P2814
NOVER-ARMSTRONG ASSOCIATES, INC.

APPENDIX A

SITE-SPECIFIC STANDARD OPERATING PROCEDURES (SOPs)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

STANDARD OPERATING PROCEDURE FOR SAMPLING POROUS SURFACES FOR POLYCHLORINATED BIPHENYLS (PCBs)

May 2011

SDMS DocID 484692

STANDARD OPERATING PROCEDURE FOR SAMPLING POROUS SURFACES FOR POLYCHLORINATED BIPHENYLS (PCBs)

The Office of Environmental Measurement and Evaluation
EPA New England – Region 1
11 Technology Dr.
North Chelmsford, MA 01863

Prepared by: Dan Granz, Environmental Engineer — Date: 5/5/11

Reviewed by: Kim Tisa, TSCA PCB Coordinator — Date: 5/5/11

Reviewed by: Jerry Keefe – EIA Team Leader — Date: 05/23/11

Approved by: Dan Boudreau, EIA Chemistry Team Leader — Date: 5/23/11

Disclaimer: The controlled version of this document is the electronic version viewed on-line only. If this is a printed copy of the document, it is an uncontrolled version and may or may not be the version.

This document contains direction developed solely to provide internal guidance to U.S. Environmental Protection Agency (EPA) personnel. EPA retains the discretion to adopt approaches that differ from these procedures on a case by case basis. The procedures set forth do not create any rights, substantive or procedural, enforceable at law by a party to litigation with EPA or the United States.

Revision Page

Date	Rev#	Summary of Changes	Sections
12/97	1	Initial Approval, draft	
3/20/08	2	Major update, only for PCBs, added TSCA sampling	All sections
7/17/08	3	Disposal of dust filter and decon of vac hose	11.0 and 14.0
5/04/11	4	Vacuum Trap Design and Clean-out	9.4

Table of Contents

1.0 Scope and Application 4

2.0 Summary of Method 4

3.0 Definitions 4

4.0 Health and Safety Warnings 5

5.0 Interferences 6

6.0 Personnel Qualifications 6

7.0 Equipment and Supplies 6

8.0 Sampling Design 7

9.0 Sample Collection 7

10.0 Sample Handling, Preservation, and Storage 10

11.0 Decontamination 11

12.0 Data and Record Management 11

13.0 Quality Control and Quality Assurance 11

14.0 Waste Management and Pollution Prevention 12

15.0 References 12

Attachments:

Example of Custody Seal and Sample Label
Example of Chain of Custody Form

1.0 Scope and Application

1.1 This Standard Operating Procedure (SOP) is suitable for collection of a porous matrix sample for analysis of Polychlorinated Biphenyls (PCBs).

1.2 This SOP describes sampling techniques for both hard and soft porous surfaces.

1.2.1 Hard surfaces, and most soft surfaces, can be sampled using an impact hammer drill to generate a uniform, finely ground, powder to be extracted and analyzed for PCBs. This procedure is primarily geared at providing enough sample quantity for two analyses. Hard porous surfaces include concrete, brick, asphalt, cement, sandstone, limestone, unglazed ceramics, and other possible PCB suspected material. This procedure may also be used on other softer porous surfaces, such as wood.

1.2.2 Soft surfaces can be sampled using a chisel or sharp knife to generate a representative sample to be extracted and analyzed for PCBs. Soft porous surfaces include wood, wall plasterboard, low density plastics, rubber, caulking, and other PCB suspected material.

1.3 This SOP provides for collection of surface samples (0 – 0.5 inches) and delineation of PCB contamination throughout the core of the porous surface. The procedure can be used to sample the porous surface at distinctly different depth zones.

2.0 Method Summary

A one-inch or other sized diameter carbide drill bit is used in a rotary impact hammer drill to generate a fine powder, or other representative sample, suitable for extraction and analysis of PCBs from porous surfaces. This method also allows the use of chisels or knives for the collection of samples from soft porous surfaces for PCB analysis.

3.0 Definitions

3.1 Field/Bottle Blank: A sample container of the same lot as the containers used for the environmental samples. This evaluates PCB contamination introduced from the sample container(s) from a common lot.

3.2 Equipment/Rinse/Rinsate Blanks: A sample that is collected by pouring hexane over the sample collection equipment after decontamination and before sample collection. The sample is collected in the appropriate sample container identical to the sample containers. This represents background contamination resulting from the field equipment, sampling procedure, sample container, and shipment.

3.3 Field Replicates/Duplicates: Two or more samples collected at the same sampling location. Field replicates should be samples collected side by side. Field replicates represent the precision of the whole method, site heterogeneity, field sampling, and the laboratory analysis.

3.4 Field Split Samples: Two or more representative subsamples taken from one environmental sample in the field. Prior to splitting, the environmental sample is homogenized to correct for sample heterogeneity that would adversely impact data comparability. Field split samples are usually analyzed by different laboratories (interlaboratory comparison) or by the same laboratory (intralaboratory comparison). Field splits are used to assess sample handling procedures from field to laboratory and laboratory comparability.

3.5 Laboratory Quality Samples: Additional samples that will be collected for the laboratory's quality control program: matrix spike, matrix spike duplicate, laboratory duplicates, etc.

3.6 Proficiency Testing (PT)/Performance Evaluation (PE) Sample: A sample, the composition of which is unknown to the laboratory or analyst, provided to the analyst or laboratory to assess the capability to produce results within acceptable criteria. This is optional depending on the data quality objectives. If possible, it is recommended that the PE sample be of similar matrix as the porous surface(s) being sampled.

3.7 Porous Surface: Any surface that allows PCBs to penetrate or pass into itself including, but not limited to, paint or coating on metal; corroded metal; fibrous glass or glass wool; unglazed ceramics; ceramics with porous glaze; porous building stone such as sandstone, travertine, limestone, or coral rock; low density plastics such as Styrofoam and low density polyethylene; coated (varnished or painted) or uncoated wood; painted or unpainted concrete or cement; plaster; plasterboard; wallboard; rubber; caulking; fiberboard; chipboard; asphalt; or tar paper.

3.8 Shipping Container Temperature Blank: A water sample that is transported to the laboratory to measure the temperature of the samples in the cooler.

4.0 Health and Safety

4.1 Eye, respiratory, and hearing protection are required at all times during sample drilling. A properly fitted respirator is required for hard porous surface sampling. A respirator is recommended whenever there is a risk of inhalation of either particulate or volatilized PCBs during sampling.

4.2 All proper personal protection clothing and equipment must be worn.

4.3 When working with potentially hazardous materials or situations, follow EPA, OSHA, and specific health or safety procedures.

4.4 Care must be exercised when using an electrical drill and sharp cutting objects.

5.0 Interferences and Potential Problems

5.1 This sampling technique produces a finely ground uniform powder, which minimizes the physical matrix effects from variations in the sample consistency (i.e., particle size, uniformity, homogeneity, and surface condition). Matrix spike analysis of a sample is highly recommended to monitor for any matrix related interferences.

5.2 Nitrile gloves are recommended. Latex gloves must not be used due to possible phthalate contamination.

5.3 Interferences may result from using contaminated equipment, solvents, reagents, sample containers, or sampling in a disturbed area. The drill bit must be decontaminated between samples. (see Section 11.0.)

5.4 Cross contamination problems can be eliminated or minimized through the use of dedicated sampling equipment.

6.0 Personnel Qualifications

6.1 All field samplers working at hazardous materials/waste sites are required to take a 40 hour health and safety training course prior to engaging in any field activities. Subsequently, an 8 hour refresher health and safety course is required annually.

6.2 The field sampler should be trained by an experienced sampler before initiating this procedure.

6.3 All personnel shall be responsible for complying with all quality assurance/quality control requirements that pertain to their organizational/technical function.

7.0 Equipment and Supplies

7.1 This list varies with the matrix and if depth profiling is required

Rotary impact hammer variable speed drill
1-inch or other suitable (1/2, 3/4, etc.) diameter carbide tip drill bits
Steel chisel or sharp cutting knife, and hammer
Brush and cloths to clean area
Stainless steel scoopulas

Aluminum foil to collect the powder sample
1 quart Cubitainer with the top cut out to collect the powder sample
Aluminum weighing pans to collect the powder sample
Cleaned glass container (2 oz or 40 mL) with Teflon lined cap
Decontamination supplies: hexane, two small buckets, a scrub brush, detergent, deionized water, hexane squirt bottle, and paper towels
Dedicated vacuum cleaner with a disposable filter or a vacuum pump with a dust filter
Polyethylene tubing and Pasteur pipettes
Sample tags/labels, custody seals, and Chain-of-Custody form

8.0 Sampling Design

8.1 A sufficient number of samples must be collected to meet the data quality objectives of the project. If the source of the PCB contamination is regulated under the federal TSCA PCB Regulations at 40 CFR Part 761, the sampler should insure that the sampling design is sufficient to meet any investigation or verification sampling requirements. At a minimum, the following is recommended:

8.1.1 Suspected stained area (s) should be sampled.

8.1.2 At each separate location, collect at least 3 samples of each type of porous surface, regardless of the amount of each type of porous surface present.

8.1.3 In areas where PCB equipment was used or where PCBs were stored, samples should be collected at a frequency of 1 sample/100 square feet (ft^2).

9.0 Sample Collection

9.1 Hard Porous Surfaces

9.1.1 Lock a 1-inch or another size diameter carbide drill bit into the impact hammer drill and plug the drill into an appropriate power source. For easy identification, sample locations may be pre-marked using a marker or paint. (Note: the actual drilling point must not be marked.) Remove any debris with a clean brush or cloth prior to drilling. All sampling decisions of this nature should be noted in the sampling logbook.

9.1.2 Use a Cubitainer with the top cut off or aluminum foil to contain the powdered sample. Begin drilling in the designated location. Apply steady even pressure and let the drill do the work. Applying too much pressure will generate excessive heat and dull the drill bit prematurely. The drill will provide a finely ground powder that can be easily collected.

9.1.3 Samples should be collected at ½-inch depth intervals. Thus, the initial surface sample should be collected from 0 – 0.5 inches. A ½-inch deep hole generates about 10 grams (20 mL) of powder. Multiple holes located closely adjacent to each other, may be needed to generate sufficient sample volumes for a PCB determination. It is strongly recommended that the analytical laboratory be consulted on the minimum sample size needed for PCB extraction and analysis.

9.1.4 Wall and Ceiling Sampling: A team of two samplers will be required for wall and ceiling sampling. The second person will hold a clean catch surface (e.g. an aluminum pan) below the drill to collect the falling powder. Alternatively, use the chuck-end of the drill bit and punch a hole through the center of the collection pan. The drill bit is then mounted through the pan and into the drill. For ceilings, the drill may be held at an angle to collect the powder. Thus the driller can be drilling at an angle while the assistant steadies the pan to catch the falling powder. As a precaution, it may be advantageous to tape a piece of plastic around the drill, just below the chuck, to avoid dust contaminating the body of the drill and entering the drill's cooling vents. Caution must be taken to prevent obstruction of the drill's cooling vents.

9.2 Soft Porous Surfaces

9.2.1 The procedure for the hard porous surface may be used for certain soft porous surfaces, such as wood.

9.2.2 Samples should be collected at no more than ½-inch depth intervals using a metal chisel or sharp cutting knife. Thus, the initial surface sample should be collected from 0 – 0.5 inches. It is important to collect at least 10 grams for analysis.

9.2.3 For soft porous surfaces, such as caulking and rubber, a representative sample can be collected using a metal chisel or sharp cutting knife.

9.3 Multiple Depth Sampling

9.3.1 Multiple Depth Sampling may not be applicable to certain porous surfaces, such as caulking.

9.3.2 Collect the surface sample as outlined in Section 9.1 or 9.2.

9.3.3 Use the vacuum pump or cleaner to clean out the hole.

9.3.4 To collect multiple depths there are two options.

9.3.4.1 Option one: drill sequentially ½-inch increments with the 1 inch drill.

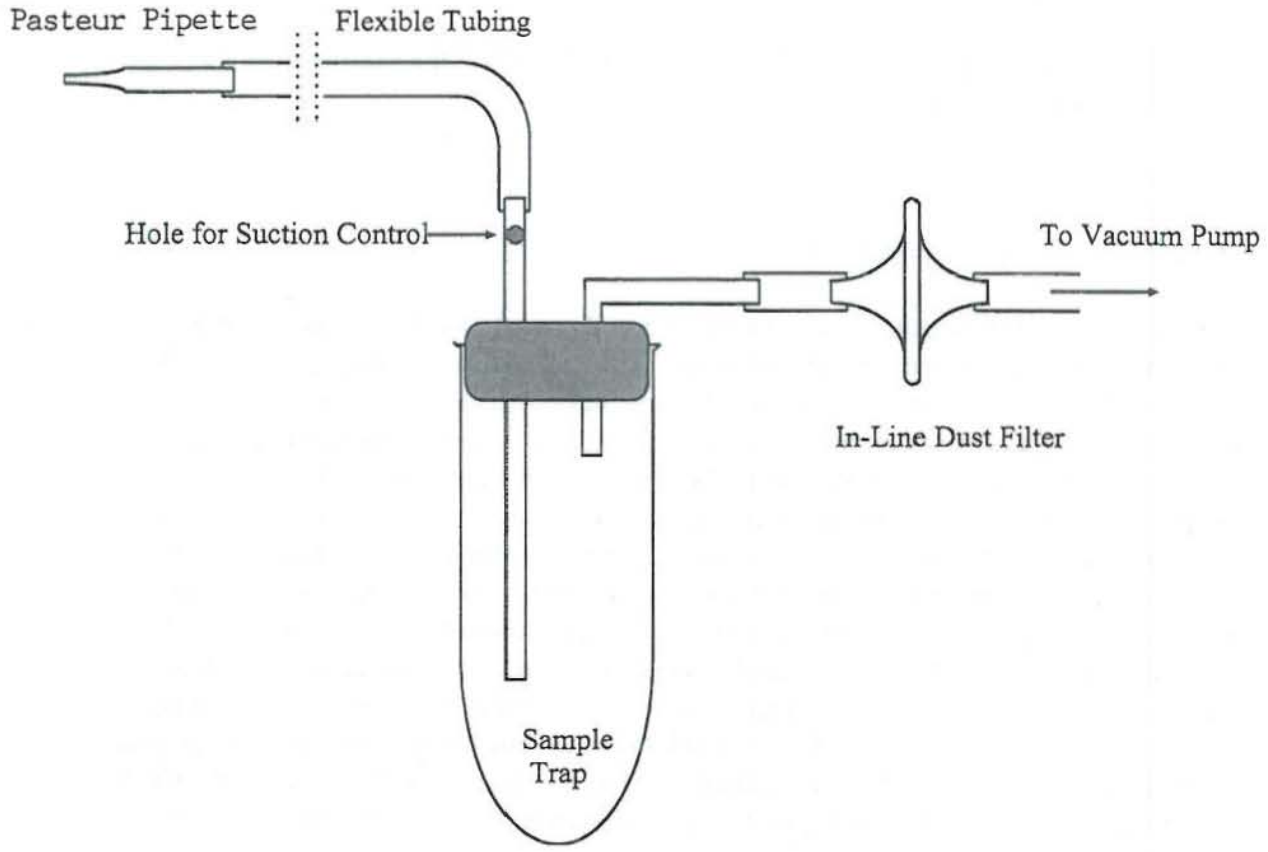
9.3.4.2 Option two: drill with the 1 inch bit and either make the hole larger or use a smaller bit to take the next ½- inch sample.

9.3.5 A stainless steel scoopula will make it easier to collect the sample from the bottom of the hole.

9.4 Vacuum Trap Design and Clean-out

The trap presented in Figure 1 is a convenient and thorough way for collecting and removing concrete powder from drilled holes. The trap system is designed to allow for control of the suction from the vacuum pump and easy trap clean-out between samples. Note, by placing a hole in the inlet tube (see Figure 1), a finger on the hand holding the trap can be used to control the suction at the sampling tip. Thus, when this hole is left completely open, there will be no suction, and the sampler can have complete control over where and what to sample. To change-out between samples the following steps should be taken: 1) the Pasteur pipette and piece of polyethylene tubing at the sample inlet should be replaced with new materials, 2) the portion of the rubber stopper and glass tubing that was in the trap should be wiped down with a clean damp paper towel (wetted with deionized water) and then dried with a fresh paper towel, 3) a clean pipe cleaner should be drawn through the glass inlet tube to remove any concrete dust present, and 4) the glass tube or flask used to collect the sample should swapped out with a clean decontaminated sample trap. Having several clean tubes or flasks on hand will facilitate change-out between samples.

Figure 1



Note: the holes should be vacuumed thoroughly to minimize any cross-contamination between sample depths and the bits should be decontaminated between samples. (See Section 11.0)

10.0 Sample Handling, Preservation, and Storage

10.1 Samples must be collected in glass containers for PCB analyses. In general, a 2-ounce sample container with a Teflon-lined cap (wide-mouth jars are preferred) will hold sufficient mass for most analyses. A 2-ounce jar can hold roughly 90 grams of sample.

10.2 Samples are to be shipped refrigerated and maintained at $\leq$ 6°C until the time of extraction and analysis.

10.3 The suggested holding time for PCB samples is 14 days to extraction.

11.0 Decontamination

11.1 Assemble two decontamination buckets. The first bucket contains a detergent and potable water solution, and the second bucket is for rinsate. Place all used drill bits, hose for the vacuum cleaner, and utensils in the detergent and water bucket. Scrub each piece thoroughly using the scrub brush. Note, the powder does cling to the metal surfaces, so care should be taken during this step, especially with the twists and curves of the drill bits. Next, rinse each piece with water and hexane. Place the rinsed pieces on clean paper towels and individually dry and inspect each piece. Note: all pieces should be dry prior to reuse.

11.2 Lightly contaminated drill bits and utensils may be wiped with a hexane soaked cloth and hexane rinsed for decontamination.

12.0 Data and Record Management

12.1 All data and information collection should follow a Field Data Management SOP or Quality Assurance Project Plan (QAPP).

12.2 Follow the chain of custody procedures to release the samples to the laboratory. A copy is kept with the sampling records.

12.3 The field data is stored for at least 3 years.

13.0 Quality Control and Quality Assurance

13.1 Representative samples are required. The sampler will evaluate the site specific conditions to assure the sample will be representative.

13.2 All sampling equipment must be decontaminated prior to use and between each discrete sample.

13.3 All field Quality Control (QC) sample requirements in a Sample and Analysis Plan (SAP) or QAPP must be followed. The SAP or QAPP may involve field blanks, equipment blanks, field duplicates and/or the collection of extra samples for the laboratory's quality control program.

13.4 Field duplicates should be collected at a minimum frequency of 1 per 20 samples or 1 per non-related porous matrix, whichever is greater.

14.0 Waste Management and Pollution Prevention

14.1 During field sampling events there may be PCB and/or hazardous waste produced from the sample collection. The waste must be handled and disposed of in accordance with federal, state, and local regulations. The dust filter, and tubing if a vacuum pump is used, is disposed after each site investigation. This waste will be treated as PCB waste if the samples are positive for PCBs. It may be possible to manage or dispose of the waste produced at the site where the work was performed. If the site does not meet regulatory requirements for these types of activities, the waste must be transported to a facility permitted to manage and/or dispose of the waste.

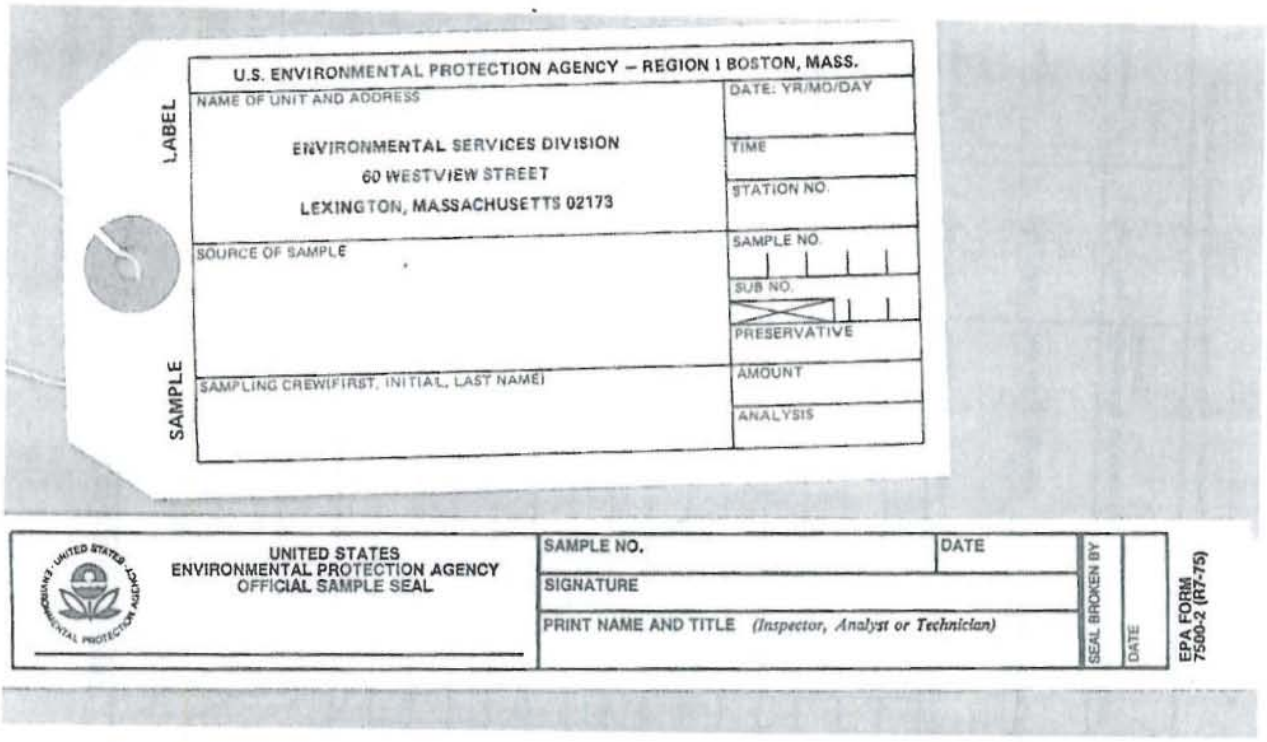
15.0 References

1. Guidance for the Preparation of Standard Operating Procedures for Quality-Related Operations, QA/G-6, EPA/600/R-96/027, November 1995.

2. 40 CFR Part 761 – Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, and Use Prohibitions

3. Sample Container and Holding Time: RCRA SW 846, Chapter 4, Table 4.1, Revision 4, February, 2007.

Example of Sample Label and Custody Seal



U.S. ENVIRONMENTAL PROTECTION AGENCY – REGION I BOSTON, MASS.

LABEL

NAME OF UNIT AND ADDRESS

ENVIRONMENTAL SERVICES DIVISION
60 WESTVIEW STREET
LEXINGTON, MASSACHUSETTS 02173

DATE: YR/MO/DAY

TIME

STATION NO.

SAMPLE

SOURCE OF SAMPLE

SAMPLE NO.

SUB NO.

PRESERVATIVE

SAMPLING CREW(FIRST, INITIAL, LAST NAME)

AMOUNT

ANALYSIS

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
OFFICIAL SAMPLE SEAL

SAMPLE NO.

DATE

SIGNATURE

PRINT NAME AND TITLE *(Inspector, Analyst or Technician)*

SEAL BROKEN BY

DATE

EPA FORM
7500-2 (R7-75)

Example of Chain of Custody Form

ENVIRONMENTAL PROTECTION AGENCY

REGION 1

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME	NO. OF CON-TAINERS							REMARKS
SAMPLERS: *(Signature)*									
STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION				

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

1-16940

☆ U.S. GOVERNMENT PRINTING OFFICE: 2004—700-325

Equipment Decontamination

Standard Operating Procedure SOP.NAA_C.05.1

July 2011

APPROVED BY:

Marylou Armstrong, LSP _____ Date: 7.15.11
Nover-Armstrong Principal; Quality Assurance Manager
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mla@noverarmstrong.com

Marta J. Nover _____ Date: 7.15.11
Nover-Armstrong Principal
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mnover@noverarmstrong.com

Matthew Alger _____ Date: 7.15.11
Nover-Armstrong Quality Assurance Coordinator
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: malger@noverarmstrong.com

TABLE OF CONTENTS

A. PURPOSE AND APPLICABILITY 3
B. SUMMARY OF METHOD 3
C. DEFINITIONS 3
D. HEALTH AND SAFETY WARNINGS 3
E. CAUTIONS 3
F. INTERFERENCES 3
G. PERSONNEL QUALIFICATIONS 4
H. EQUIPMENT AND SUPPLIES 4
I. PROCEDURE 4
J. DATA AND RECORDS MANAGEMENT 5
K. QUALITY CONTROL AND QUALITY ASSURANCE 5
L. REFERENCES 5

A. PURPOSE AND APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to establish a uniform procedure for the decontamination of sampling equipment when the use of single use disposable equipment is not possible. The procedures outlined in this SOP are applicable to all Nover-Armstrong Associates, Inc. (Nover-Armstrong) field personnel who decontaminate reusable equipment prior to use in the field.

B. SUMMARY OF METHOD

Equipment is cleaned and decontaminated before its use in every different location. Appropriate methods, determined by the function of the equipment and what compounds the equipment is used to measure, are observed.

C. DEFINITIONS

VOC	Volatile Organic Compound
SVOC	Semi-Volatile Organic Compound
PCB	Polychlorinated Biphenyl
VOA	Volatile Organic Analysis
MCP	Massachusetts Contingency Plan (310 CMR 40.0000)
OSHA	Occupational Health and Safety Administration
HAZWOPER	Hazardous Waste Operations and Emergency Response
TPH	Total Petroleum Hydrocarbon
MeOH	Methanol

D. HEALTH AND SAFETY WARNINGS

Field sampling personnel should use caution when handling soil samples with potentially elevated concentrations of hazardous chemical compounds. The sampler should wear protective gloves and safety glasses to avoid direct contact with the soil. The sampler should also wear clothing and protective gear that is appropriate for the type of site, field conditions, and weather conditions in which they are collecting the soil samples. Gloves and other articles of clothing that come in contact with potentially contaminated soil should be cleaned or disposed of after each sampling event. Food and drink should not be brought onto sites at which elevated concentrations of hazardous materials are potentially present. Laboratory containers containing corrosive, caustic, and/or toxic chemical preservatives must be handled with care.

E. CAUTIONS

It is important to note the source of rinse water, for it is often from nearby public sources. The source should be noted and a sample collected.

F. INTERFERENCES

Avoid using distilled water stored in plastic bottles for the plastic contains too many contaminants. Bring deionized water in either nalgene bottles or teflon bottles if possible.

G. PERSONNEL QUALIFICATIONS

Field sampling personnel using this SOP should have completed OSHA's 40-hour HAZWOPER training and annual 8-hour refresher training.

H. EQUIPMENT AND SUPPLIES

The following equipment and supplies are required for this SOP:

- Plastic gloves
- Safety glasses
- Garbage bag for disposal of used field supplies
- Non-phosphate detergent-solution (e.g. Alconox)
- Brush
- Tap water
- Deionized water (either ASTM type I or II)
- Decontamination of metals analysis equipment additionally requires:
    - 1:1 nitric acid
- Decontamination of SVOC collection equipment additionally requires:
    - Technical grade acetone
    - Pesticide grade hexane
- Decontamination of VOC collection equipment OR of oil or grease analysis equipment additionally requires:
    - Reagent grade methanol (MeOH)

I. PROCEDURE[1]

1. Equipment to be utilized in the collection of samples for metals analysis should be cleaned by the following steps:
    a. Wash equipment with a non-phosphate detergent-solution and a brush.
    b. Rinse thoroughly with tap water.
    c. Rinse with 1:1 nitric acid.
    d. Rinse the equipment thoroughly with deionized water.
    e. For water samples, rinse the equipment two to three times with the media being sampled before collecting a sample.
    f. Repeat this procedure at each location.

2. Equipment to be used for collection of samples for oil identification, oil and grease analyses, and TPH should be cleaned by the following steps:
    a. Wash equipment with a non-phosphate detergent-solution and a brush.
    b. Rinse with tap water.
    c. Rinse with reagent grade MeOH
    d. Rinse thoroughly with deionized water.
    e. For water samples, rinse the equipment two to three times with the media being sampled prior to collecting a sample.

[1] Nover-Armstrong's Standard Operating Procedure (SOP) for decontamination of sampling equipment follows the procedures described in MassDEP Policy WSC-91-310 *Standard References for Monitoring Wells.*

f. Repeat at each location.

3. Equipment to be used for collection of SVOCs (including base-neutral extractables, PCBs, herbicides, and pesticides) should be cleaned by the following steps:
   a. Wash equipment with a non-phosphate detergent-solution and a brush
   b. Rinse with tap water.
   c. Rinse with technical grade acetone.
   d. Rinse with pesticide grade hexane.
   e. Rinse thoroughly with deionized water.
   f. For water samples, rinse the equipment two to three times with the media being sampled prior to collecting a sample.
   g. Repeat at each location.

4. Equipment used for collection of samples for VOA should be cleaned by the following steps:
   a. Wash equipment with a non-phosphate detergent solution and a brush.
   b. Rinse with tap water.
   c. Rinse with reagent grade MeOH.
   d. Rinse thoroughly with deionized water.
   e. For water samples, rinse the equipment two to three times with the media being sampled prior to collecting a sample.
   f. Repeat at each location.

5. Steam Cleaning is another acceptable technique for field decontamination.

J. DATA AND RECORDS MANAGEMENT

Hard copies of recorded field sampling notes will be kept in individual project folders at the Nover-Armstrong office location in Carver, MA. Additionally, the field sampling notes will be scanned and stored electronically on the company's computer system. Laboratory analytical results will be received as electronic .pdf files and stored electronically on Nover-Armstrong's computer system. Archived files of analytical results are also maintained by the analytical laboratories.

K. QUALITY CONTROL AND QUALITY ASSURANCE

Instrumentation shall be checked intermittently by the Project Manager to ensure that the proper procedures for equipment decontamination are being followed at all project sites.

L. REFERENCES

1. United States Environmental Protection Agency (USEPA). 2007. *Guidance for Preparing Standard Operating Procedures (SOPs)* (EPA QA/G-6).

2. United States Environmental Protection Agency (USEPA) Region 1. 2010. *Quality Assurance Project Plan Program Guidance*.

3. MassDEP Policy WSC-91-310 *Standard References for Monitoring Wells*

4. SOP.NAA_C.01.1 Field Documentation

Chain of Custody Sample Handling & Shipping

Standard Operating Procedure SOP.NAA_C.07.1

July 2011

APPROVED BY:

Marylou Armstrong, LSP _____ Date: 7.15.11
Nover-Armstrong Principal; Quality Assurance Manager
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mla@noverarmstrong.com

Marta J. Nover _____ Date: 7.15.11
Nover-Armstrong Principal
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mnover@noverarmstrong.com

Matthew Alger _____ Date: 7.15.11
Nover-Armstrong Quality Assurance Coordinator
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: malger@noverarmstrong.com

TABLE OF CONTENTS

A. PURPOSE AND APPLICABILITY 3
B. SUMMARY OF METHOD 3
C. DEFINITIONS 3
D. HEALTH AND SAFETY WARNINGS 3
E. CAUTIONS 3
F. INTERFERENCES 3
G. PERSONNEL QUALIFICATIONS 3
H. EQUIPMENT AND SUPPLIES 4
I. PROCEDURE 4
J. DATA AND RECORDS MANAGEMENT 5
K. QUALITY CONTROL AND QUALITY ASSURANCE 5
L. REFERENCES 6

A. PURPOSE AND APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to establish a uniform procedure for documenting the chain of custody associated with any field sample to ensure that the sample is accounted for at all times. The procedures outlined in this SOP are applicable to all Nover-Armstrong Associates, Inc. (Nover-Armstrong) field personnel who collect or handle field samples.

B. SUMMARY OF METHOD

Chain of custody records are created and maintained in order to document the identity of a sample and its handling from its creation as a sample until analysis and data reduction are completed.

C. DEFINITIONS

COC	Chain of Custody
MCP	Massachusetts Contingency Plan (310 CMR 40.0000)
OSHA	Occupational Health and Safety Administration
HAZWOPER	Hazardous Waste Operations and Emergency Response
VOC	Volatile Organic Compound

D. HEALTH AND SAFETY WARNINGS

Field sampling personnel should use caution when handling soil samples with potentially elevated concentrations of hazardous chemical compounds. The sampler should wear protective gloves and safety glasses to avoid direct contact with the soil. The sampler should also wear clothing and protective gear that is appropriate for the type of site, field conditions, and weather conditions in which they are collecting the soil samples. Gloves and other articles of clothing that come in contact with potentially contaminated soil should be cleaned or disposed of after each sampling event. Food and drink should not be brought onto sites at which elevated concentrations of hazardous materials are potentially present. Laboratory containers containing corrosive, caustic, and/or toxic chemical preservatives must be handled with care.

E. CAUTIONS

Care must be taken to uniquely identify all samples, samples are protected from loss or damage, any processing of samples is documented, and client confidentiality is maintained. A sample is considered to be under a chain of custody if it is in your custody, it is in your view after being in your possession, it is in your possession and locked up to prevent tampering, and it is in a designated, secured area.

F. INTERFERENCES

Avoid leaving samples unattended, unlocked, or in locations where they could be tampered with or vandalized.

G. PERSONNEL QUALIFICATIONS

Field sampling personnel using this SOP should have completed OSHA’s 40-hour HAZWOPER training and annual 8-hour refresher training.

H. EQUIPMENT AND SUPPLIES

The following equipment and supplies are required for this SOP:

- Plastic gloves
- Safety glasses
- Chain of Custody form
- Chain of Custody records
- Field data sheets
- Sample labels
- Pen or marker for labels
- Field book for notes

I. PROCEDURE[1]

1. Pre-prepare labels for each sample that includes identification, date and time of collection, sample parameters to be analyzed, any preservatives added, and the name of the sample collector.

2. Record the procedures and amounts of reagents or supplies necessary for each sample including sample preparation and preservation.

3. Record date and time of sampling, sampling locations, sample bottle identification, and specific sample acquisition measures on the chain of custody forms.

4. The COC description section requires:
    a. A unique identification of each sample
    b. The name(s), address(es), and telephone number(s) of the sampler(s) and the person shipping the samples and all subsequent transfers of custody
    c. The type and method of analysis requested (sometimes this can be put on the field data sheet that accompanies the COC form)
    d. The date and time that the samples were taken and delivered for shipping
    e. The names of those responsible for receiving the samples at the laboratory

5. Complete standard field data record forms to establish sample custody in the field before sample shipment.

6. At least four copies of the COC record are needed:
    a. The original COC record and one copy are sent to the laboratory with the samples
    b. One copy is retained by the sampling crew chief
    c. One copy is placed in the project file
7. The signed copy of the original COC record is retained by the laboratory, but copies of the original record, signed by the receiving laboratory are returned to the sampling crew chief and to the project file.

---

[1] Nover-Armstrong's Standard Operating Procedure (SOP) for chain of custody documentation follows the procedures described in MassDEP Policy WSC-91-310 *Standard References for Monitoring Wells.*

J. DATA AND RECORDS MANAGEMENT

Hard copies of COCs will be kept in individual project folders at the Nover-Armstrong office location in Carver, MA. Additionally, the COCs will be scanned and stored electronically on the company's computer system. Laboratory analytical results will be received as electronic .pdf files and stored electronically on Nover-Armstrong's computer system. Archived files of analytical results are also maintained by the analytical laboratories.

K. QUALITY CONTROL AND QUALITY ASSURANCE

Chains of Custody will be reviewed by the Project Manager to ensure proper documentation procedures. Nover-Armstrong field personnel will be trained to properly complete COCs prior to using them in the field. Special instructions on COCs will be verbally conveyed to laboratory personnel to ensure that the proper instructions are being followed.

L. REFERENCES

1. United States Environmental Protection Agency (USEPA). 2007. *Guidance for Preparing Standard Operating Procedures (SOPs)* (EPA QA/G-6).

2. United States Environmental Protection Agency (USEPA) Region 1. 2010. *Quality Assurance Project Plan Program Guidance*.

3. MassDEP Policy WSC-91-310 *Standard References for Monitoring Wells*

4. SOP.NAA_C.01.1 Field Documentation

Field Documentation

Standard Operating Procedure SOP.NAA_C.01.1

July 2011

APPROVED BY:

Marylou Armstrong, LSP _____ Date: 7.15.11
Nover-Armstrong Principal; Quality Assurance Manager
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mla@noverarmstrong.com

Marta J. Nover _____ Date: 7.15.11
Nover-Armstrong Principal
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: mnover@noverarmstrong.com

Matthew Alger _____ Date: 7.15.11
Nover-Armstrong Quality Assurance Coordinator
124 Main Street, Unit 2GG
Carver, MA 02330
Tel: 508.866.8383, Fax: 508.866.9898, Email: malger@noverarmstrong.com

TABLE OF CONTENTS

A. PURPOSE AND APPLICABILITY 3
B. SUMMARY OF METHOD 3
C. DEFINITIONS 3
D. HEALTH AND SAFETY WARNINGS 3
E. CAUTIONS 3
F. INTERFERENCES 3
G. PERSONNEL QUALIFICATIONS 3
H. EQUIPMENT AND SUPPLIES 4
I. PROCEDURE 4
J. DATA AND RECORDS MANAGEMENT 4
K. QUALITY CONTROL AND QUALITY ASSURANCE 5
L. REFERENCES 6

A. PURPOSE AND APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to establish a uniform procedure for documenting samples collected for analysis. The procedures outlined in this SOP are applicable to all Nover-Armstrong Associates, Inc. (Nover-Armstrong) field personnel who collect samples for laboratory analysis at MCP and non-MCP project sites.

B. SUMMARY OF METHOD

Collected samples are documented to uniquely identify each sample and ensure adequate chain-of-custody procedures.

C. DEFINITIONS

VOC	Volatile Organic Compound
MCP	Massachusetts Contingency Plan (310 CMR 40.0000)
OSHA	Occupational Health and Safety Administration
HAZWOPER	Hazardous Waste Operations and Emergency Response

D. HEALTH AND SAFETY WARNINGS

Field sampling personnel should use caution when handling soil samples with potentially elevated concentrations of hazardous chemical compounds. The sampler should wear protective gloves and safety glasses to avoid direct contact with the soil. The sampler should also wear clothing and protective gear that is appropriate for the type of site, field conditions, and weather conditions in which they are collecting the soil samples. Gloves and other articles of clothing that come in contact with potentially contaminated soil should be cleaned or disposed of after each sampling event. Food and drink should not be brought onto sites at which elevated concentrations of hazardous materials are potentially present. Laboratory containers containing corrosive, caustic, and/or toxic chemical preservatives must be handled with care.

E. CAUTIONS

Take care to note that any samples collected may be used in future litigations. Also take note that if taking samples from privately owned property, samplers should provide the property owner with a receipt for the samples collected.

F. INTERFERENCES

Avoid using multiple transportation carriers in sending samples to the laboratory to avoid confusion.

G. PERSONNEL QUALIFICATIONS

Field sampling personnel using this SOP should have completed OSHA's 40-hour HAZWOPER training and annual 8-hour refresher training.

H. EQUIPMENT AND SUPPLIES

The following equipment and supplies are required for this SOP:

- Plastic gloves
- Safety glasses
- Chain of Custody form
- Sample labels
- Pen or marker for labels
- Field book for notes
- Garbage bag for disposal of used field supplies

I. PROCEDURE

1. Review project plans to determine what types of documentation must be completed for a sampling project and to ensure that the appropriate documentation will be on-hand in the field.

2. Field personnel shall use field logbooks and/or pre-printed work sheets to accurately document all field activities: on-site conditions; field measurements; sample collection information; field instrument and calibration information; and other pertinent site-related information during monitoring activities.

3. The field notes shall include a description of field conditions that includes, as a minimum:

    - Site location
    - Date, start, and finish times of the work and weather conditions;
    - Name and initials of person making entry;
    - Names of other personnel present, if any;
    - Names of visitors, if any;
    - Purpose and summary of proposed work effort;
    - Details of any deviation from the field operations plan or standard operating procedures, including who authorized the deviation;
    - Field observations;
    - Sampling equipment used (including make model and serial number) and equipment calibration documentation;
    - Field screening methods, if used, and a description of screening locations;
    - Field screening results, and identify samples with both field and fixed lab analyses;
    - Fixed laboratory sample identification number, sample type (composite, grab), time of sampling, sample analysis, and sample locations shown on a near-scale map relative to a fixed landmark;
    - Sample handling, packaging, labeling, and shipping information (including destination);
    - Location, description and unique identifier for all photographs taken in association with the field activity; and
    - Any other pertinent information

4. Information recorded in other site documents, *e.g.*, sampling logs, will not be repeated in logbooks except in summary form.

5. Any corrections to the logbook or other written documentation shall be initialed and dated. All corrections shall be shown as a single line through the original. The unused bottom portion of each page shall be lined-out, initialed, and dated.

J. DATA AND RECORDS MANAGEMENT

Hard copies of recorded field sampling notes will be kept in individual project folders at the Nover-Armstrong office location in Carver, MA. Additionally, the field sampling notes will be scanned and stored electronically on the company's computer system. Laboratory analytical results will be received as electronic .pdf files and stored electronically on Nover-Armstrong's computer system. Archived files of analytical results are also maintained by the analytical laboratories.

K. QUALITY CONTROL AND QUALITY ASSURANCE

Copies of field documentation will be reviewed by Project Managers upon completion of field activities to ensure the quality and correctness of the documentation. Any inconsistencies or questionable field notes will be reviewed together with field personnel to achieve clarity and reduce confusion. Nover-Armstrong field sampling personnel will be trained in the field documentation SOP prior to conducting field activities.

L. REFERENCES

1. United States Environmental Protection Agency (USEPA). 2007. *Guidance for Preparing Standard Operating Procedures (SOPs)* (EPA QA/G-6).

2. United States Environmental Protection Agency (USEPA) Region 1. 2010. *Quality Assurance Project Plan Program Guidance*.

3. US EPA *Sampler's Guide: Contract Laboratory Guidance for Field* Sampler s (July 2007). EPA 540-R-07-06.

PCBs

By Capillary Column Gas Chromatography

Reference Methods No.: **Method 8082**

Reference: SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA SW-846, Update III, 1997.

1. Scope and Application

Method 8082 is used to determine the concentrations of Polychlorinated Biphenyls (PCBs) as Aroclors in extracts from solid and liquid matrices. This SOP details the analysis for PCBs using fused-silica, open-tubular, capillary columns with electron capture detectors (ECD).

Matrices: Extracts from solid and liquid matrices.

Definitions: See Alpha Laboratories Quality Manual Appendix A

Regulatory Parameter List: The standard compounds listed below are determined by this method.

Parameter	CAS
Aroclor 1016	12674-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5
Aroclor 1262	37324-23-5
Aroclor 1268	11100-14-4

The data report packages present the documentation of any method modification related to the samples tested. Depending upon the nature of the modification and the extent of intended use, the laboratory may be required to demonstrate that the modifications will produce equivalent results for the matrix. Approval of all method modifications is by one of the following laboratory personnel before performing the modification: Area Supervisor, Laboratory Director, or Quality Assurance Officer.

This method is restricted to use by or under the supervision of analysts experienced in the operation of the gas chromatograph (GC) and in the interpretation of gas chromatograms. Each analyst must demonstrate the ability to generate acceptable results with this method by performing an initial demonstration of capability (see section 13.2), analyzing a proficiency test sample and completing the record of training.

After initial demonstration, ongoing demonstration is based on acceptable laboratory performance of at least a quarterly laboratory control sample or acceptable performance from an annual proficiency test sample. A major modification to this procedure requires demonstration of performance. The identification of major method modification requiring performance demonstration is directed by the QA Officer and/or Laboratory Director on a case-by-case basis.

2. Summary of Method

A measured volume or weight of sample (approximately 1L for liquids, 15g to 30g for solids) is extracted using the appropriate matrix-specific sample extraction technique.

Liquid samples are extracted at neutral pH with methylene chloride using Method 3510C (separatory funnel), or other appropriate technique.

Solid samples are extracted with methylene chloride: acetone (1:1) using Method 3540C (Soxhlet), or other appropriate technique. Solid samples may also be extracted with hexane:acetone (1:1) using Method 3546 (microwave).

Wipe samples are extracted with methylene chloride: acetone (1:1) using Method 3540C (Soxhlet) or other appropriate technique.

Oil samples are diluted with hexane following the procedure outlined in the extraction SOP.

Sulfuric acid cleanup (Method 3665) and Copper cleanup (Method 3660B) are utilized for PCB extracts.

After cleanup, the extract is analyzed by injecting 1µL into a gas chromatograph equipped with narrow- or wide-bore fused silica capillary columns and electron capture (GC/ECD) detectors.

2.1 Method Modifications from Reference

Internal standard calibration is used for all analytes. The internal standard used is 1-bromo-2-nitrobenzene.

3. Reporting Limits

Reporting limits vary depending on project specific data quality objectives.

4. Interferences

4.1 Instrumental

4.1.1 Only high purity gases are used in the GC system to eliminate this source of possible contamination. Both the helium (carrier gas – 99.999%) and argon-methane (detector make-up gas) are certified by the gas supplier.

4.1.2 Preventive instrument maintenance is performed routinely, and whenever highly contaminated extracts are analyzed that could result in chromatographic interferences or result in degradation of system performance. Section 9.5 details the maintenance steps.

4.1.3 Glassware must be scrupulously cleaned. This procedure is detailed in the Organic Extraction Cleaning and Handling SOP/02-03. Store dry glassware in a clean environment.

4.2 Parameters

4.2.1 All solvents used are pesticide grade or equivalent, and reagents are purchased as certified contaminant free. All of these materials are routinely determined to be free of interferences by analysis of extraction blanks with every extraction batch performed.

4.2.2 Certain compounds (i.e. phthalates) can be extracted from the sample matrix and be detected by the ECD that could possibly result in false positive results or complicate the data interpretation. The use of the cleanup procedure mentioned in Section 2.1 and detailed in the extraction SOP minimizes these possible interferences. Analyst experience is also crucial in making compound determinations.

4.2.3 Interferences co-extracted from the samples will vary considerably from waste to waste. While a general cleanup technique is referenced or provided as part of the method, unique samples may require additional cleanup approaches to achieve desired degrees of discrimination and quantitation.

5. Health and Safety

The toxicity or carcinogenicity of each reagent and standard used in this method is not fully established; however, each chemical compound must be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. A reference file of material data handling sheets is available to all personnel involved in the chemical analysis. PCBs have been tentatively classified as known or suspected human or mammalian carcinogens. Additional references to laboratory safety are available in the Chemical Hygiene Plan.

All personnel handling environmental samples known to contain or to have been in contact with municipal waste must follow safety practices for handling known disease causative agents.

5.1 Lab coats, safety glasses, and gloves must be worn when handling samples, extracts, standards or solvents.

5.2 All solvent and extract transfers must be handled in the vented bench area in the GC laboratory.

5.3 All stock standards, working standards, and vialed sample extracts must be placed into the waste bucket in the lab, for future disposal by the Hazardous Waste Manager. The container must be labeled properly with hazard warning labels indicating the container contents.

5.4 Bottles containing flammable solvents must be stored in the flammables cabinet.

6. Sample Collection, Preservation, Shipping and Handling

6.1 Sample Collection

Aqueous samples are collected in two 1L amber glass jars with teflon-lined lids. Solid samples are collected in one 250 mL wide-mouth glass jar with a teflon-lined lid. All containers are purchased pre-cleaned and certified from commercial vendors.

6.2 Sample Preservation

Both aqueous and solid samples are then preserved by packing in coolers with ice or ice packs, to maintain a temperature of 4 ± 2° C. Upon receipt at the laboratory, the samples are transferred into sample storage refrigerators to maintain at a temperature of 4 ± 2° C.

6.3 Sample Handling

Aqueous samples must be extracted within 7 days of sample collection, solid samples within 14 days of collection. Once extracted, the samples must be analyzed within 40 days of the extraction date.

7. Equipment and Supplies

7.1 Gas Chromatograph, Hewlett Packard 6890: An analytical system complete with gas chromatograph configured for split-splitless injection and all required accessories including syringes, analytical columns, gases, electron capture detectors (ECD), and data system.

7.2 GC Columns: Alpha utilizes dual-column analyses. The dual-column approach involves either a single injection that is split between two columns that are mounted in a single gas chromatograph, or dual injections of the split extract on a single GC equipped with two columns. Typical column pairs used are listed below. Other columns may be used as long as method performance criteria can be met.

7.2.1 Column pair 1

30m x 0.32mm ID fused silica capillary column chemically bonded with SE-54 (RTX-CLP or equivalent), 0.32µm film thickness.

30m x 0.32mm ID fused silica capillary column chemically (CLP-pesticideII, or equivalent) 0.25µm film thickness.

7.3 Volumetric Flasks: 10mL and 25mL, for the preparation of standards.

7.4 Microsyringes/Wiretrol syringes: 10 µL – 1000 µL

7.5 Disposable Borosilicate Pipets

7.6 Vials: 2 mL clear glass, crimp-top and screw-cap.

8. Reagents and Standards

Reagent grade or pesticide grade chemicals are used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficient high purity to permit its use without lessening the accuracy of the determination.

NOTE: Store the standard solutions (stock, composite, calibration, internal, and surrogate) at 4 ± 2° C in Teflon(R)-sealed containers in the dark. When a Lot of standards is prepared, aliquots of that Lot are stored in individual small vials. All stock standard solutions must be replaced after one year or sooner if routine QC tests indicate a problem. All other standard solutions must be replaced after six months or sooner if routine QC indicates a problem.

8.1 n-Hexane: Pesticide quality or equivalent.

8.2 Acetone: Pesticide quality or equivalent.

8.3 Methylene chloride: Pesticide quality or equivalent.

8.4 Organic-free Reagent Water: All references to water in this method refer to organic-free reagent water from Alpha's RO water treatment system.

8.5 Stock Standard Solutions: All stock standard solutions are purchased from commercial vendors as ampulated certified solutions. When an ampulated stock solution is opened, it is transferred to a labeled amber screw-cap vial. The expiration date of the stock solution is either the vendor specified expiration date, or 1 year from the date the ampule was opened, whichever is sooner. Typical stock standard concentrations are listed in Table 1.

8.6 Calibration Standards: Calibration standards are prepared volumetrically by diluting the appropriate stock standard(s) with hexane. Calibration standards expire 6 months from the date of preparation, or on the earliest expiration date of any of the stock solutions used to prepare the calibration standard. Calibrations are performed at the 6 concentration levels listed in Table 1.

8.7 Internal Standard Solution: 1-Bromo-2-nitrobenzene is used as the internal standard, and is added to all single-component calibration standards and sample extracts to achieve a concentration of 0.25 µg/mL.

8.8 Surrogate Standards:

8.8.1 Tetrachloro-m-xylene and Decachlorobiphenyl are used as surrogates for Aroclor analysis. They are added to the calibration standards at the concentrations listed in Table 1, and are spiked into all samples and QC samples prior to extraction. The spiking solution is prepared in acetone at the concentrations listed in Table 1.

8.9 LCS/MS Spiking Solutions: The LCS/MS spiking solutions are prepared volumetrically by diluting the appropriate stock standards in acetone. The spiking solution concentrations are listed in Table 1.

9. Quality Control

The laboratory must maintain records to document the quality of data that is generated. Ongoing data quality checks are compared with established performance criteria to determine if the results of analyses meet the performance characteristics of the method.

9.1 Blank(s)

Extraction blanks are performed with each extraction batch of 20 or less samples, according to the extraction SOPs. The extraction blank must not contain any of the reportable analytes above the reporting limit. If any reportable analytes are detected in the blank, the entire extraction batch is suspect and re-extraction of all associated samples is required, unless the associated samples are non-detect.

9.2 Laboratory Control Sample (LCS)

A Laboratory Control Sample (LCS) is extracted with each analytical batch. The LCS consists of an aliquot of a clean (control) matrix similar to the sample matrix and of the same weight or volume. For Aroclor analysis, the LCS is spiked with a mixture of Aroclor 1016 and 1260. The concentrations of the spiking solutions are listed in Table 1. The recovery acceptance criteria are listed in Table 2. If any recovery criteria are not met, the extract may be re-analyzed. If the criteria are still not met, the entire batch is re-extracted, unless the recoveries are high and the associated samples are non-detect. If this is not possible, due to insufficient sample or holding time exceedence, the analyst must narrate the failure in the LIMSfor inclusion in the client report.

9.3 Initial Calibration Verification (ICV)

Refer to Section 10.2.

9.4 Continuing Calibration Verification (CCV)

Refer to Section 10.4.

9.5 Matrix Spike

Upon client request, a matrix spike and matrix spike duplicate pair is extracted and analyzed with each batch of 20 or less samples. The MS/MSD pair is extracted and analyzed for standard PCB analysis. The PCB spike compounds and concentrations are listed in Table 1. The recovery acceptance criteria are listed in Table 2. If the recovery criteria are not met, but are met in the LCS, the failure may be attributed to sample matrix effects and must be narratedfor inclusion in the client report.

9.6 Laboratory Duplicate

Upon client request, a Laboratory Duplicate is extracted and analyzed with each batch of 20 or less samples. The relative percent difference (RPD) acceptance criteria are listed in Table 2. If the RPD criteria are not met, the failure may be attributed to matrix effect and must be narrated for inclusion in the client report.

9.7 Method-specific Quality Control Samples

9.7.1 **Surrogates:** All extracted samples and associated QC are spiked with surrogates at the levels listed in Table 1. The laboratory must evaluate surrogate recovery data from individual samples and QC samples versus the surrogate control limits listed in Table 2. If the surrogate limits are not met, the extract may be reanalyzed to determine if the failure was due to an instrument problem. If the criteria are still not met, the affected samples must be re-extracted to confirm that the failure was due to sample matrix, unless the surrogate recovery is high and the associated sample is non-detect. If matrix effect is confirmed, this must be noted on a narrative sheet for inclusion in the client report.

9.8 Method Sequence

Typical Initial calibration (each level to identify the standard lot number)

2. Std Level 1
3. Std Level 2
4. Std Level 3
5. Std Level 4
6. Std Level 5
7. Std Level 6
8. Initial Calibration Verification Standard (ICV)

Repeat steps 2 – 7 as needed for each Aroclor necessary for calibration.

[**NOTE:** If multiple calibration mixtures are analyzed, it is acceptable to analyze appropriate ICVs after all calibration standards have been injected.]

Typical Daily sequence:

1. 1016/1260 Continuing Calibration Standard; identified with the standard lot number 2. Extraction Blank
3. Laboratory Control Sample
4. Matrix Spike / Matrix Spike Duplicate (if requested by Client)
5. Duplicate (if included with batch QC)
6. Samples (4 – 8)
7. Cal check (Typically alternating the Aroclors)

Repeat 2 – 7 (as needed)

10. Procedure

10.1 Equipment Set-up

10.1.1 Sample Extraction

Water samples are extracted at a neutral pH with methylene chloride using a separatory funnel (Method 3510). See extraction SOP for details.

Solid samples are extracted with methylene chloride: acetone (1:1) using Soxhlet extraction (Method 3540C) procedures. Solid samples may also be extracted with hexane: acetone (1:1) using Method 3546 (microwave). See extraction SOP for details.

10.1.2 Extract Cleanup

Cleanup procedures may not be necessary for a relatively clean sample matrix, but most extracts from environmental and waste samples will require additional preparation before analysis. The sulfuric acid cleanup method (Method 3665) is utilized. See extraction SOPs for details as well as the Copper cleanup method (method 3660B).

10.1.3 GC Conditions:

The dual-column / dual-detector approach involves the use of the columns listed in section 7.2. The columns are connected to an injection tee or dual injection GC, and separate electron capture detectors. Typical GC conditions for the HP 6890 instruments utilizing column pair 1, are listed below, but may be altered as long as method performance criteria are met.

Temperature 1:	120 °C
Time 1:	0 minute
Ramp 1:	35 °C/minute
Temperature 2:	200 °C
Time 2:	0 minutes
Ramp 2:	15° C/minute
Temperature 3:	260 °C
Time 3:	0 minute
Ramp 3:	°C/minute
Final temperatur	325 °C
Final time:	2.00 minutes
Injector temperature:	250 °C
Injector mode:	Pulsed Split
	2:1 split, 0.75 min pulse
Injector Flow:	6.0 mL/min split flow
Detector temperature:	375 °C
Carrier gas:	Helium
Carrier flow:	3 mL/min
Carrier mode:	Constant flow
Makeup gas:	Argon/methane (P5)
Total detector flow:	55 mL/min

Injection volume: 1 µL

10.2 Initial Calibration

10.2.1 Prepare calibration standards using the procedures in Section 8.6 and Table 1. The calibration standards are aliquoted into autosampler vials and capped prior to loading onto the autosampler tray.

10.2.2 Establish the GC operating conditions by loading the appropriate GC method. Typical instrument conditions are listed in section 10.1.3. The same operating conditions are used for calibrations and sample analyses. Create the analytical sequence using the Turbochrom or Agilent Chemstation data acquisition software.

Record the calibration standard, unique lab identifier code (lot), concentration, and analyst's initials in the analytical sequence list.

10.2.3 A 1µL injection volume of each calibration standard is typically used. Other injection volumes may be employed, provided that the analyst can demonstrate adequate sensitivity for the compounds of interest. The same injection volume must be used for all standards and samples.

10.2.4 Column adsorption may be a problem when the GC has not been used for a day or more or after system maintenance. The GC column may be primed (or deactivated) by injecting a PCB standard mixture approximately 20 times more concentrated than the mid-concentration standard. Inject this standard mixture prior to beginning the initial calibration or calibration verification.

Alternately, the system may be primed by baking at the final analytical temperature for approximately 30 minutes.

Several analytes may be observed in the injection just following system priming. Always run an instrument blank after system priming.

10.2.5 Calibration Factors

Internal standard calibration techniques are employed in this method.

10.2.5.1 Internal Standard Procedure. In each standard, calculate the response factor (RF) for each analyte, the average RF, and the relative standard deviation (RSD) of the RFs, using the Target or Enviroquant data processing software. The calculations are performed automatically, using the formulae listed in Alpha's Quality Manual.

10.2.6 Initial Calibration Criteria

If the RSD for an analyte is $\leq$ 20%, then the response of the instrument for this compound is considered linear over the range and the mean calibration factor can be used to quantitate sample results.

If the RSD for any analyte is > 20%, then linearity through the origin cannot be assumed. The mean response factor cannot be used for quantitation. An alternative calculation may be done by the use of linearity as long as the correlation coefficient is $\geq$0.995. If both of these quantitation methods fail criteria for any compound in the initial calibration, then the system must be reevaluated and a new calibration curve must be analyzed.

10.2.6.1 Initial Calibration Verification

An initial calibration verification standard must be run immediately after each initial calibration, near the midpoint of the curve. The standard must be prepared using a second source that is different than the source used for the initial calibration. The %D is the same as the CCV (see Section 10.4.1.1).

10.2.7 Retention Time Window

10.2.7.1 The retention time window used for the identification of target analytes is ± 0.07 minutes. These criteria have been adopted from the EPA CLP Statement of Work (OLM04.2). It has been found that these limits work well, being wide enough to eliminate false-negatives while being tight enough to eliminate false-positives. Windows that are calculated using the procedure recommended in Method 8000 tend to be very narrow, creating the risk of false negative results.

10.2.7.2 The windows listed above are used as guidance; however the experience of the analyst weighs heavily in the interpretation of the chromatograms. For example, it has been observed that certain oil matrices can cause the retention times to shift more dramatically.

10.3 Equipment Operation and Sample Processing

10.3.1 The same GC operating conditions used for the initial calibration must be employed for sample analyses, including sample injection volume (Section 10.1.3).

10.3.2 Tentative identification of an analyte occurs when a peak from a sample extract falls within the retention time window for the compound. Each tentative identification is confirmed using a second GC column of dissimilar stationary phase. Confirmation is positive when the %RPD is ≤ 40% from the results of the two columns.

10.3.2.1 In addition to utilizing retention time windows, the pattern of peaks in the sample extract is compared to the known Aroclor patterns.

10.3.3 The concentration reported for an identified target analyte in an extract is calculated using the Target or Enviroquant data processing software. Proper quantitation requires the appropriate selection of a baseline from which the peak area or height can be determined. See the Manual Integration SOP for integration guidelines.

10.3.3.1 If the responses exceed the calibration range of the system, dilute the extract with Hexane and reanalyze.

10.3.4 Each sample analysis must be bracketed with an acceptable calibration verification standard (each 12-hour analytical shift), or calibration verification standards interspersed within the samples, with the exception of those samples analyzed under WCS-CAM-VA. When a calibration verification standard fails to meet the QC criteria, all samples that were injected after the last standard that last met the QC criteria must be re-injected.

Calibration verification standards that are interspersed throughout the analytical sequence are varied to verify performance of all analytes.

10.3.5 Sample injections may continue for as long as the calibration verification standards and standards interspersed with the samples meet instrument QC requirements. Standards are typically analyzed after every 4 – 8 samples to minimize the number of samples that must be re-injected when the standards fail the QC limits. However, a calibration verification standard must be analyzed after every 20 samples. The sequence ends

when the set of samples has been injected or when qualitative and/or quantitative QC criteria are exceeded.

10.3.6 Use the calibration standards analyzed during the sequence to evaluate retention time stability. The retention time windows are established using the absolute retention time of each analyte in the mid-concentration standard during the initial calibration as the mid-point of the window. The widths of the windows are defined in Section 10.2.7.

10.3.7 Each subsequent injection of a standard during the 12-hour analytical shift (i.e., those standards injected every 20 samples, or more frequently) must be checked against the retention time windows. If any of these subsequent standards fall outside their absolute retention time windows, the GC system is out of control. Determine the cause of the problem and correct it. If the problem cannot be corrected, a new initial calibration must be performed.

10.3.8 Identification of mixtures (i.e. Aroclor 1248) is based on the characteristic 'fingerprint' retention time and shape of the indicator peak(s); and quantitation is based on the area under the characteristic peaks as compared to the area under the corresponding calibration peaks(s) of the same retention time and shape generated using internal calibration procedures.

10.3.9 If compound identification or quantitation is precluded due to interference (e.g., broad, rounded peaks or ill-defined baselines are present) cleanup of the extract may be needed. If instrument problems are suspected, rerun the extract on another instrument to determine if the problem results from analytical hardware or the sample matrix. Refer to the extraction SOPs for the procedures to be followed in sample cleanup.

10.4 Continuing Calibration

10.4.1 Verify calibration each 12-hour shift by injecting calibration verification standards prior to conducting any sample analyses. A calibration standard must also be injected at intervals of not less than once every twenty samples (after every 4 - 8 samples is routine practice to minimize the number of samples requiring re-injection when QC limits are exceeded) and at the end of the analysis sequence.

10.4.1.1 The response factor (for internal standard compounds) for each analyte to be quantitated must not exceed a ± 15% difference when compared to the initial calibration curve. The Target data processing software automatically calculates the %D for all analytes according to the formulae in Alpha's Quality Manual.

10.4.1.2 If this criterion is exceeded, inspect the gas chromatographic system to determine the cause and perform whatever maintenance is necessary before verifying calibration and proceeding with sample analysis.

10.4.1.3 If routine maintenance does not return the instrument performance to meet the QC requirements (Section 9) based on the last initial calibration, then a new initial calibration must be performed. Due to the large number of analytes present, allowances may be made for a RF that drifts out high, as long as there are no positive hits for that particular analyte in any of the associated samples. Any QC failures must be narrated in the LIMS for inclusion with the sample data.

10.4.2 Compare the retention time of each analyte in the calibration standard with the absolute retention time windows described in section 10.2.7. The center of the absolute retention time window for each analyte is its retention time in the mid-concentration standard analyzed during the initial calibration. Each analyte in each standard must fall within its respective retention time window. If not, the gas chromatographic system must either be adjusted so that a second analysis of the standard does result in all analytes falling within

their retention time windows, or a new initial calibration must be performed and new retention time windows established.

10.5 Preventive Maintenance

10.5.1 Preventive Maintenance

Routine preventive maintenance is performed to maintain GC system performance. This includes periodic replacement of injector septa, replacement of injector liner(s), and replacement of injector seals.

10.5.2 Other Maintenance

ECD detectors may become contaminated, requiring bake out at elevated temperatures, or repair by the manufacturer.

11. Data Evaluation, Calculations and Reporting

11.1 Quantitation of Aroclors

Per Method 8082, quantitation is based on the use of a minimum of 3 of the major peaks present in the analyte, although the use of 5 of the major peaks is recommended. Each of these peaks is individually calibrated with a minimum of five calibration points based on average response factors. The %RSD must meet the criteria of ≤20% for the ICAL. The five major peaks are calculated as described below. After individual calculation meets criteria, the average of the peaks selected for quantitation is used to determine the final concentration.

11.1.1 Aqueous samples

$$\text{Concentration } (\mu g/L) = \frac{C \times DF \times Vf \times 1000}{Vo}$$

where:

C = Extract concentration (µg/mL), **NOTE**: ng on column = ng/injection volume = ng/uL = ug/mL
DF = Dilution factor
Vf = Final extract volume (mL)
Vo = Sample volume (mL)

11.1.2 Soil/sediment samples

$$\text{Concentration } (\mu g/Kg, \text{ dry weight}) = \left[\frac{C \times DF \times Vf \times 1000}{W\ (gm)}\right] \div \%S$$

where:

C = Extract concentration (µg/mL), **NOTE**: ng on column = ng/injection volume = ng/uL = ug/mL
DF = Dilution factor
Vf = Final extract volume (mL)
W = Weight of the sample extracted (10g for high, 30g for low)
%S = Percent solids, as a decimal value

11.1.3 Reporting Results

11.1.3.1 After performing technical data review, validating that all QC criteria have been met and confirming all positive hits, the data report is sent electronically to the LIMS computer for generation of the client report. There are two levels of review of the data in the LIMS system prior to release of data. These reviews must be done by two separate individuals.

11.1.3.2 Reporting Results for PCBs in Caulk Samples

If the sample concentration as calculated above for any Aroclor is > 50ppm, the Client is contacted by a Customer Service Representative and these results are sent to the LIMS and reported to the Client.

If the sample concentration as calculated above for any Aroclor is < 50ppm, the sample is sent for re-extraction by Method 3540C (Alpha SOP/02-04).

12. Contingencies for Handling Out-of-Control Data or Unacceptable Data

Holding time exceedence and/or improper preservation are noted on the nonconformance report form.

Perform instrument maintenance as described throughout this SOP as needed when instrument calibration criteria are not met. Record all maintenance in the instrument logbook.

All batch and sample specific QC criteria outlined in Section 10 are evaluated by the analyst prior to approval of the data. When any QC criteria fail, the cause for the failure must be identified and corrected. This may include instrument recalibration followed by sample reanalysis, sample cleanup, or sample re-extraction. If it is determined that the failure is due to sample matrix effects, a project narrative report is written into the LIMS by the analyst for inclusion in the data report. If there is insufficient sample volume to perform the re-analysis for confirmation, this is also noted in the narrative and included in the client report.

13. Method Performance

13.1 Method Detection Limit Study (MDL) / Limit of Detection Study (LOD) / Limit of Quantitation (LOQ)

The laboratory follows the procedure to determine the MDL, LOD, and/or LOQ as outlined in Alpha SOP/08-05. These studies performed by the laboratory are maintained on file for review.

13.2 Demonstration of Capability Studies

Refer to Alpha SOP/08-12 for further information regarding IDC/DOC Generation.

13.2.1 Initial (IDC)

The analyst must make an initial, one-time, demonstration of the ability to generate acceptable accuracy and precision with this method, prior to the processing of any samples.

13.2.2 Continuing (DOC)

The analyst must make a continuing, annual, demonstration of the ability to generate acceptable accuracy and precision with this method.

14. Pollution Prevention and Waste Management

Refer to Alpha's Chemical Hygiene Plan and Waste Management and Disposal SOP for further pollution prevention and waste management information.

15. Referenced Documents

Chemical Hygiene Plan

SOP/08-05 MDL/LOD/LOQ Generation

SOP/08-12 IDC/DOC Generation

SOP/14-01 Waste Management and Disposal SOP

16. Attachments

Table 1: STANDARD SOLUTIONS

Table 2: QC ACCEPTANCE CRITERIA

TABLE 1

STANDARD SOLUTIONS

	Stock solution (ug/mL)	Level 6 (ug/mL)	Level 5 (ug/mL)	Level 4 (ug/mL)	Level 3 (ug/mL)	Level 2 (ug/mL)	Level 1 (ug/mL)	Spike Solution (ug/mL)	LCS Solution (ug/mL)
PCB 1016/1260 Mix									
Aroclor 1016	100	0.1	10	5	2.5	1.0	0.5	12.5	12.5
Aroclor 1260	100	0.1	10	5	2.5	1.0	0.5	12.5	12.5
Aroclors 1221, 1232, 1242, 1254, 1262, 1268	100	0.1	10	5	2.5	1.0	0.5		
Internal Standard									
1-Bromo-2-Nitrobenzene	5000	0.25	0.25	0.25	0.25	0.25	0.25		
Surrogates: Aroclor Analysis									
Tetrachloro-m-xylene	2.0	0.64	0.32	0.16	0.08	0.04	0.02		
Decachlorobiphenyl	2.0	1.28	0.64	0.32	0.16	0.08	0.04		

TABLE 2

QC ACCEPTANCE CRITERIA

	Aqueous		Soil	
Surrogate % Recovery: Aroclor Analysis	**Lower Control Limit**	**Upper Control Limit**	**Lower Control Limit**	**Upper Control Limit**
2,4,5,6-Tetrachloro-m-xylene	30%	150%	30%	150%
Decachlorobiphenyl	30%	150%	30%	150%

	Aqueous % Recovery		Soil % Recovery		Duplicate and/or MSD	
MS/MSD and LCS	**Lower Control Limit**	**Upper Control Limit**	**Lower Control Limit**	**Upper Control Limit**	**Aqueous RPD**	**Soil RPD**

Aroclor 1016	40%	140%	40%	140%	30%	50%
Aroclor 1260	40%	140%	40%	140%	30%	50%

Soxhlet Extraction

References: **EPA Method 3540C** SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA SW-846, Update III, 1997.

Analysis of Extractable Petroleum Hydrocarbon Compounds (EPH) in Aqueous and Soil/Sediment/Sludge Matrices, New Jersey Dept. of Environmental Protection Site Remediation Program, (version 1.1), October 2009 Revision 2

Method 8081, Reference: SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA SW-846, Update III, 1997.

Method 8082, Reference: SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA SW-846, Update III, 1997.

Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), Massachusetts DEP, ORS, BWSC. MADEP-EPH-04-1, Revision 1.1 May 2004.

CT-ETPH, Environmental Research Institute – University of Connecticut, March 1999.

Maine 4.1.25, Maine Health and Environmental Testing Laboratory, 09/06/1995.

EPA 8015B (Modified), SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA SW-846, Update III, December 1996

Extractable Petroleum Hydrocarbons Methodology, New Jersey Department of Environmental Protection, **NJDEP EPH** 10/08, Revision 2 October 2009.

1. Scope and Application

Matrices: This method is applicable to solids, soils, and sludges.

Definitions: Refer to Alpha Analytical Quality Manual.

This method is applicable to the extraction of semivolatile organic compounds from solids such as soils, sludges, and wastes. The Soxhlet extraction procedure ensures intimate contact of the sample matrix with the extraction solvent.

This method is applicable to the extraction of a variety of semivolatile organic compounds, which are then be analyzed by the appropriate chromatographic procedure(s).

The data report packages present the documentation of any method modification related to the samples tested. Depending upon the nature of the modification and the extent of intended use, the laboratory may be required to demonstrate that the modifications will produce equivalent results for the matrix. Approval of all method modifications is by one or more of the following laboratory personnel before performing the modification: Area Supervisor, Department Supervisor, Laboratory Director, or Quality Assurance Officer.

This method is restricted to use by or under the supervision of trained analysts. Each analyst must demonstrate the ability to generate acceptable results with this method by performing an initial demonstration of capability and completing the record of training.

After initial demonstration, ongoing demonstration is based on acceptable laboratory performance of at least a quarterly laboratory control sample or acceptable performance from an annual proficiency test sample. A major modification to this procedure requires demonstration of performance. The identification of major method modification requiring performance demonstration is directed by the Quality Assurance Officer and/or Laboratory Director on a case-by-case basis.

2. Summary of Method

Weighed samples, around 15 grams, are prepared for extraction by mixing the sample with anhydrous sodium sulfate until the sample is free flowing. The sample is then placed in a Soxhlet extractor using the appropriate solvent (Table 1). The extract is allowed to cool prior to proceeding with additional extract preparation steps.

Any water is removed from the sample extract by filtering through a powder funnel containing approximately 20g of anhydrous sodium sulfate. The extract is then concentrated and, as needed, exchanged into a solvent compatible with the cleanup or determinative step being employed.

2.1 Method Modifications from Reference

None.

3. Reporting Limits

Refer to analytical method SOPs for Reporting Limit information.

4. Interferences

4.1 The most common cause of contamination is from improperly cleaned glassware and lab supplies. All glassware and re-useable extraction equipment (i.e. spatulas) must be scrupulously cleaned, following the cleaning SOP.

4.2 Impurities in solvents and reagents may also yield artifacts and/or interferences that may compromise the results of sample analysis. All of these materials must be demonstrated to free from interferences under the conditions of extract preparation and analysis by preparing method blanks with each extraction batch. The same solvents and reagents are used for the method blank and the associated samples.

4.3 Phthalate esters contaminate many types of products used in the laboratory. Plastic materials must not contact the samples or extracts, as phthalates could be easily leached from the plastic. The exception is in the use of various pre-packed reagent cartridges (Florisil, Silica gel) used in the extract cleanup steps. Each new lot of cartridges is checked for contamination, and is monitored on an on-going basis through the analysis of method blanks.

4.4 Additional specific interference or contamination concerns are addressed in the various analytical SOPs

5. Health and Safety

The toxicity or carcinogenicity of each reagent and standard used in this method is not fully established; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. A reference file of material safety data sheets is available to all personnel involved in the chemical analysis. Additional references to laboratory safety are available in the Chemical Hygiene Plan.

All personnel handling environmental samples known to contain or to have been in contact with municipal waste must follow safety practices for handling known disease causative agents.

5.1 Lab coats, safety glasses, and gloves must be worn when handling samples, extracts, standards or solvents and when washing glassware.

5.2 All extract concentration steps must be performed in the extraction hoods. All solvent and extract transfers must also be handled in the hood.

5.3 All expired stock standards, working standards, and spent sample extracts must be placed into the waste bucket in the lab, for future disposal by the Hazardous Waste Manager. The container must be properly labeled with hazard warning labels indicating the container contents.

5.4 Bottles containing flammable solvents must be stored in the flammables cabinet or in the vented cabinets found under the hoods

5.5 All waste solvents must be transferred to the satellite waste storage containers located in the extraction lab. Separate containers are provided for chlorinated and non-chlorinated solvents and must be used accordingly. Under no circumstances are solvents to be poured down the sink drains.

5.6 Inspect all glassware prior to use. Do not use any glassware that is chipped, cracked or etched if it could present a safety hazard. Damaged glassware is put aside for repair, otherwise discard the piece.

6. Sample Collection, Preservation, Shipping and Handling

6.1 Sample Collection

Sample collection and preservation requirements are described in the various analytical method SOPs.

6.2 Sample Preservation

None.

6.3 Sample Shipping

No specific requirements.

6.4 Sample Handling

All soil samples are stored, refrigerated, in the Custody Sample Bank. Samples are taken by the analyst immediately prior to sample extraction. The analyst must take custody of the samples by signing them out utilizing the LIMS.

All samples must be fully homogenized prior to taking the sample aliquot, as described in Section 10.1.2. After the sample aliquot is removed, the samples are returned to the Sample Bank and placed in the sample return refrigerator. Custody of the samples is transferred back by signing them back in utilizing the LIMS.

After the extraction is performed, the sample extract is stored in a stoppered Concentrator tube before being transferred to a crimp-top or screw cap vial for analysis and long-term storage (See Work Form Cleanup and Vialing 02-50).

7. Equipment and Supplies

7.1 Small Soxhlet Extractor: 45/50, with 250mL or 300mL round bottom flask.

7.2 Refrigerated Water Recirculator: Allows solvents to cool in the condenser while extracting.

7.3 Analytical Balance: Capable of weighing to 0.1g.

7.4 Heating Mantle: Rheostat controlled.

7.5 Heating Plate: Rheostat controlled.

7.6 Spatulas: Stainless steel and Teflon.

7.7 Beakers: 250mL, 400mL.

7.8 Aluminum weighing dishes: VWR Cat #25433-089.

7.9 Mortar and Pestle: Capable of reducing particle size to <1mm.

7.10 Kuderna-Danish (KD) apparatus: Assemble by attaching the Concentrator Tube to the Evaporation Flask using the Plastic clip. Add the Macro column to the Evaporation Flask. The Micro Snyder Column is attached directly to the Concentrator Tube using the Plastic Clip.

7.10.1 Concentrator tube: 25mL, graduated and calibrated. A ground-glass stopper is used to prevent evaporation of extracts.

7.10.2 Evaporation flask: 500mL.

7.10.3 Snyder column: Three-ball macro.

7.10.4 Snyder column: Micro.

7.10.5 Plastic clamps

7.11 Water Bath: Heated, capable of temperature control (± 5°C). The bath must be used in a hood.

7.12 Boiling Chips: Solvent-extracted, approximately 10/40 mesh (silicon carbide).

7.13 Autopipettes: 250, 1000µL

7.14 Brady labeling system: Thermal label generator

7.15 Powder Funnel.

7.16 Glass wool: SUPELCO, silane treated.

7.17 N-EVAP: Organomation; utilized for micro blow down.

7.18 Turbo Vap II: Auto-concentrator; Caliper Life Sciences.

7.19 Zymark Tubes: 50mL or 200mL

7.20 Gauze Pad: 2"x2" 12 ply, Used as a blank matrix for wipe samples

7.21 Autovial-Syringless Filter Device- 0.45um PTFE Membrane

8. Reagents and Standards

Reagent grade inorganic chemicals are used in all tests. All reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades are used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

8.1 Reagent Water: All references to water in this method refer to reagent water from Alpha's DI water treatment system.

8.2 Sodium Sulfate (Na_2SO_4): Granular anhydrous; purified by baking at 400°C for 4 hours in a shallow tray. Store in closed glass containers. All references to sodium sulfate in this method refer to this prepared reagent.

8.3 Methylene Chloride: Pesticide quality or equivalent. No expiration date listed.

8.4 Hexane: Pesticide quality or equivalent. No expiration date listed.

8.5 Acetone: Pesticide quality or equivalent. No expiration date listed.

8.6 1:1 Acetone/Methylene Chloride: Using a 2000mL Graduated Cylinder add 2000mL of Acetone and 2000mL of Methylene Chloride to a 4 Liter amber bottle and record preparation.

8.7 Nitrogen Gas: Reagent grade, used to purge and pressurize the extraction cell and as the blow-down gas in the Turbovap II auto-concentrator units and the N-EVAP.

8.8 Spiking Solutions: The various surrogate and LCS/MS spiking solutions used in the extraction steps are listed in Table 2. The preparation and expiration dates of these solutions are described in the analytical SOPs.

9. Quality Control

The laboratory must maintain records to document the quality of data that is generated. Ongoing data quality checks are compared with established performance criteria to determine if the results of analyses meet the performance characteristics of the method.

Each extraction batch contains various QC samples used to ensure the validity of the sample results. The particular QC elements performed for a given extraction batch are determined by the requirements of the determinative method. The purpose and definition of the QC samples performed are listed below. The specific QC requirements of the analytical methods are listed in Table 2.

9.1 Blank

Blanks, or method blanks, are measured aliquots of clean matrix (typically sodium sulfate for soil extractions) that are treated identically to the associated samples. Surrogates are added, and the blanks are carried through all stages of the sample extraction, concentration, and cleanup procedures. Blanks serve to ensure that no systematic contamination exists. A blank is extracted with each batch or 20 or less samples.

9.2 Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD)

LCS samples are measured aliquots of clean matrix (typically sodium sulfate for soil extractions) that are spiked with a solution containing known amounts of target compounds, in addition to the surrogate solution. The LCS is carried through all stages of the sample extraction, concentration, and cleanup procedures. LCS samples serve as batch specific quantitative checks of the extraction. An LCS is extracted with each batch of 20 or less samples.

An LCSD is performed in addition to an LCS for most methods, as well as in lieu of the MS/MSD or Duplicate when there is insufficient sample volume available. The required solutions and volumes are listed in Table 2.

9.3 Initial Calibration Verification (ICV)

Not Applicable.

9.4 Continuing Calibration Verification (CCV)

Not Applicable.

9.5 Matrix Spike / Matrix Spike Duplicate (MS/MSD)

MS and MSDs are field samples spiked with a known quantity of the target analyte(s). They are prepared by taking additional sample aliquots, and adding the appropriate amounts of surrogate and spiking solutions. The MS/MSD are carried through all stages of the sample extraction, concentration, and cleanup procedures. MS samples serve as a measure of extraction accuracy, by allowing the comparison of the found amount(s) of target analyte(s) with the spiked amount(s). An MS/MSD set also allows for the calculation of the extraction precision, by comparing the results of the two samples.

9.6 Laboratory Duplicate

Duplicates are laboratory selected replicate samples, prepared by taking an additional sample aliquot of a sample. The duplicate is carried through all stages of the sample extraction, concentration, and cleanup procedures. Duplicates serve as a measure of the extraction precision, by comparing the results of the sample and duplicate.

9.7 Method-specific Quality Control Samples

9.7.1 Surrogate

Surrogates are compounds specified by the analytical method that are added to all samples and QC samples prior to beginning the extraction process. Surrogate recoveries are calculated and serve as a sample specific quantitative check of the extraction. The various spiking solutions are prepared according to the directions found in the analytical SOPs. The required solutions and volumes used are listed in Table 2.

9.8 Method Sequence

See Section 10.

10. Procedure

10.1 Sample Preparation and Extraction

10.1.1 Before starting the extraction process, each soil or sediment sample should be visually inspected. If a sample contains a significant amount of free water, notify your supervisor. Record this in the Electronic Laboratory Notebook (ELN). Throughout the extraction process samples are labeled following Work Instruction WI/02-03, Labeling and Generating Work Groups and Batches.

Any artifacts (rocks, leaves, sticks, or similar materials) are not typically considered part of the soil sample and should not be included. If necessary, transfer these artifacts to another container prior to homogenizing the sample. Note the presence of sample artifacts in the ELN. Gummy, fibrous, or oily materials not amenable to grinding should be cut, shredded, or otherwise reduced in size to allow mixing and maximum exposure of the sample surfaces for the extraction. The addition of anhydrous sodium sulfate to the sample (1:1) may make the mixture amenable to grinding. If this needs to be done, weigh the sample prior to addition of the sodium sulfate.

10.1.2 Homogenize the sample well by mixing the entire contents of the sample container. In instances where the sample container is filled to the top and packed in tightly, the entire sample contents are emptied into a larger glass container (400mL glass beaker) and homogenized. If this is difficult due to sample matrix, describe the non-homogeneity in the ELN. Place the 300mL beaker or aluminum weighing dish (if the sample is a PCB) onto the tared balance. Weigh 14-16 grams of sample and record in the ELN. Add approximately 15g anhydrous sodium sulfate to the beaker and mix with a spatula until a free flowing powder is obtained. For samples that contain higher amounts of water or organic matter, larger amounts of sodium sulfate may be required. Certain samples may require grinding with a mortar and pestle to achieve the free flowing consistency.

10.1.2.1 For wipe (matrix 7) samples: Use the entire sample, pour it directly into the soxhlet set-up (see 10.1.3 for details on soxhlet extractor set-up).

10.1.3 See Work Instruction **WI**/02-03 for proper glassware labeling procedures. For each QC sample and extraction sample pour approximately 200mL of the extraction solvent (Section Table 1) into a 250mL or 300mL round bottom flask containing one or two clean boiling chips. .Attach the flask to the extractor. Plug the extractor siphon tube with a wad of glass wool using a stainless steel spatula. Add approximately 10-15 grams of sodium sulfate to the extractor to hold the glass wool in place. Note, do not clog the siphon tube with sodium sulfate. Using a stainless steel spatula transfer the sample to the soxhlet extractor.

10.1.4 Using the auto pipette, add the appropriate volume(s) of surrogate and spike solution(s) listed in Table 2 to the samples and QC samples. The spiking procedure must be witnessed by another chemist and recorded into the ELN. Attach the soxhlet set-up to the condensers and turn on the hot plates to the calibrated mark. Turn on the chiller serving the soxhlets being extracted. Chiller temp should be pre-set at 13C.

10.1.5 Extract the sample for 16 – 24 hours making sure to achieve four to six cycles/hour.

10.1.6 Allow the extract to cool after the extraction is complete.

10.1.7 After the extract has cooled, drain the solvent from the extractor into the round bottom flask. Tip the Soxhlet to empty. Rinse the Soxhlet with solvent if any residual sample is present. Place the Soxhlet in the hood to allow solvent to evaporate. Once dry, the samples are disposed of in the waste barrels.

10.2 Sample Concentration: KD Technique

10.2.1 Assemble a KD apparatus for each sample and QC by attaching the 25 mL concentrator tube to the bottom of the 500 mL KD flask. Use a blue clip to help insure that they do not separate. Place a boiling stone in the bottom of the concentrator tube. Assemble a powder funnel and place on top of the flask. Drain the sample through this powder funnel and rinse the round bottom 3 times with DCM, pour this rinseate into the KD as well. After the powder funnel is done draining remove and discard it. Alternatively, the sample may be filtered directly into a Zymark Tube for Turbovap concentration(See Section 10.3).

10.2.2 Attach a three-ball Snyder column to the top of the flask. Place the KD apparatus on a hot water bath (heated to approximately 75°C for samples extracted in Methylene Chloride and 95°C for samples extracted in Hexane) so that the concentrator tube is partially immersed in the hot water, and so that the entire lower rounded surface of the flask is bathed in hot water vapor. Adjust the position of the apparatus as required to complete the concentration in 30 to 40 minutes. At the proper rate of distillation, the balls in the column will actively chatter, but the chambers will not flood with solvent. Periodically rinse the internal walls of the concentrator tubes with DCM.

10.2.3 If a Hexane exchange is required (see Table 1), add 30 to 35mL of hexane), when the sample volume reaches approximately 10mLs. Add the hexane to the top of the Snyder column while the concentrator is still on the water bath. Continue with the concentration until the extract volume is reduced to below 10mL. Periodically rinse the internal walls of the synder column with Hexane. Remember to switch the extract to the higher temperature bath after the addition of hexane.

10.2.4 Remove the KD apparatus from the water bath. Rinse the flask and its lower ground glass joint with 1 to 2 mL of acetone to remove any moisture from the outside of the glassware. Allow to cool for 15 minutes. Disassemble the KD apparatus. Move the label from the K-D Flask to the concentrator tube (See WI/02-03).

10.2.5 Place the Concentrator tube on the N-EVAP. The N-EVAP is set at 37°C for samples extracted in Methylene Chloride and 65 °C for samples extracted in Hexane with the nitrogen flow at 5 - 7. Samples remain on N-EVAP until they are reduced to 1mL. Exception: ABN(625,8270,PAH) extracts that have a visual brownish tint or darker, or have sediment in the extract will require filtration through a 0.45um PTFE Autovial. This will eliminate some of the interferences associated with the analysis. While concentrating the extract using the N-evap, once the extract volume reaches 3-5mL remove the sample and transfer to the 0.45um PTFE autovial. Using the supplied PTFE plunger, push the extract through the filter into another 25mL concentrator tube. Remove the plunger from the vial and rinse the membrane with 2-3mL of Methylene Chloride and collect in the

same vial. Place the extract back on the N-evap for final concentration to 1.0mL. Note the use of the autovial in the ELN. Repeat the procedure for all ABN samples that meet the visual filtering requirement. Note that all associated QC samples are required to be filtered as well.

10.2.6 **Pesticide Extracts:** In the concentrator tube, adjust final volume to 10 mL with hexane.

10.2.7 The extract is now ready for sample cleanup or vialing (See Table 1). Refer to the relevant Clean-up SOP or proceed with vialing the extract. See vialing Form(02-50).

10.3 Alternate Concentration Technique

The equipment used for alternate sample concentration is the Zymark TurboVap II, which is a self-contained water bath and nitrogen blow-down. It is equipped with sensors to allow for automatic shutdown when the extract volume goes below 1mL. This technique is generally used for concentration of TPH samples.

10.3.1 The TurboVap is set at 37°C for samples extracted in Methylene Chloride. The nitrogen pressure is set to 10-15 psi and the endpoint concentration is set to 'Sensor'. The Zymark tube is labeled with the sample I.D.

10.3.2 Assemble a powder funnel and place on top of the Zymark tube. Drain the sample through this powder funnel and rinse the round bottom 3 times with DCM, pour this rinseate into the Zymark tube as well. After the powder funnel is done draining remove and discard it.

10.3.3 Place the labeled Zymark tube containing sample into the TurboVap II concentration unit. Start the nitrogen blow-down by pressing the button on the front panel of the unit.

10.3.4 When the concentration is complete, the nitrogen stream will be automatically shut off. The light on the front panel will flash, and the instrument will beep. Remove the tube from the Zymark concentrator; the final extract volume is 1mL. Refer to Form 02-50 for vialing instructions or the appropriate SOP for cleaning procedures.

10.4 Instrument Maintenance

10.4.1 Refrigeration Re-circulator

The Refrigeration Re-circulator should be checked periodically to insure that it is running correctly and that the level of reagent water is constant with manufactures recommendation.

.

10.4.2 Zymark Turbovap II Concentrators

10.4.2.1 Maintain the level of the water bath by adding water daily to fill. Routinely discard visually dirty water and refill with clean water. This will extend the life of the extract level sensors in the bath.

10.4.2.2 Keep unit clean. Avoid solvent spills on or around unit. Clean periodically with a damp cloth.

10.4.3 Analytical Balance

10.4.3.1 All balances are calibrated and serviced every six months by an instrument service company. All service records are kept on file.

10.4.3.2 Keep balances clean. Brush off any sample spills immediately. Keep the balance doors closed and the balance turned off when not in use.

10.4.4 Water Bath

10.4.4.1 The water bath should be kept full at all times. Add reagent water as necessary.

10.4.4.2 Keep unit clean. Avoid solvent spills on or around unit. Clean periodically with a damp cloth.

11. Data Evaluation, Calculations and Reporting

Not Applicable.

12. Contingencies for Handling Out-of-Control Data or Unacceptable Data

Holding time exceedence and improper preservation are noted on the nonconformance report form.

When analysis of samples indicates possible extraction problems, such as poor surrogate recoveries, poor LCS/MS/MSD recoveries, or suspected contamination in blanks or samples, re-extractions are required. Depending on the particular failure, the re-extraction may be of a specific sample or the entire extraction batch.

The analyst that determines the need for re-extraction must fill out a sample re-extract request form. This form notes the reason for the re-extraction request along with any special requirements, and the date and time that the re-extract is needed. Re-extraction request forms are maintained on file to help track the cause for re-extractions, and to be used as a tool in improving systems to minimize the need for re-extractions.

Depending on the results of the re-extraction, the first, second, or both sets of results may be reported to the client, along with a narrative report detailing the problems encountered and the resolution.

13. Method Performance

13.1 Method Detection Limit Study (MDL) / Limit of Detection Study (LOD) / Limit of Quantitation (LOQ)

The laboratory follows the procedure to determine the MDL, LOD, and/or LOQ as outlined in Alpha SOP/08-05. These studies performed by the laboratory are maintained on file for review.

13.2 Demonstration of Capability Studies

Refer to Alpha SOP/08-12 for further information regarding IDC/DOC Generation.

13.2.1 Initial (IDC)

The analyst must make an initial, one-time, demonstration of the ability to generate acceptable accuracy and precision with this method, prior to the processing of any samples.

13.2.2 Continuing (DOC)

The analyst must make a continuing, annual, demonstration of the ability to generate acceptable accuracy and precision with this method.

14. Pollution Prevention and Waste Management

Refer to Alpha's Chemical Hygiene Plan and Waste Management and Disposal SOP for further pollution prevention and waste management information.

15. Referenced Documents

Chemical Hygiene Plan

SOP/08-05 MDL/LOD/LOQ Generation

SOP/08-12 IDC/DOC Generation

SOP/14-01 Waste Management and Disposal SOP

WI/02-03 Labeling and Generating Work Groups and Batches

WI/11-02 LIMS Electronic Laboratory Notebook Procedure

16. Attachments

Table 1 – Specific Extraction Conditions for Various Determinative Methods

Table 2 – Soil Extraction Guide

Table 1

Specific Extraction Conditions for Various Determinative Methods

LIMS Product Code	Extraction Solvent	Exchange Solvent Required	Typical Final Volume	Appropriate Cleanup Technique
8082	1:1 DCM/Acetone	hexane	1 mL	Sulfuric acid
8081	1:1 DCM/Acetone	hexane	10 mL	Florisil
8270	1:1 DCM/Acetone	---	1 mL	---
TPH *	DCM	---	1 mL	---
MA EPH	DCM	hexane	1 mL	Silica gel Fractionation
NJ EPH	DCM	hexane	1 mL	Silica gel Fractionation
ETPH	DCM	---	1 mL	Silica gel

***TPH includes the following LIMS Products: TPH-DRO and TPH-DRO-D**

Table 2

Soil Extraction Guide

LIMS Product Code	QC	Solvent	Surrogate Solution	LCS/LCSD MS/MSD Solution
8270	SB, LCS, LCSD	DCM/ACE	1mL ABN	1mL MCP ABN
MCP 8270	SB, LCS, LCSD	DCM/ACE	1mL ABN	1mL MCP ABN
PAH	SB, LCS, LCSD	DCM/ACE	1mL ABN	1mL MCP ABN
MCP PAH	SB, LCS, LCSD	DCM/ACE	1mL ABN	1mL MCP ABN
PAH-Low	SB, LCS, LCSD	DCM/ACE	1mL ABN	1mL MCP PAH-Low
MCP PAH-Low	SB, LCS, LCSD	DCM/ACE	1mL ABN	1mL MCP PAH-Low
8081/ MCP-8081	SB, LCS, LCSD	DCM/ACE	1mL PEST	1mL Pest
NJ/NYTCL-8081	SB, LCS, LCSD	DCM/ACE	250µL PEST	250µL Pest
PCB	SB, LCS, LCSD	DCM/ACE	250µL PEST	250µL PCB
MCP PCB	SB, LCS, LCSD	DCM/ACE	250µL PEST	250µL PCB
EPH	SB, LCS, LCSD	DCM	1mL EPH	1mL EPH
NJ EPH	SB,LCS,LCSD	DCM	1mL NJEPH	1mL NJEPH
EPH / PAH-L	SB, LCS, LCSD	DCM	1mL EPH	1mL EPH
EPH/TPH	SB, LCS, LCSD	DCM	1mL EPH	1mL EPH
ETPH/ ME4125	SB, LCS, MS, Dup	DCM	1mL DRO	1mL ETPH
TPH *	SB, LCS, Dup	DCM	1mL DRO	1mL ETPH

*** TPH includes the following LIMS Products: TPH-DRO and TPH-DRO-D**

APPENDIX B

ANALYTICAL METHOD SENSITIVITY
AND PROJECT CRITERIA TABLE

Analytical Method Sensitivity and Project Criteria Table

Quality Control Information (incl. MDL's & RL's) provided by Alpha Analytical, Inc. of Westborough, MA

EPH - Soil							
Analytes	**MDL mg/Kg**	**RL mg/Kg**	**LCS/MS % Rec**	**MS/MSD % RPD**	**MCP METHOD 1 S-1/GW-1**	**MCP METHOD 1 S-1/GW-2**	**MCP METHOD 1 S-1/GW-3**
Naphthalene	0.0850	0.34	40-140%	< 25%	4	40	500
2-Methyl-Naphthalene	0.0800	0.34	40-140%	< 25%	0.7	80	300
Acenphthalene	0.104	0.34	40-140%	< 25%	1	600	10
Acenaphthene	0.0940	0.34	40-140%	< 25%	4	1000	1000
Fluorene	0.0860	0.34	40-140%	< 25%	1000	1000	1000
Phenanthrene	0.0750	0.34	40-140%	< 25%	10	500	500
Anthracene	0.106	0.34	40-140%	< 25%	1000	1000	1000
Fluoranthene	0.0790	0.34	40-140%	< 25%	1000	1000	1000
Pyrene	0.0900	0.34	40-140%	< 25%	1000	1000	1000
Benzo(a)Anthracene	0.0850	0.34	40-140%	< 25%	7	7	7
Chrysene	0.0840	0.34	40-140%	< 25%	70	70	70
Benzo(b)Fluoranthene	0.0750	0.34	40-140%	< 25%	7	7	7
Benzo(k)Fluoranthene	0.0970	0.34	40-140%	< 25%	70	70	70
Benzo(a)Pyrene	0.108	0.34	40-140%	< 25%	2	2	2
Indeno(1,2,3-cd)Pyrene	0.0610	0.34	40-140%	< 25%	7	7	7
Dibenzo(a,h)Anthracene	0.0690	0.34	40-140%	< 25%	0.7	0.7	0.7
Benzo(g,h,i)perylene	0.0700	0.34	40-140%	< 25%	1000	1000	1000
c9-c18	N/A	6.67	40-140%	< 25%	1000	1000	1000
c19-c369	N/A	6.67	40-140%	< 25%	3000	3000	3000
c11-c22	N/A	6.67	40-140%	< 25%	1000	1000	1000

Surrogates	**% Recovery**
1-Chloro-Octadecane	40-140%
2-Fluorobiphenyl	40-140%
2-Bromonaphthalene	40-140%
o-Terphenyl	40-140%

EPH - Liquid							
Analytes	**MDL ug/L**	**RL ug/L**	**LCS/MS % Rec**	**MS/MSD % RPD**	**MCP METHOD 1 GW-1**	**MCP METHOD 1 GW-2**	**MCP METHOD 1 GW-3**
Naphthalene	1.37	10	40-140%	< 25%	140	1000	20000
2-Methyl-Naphthalene	1.37	10	40-140%	< 25%	10	2000	20000
Acenphthalene	1.24	10	40-140%	< 25%	30	10000	40
Acenaphthene	1.46	10	40-140%	< 25%	20	-	6000
Fluorene	1.38	10	40-140%	< 25%	30	-	40
Phenanthrene	1.15	10	40-140%	< 25%	40	-	10000
Anthracene	1.22	10	40-140%	< 25%	60	-	30
Fluoranthene	1.13	10	40-140%	< 25%	90	-	200
Pyrene	1.07	10	40-140%	< 25%	80	-	20
Benzo(a)Anthracene	1.16	10	40-140%	< 25%	1	-	1000
Chrysene	1.15	10	40-140%	< 25%	2	-	70
Benzo(b)Fluoranthene	2.40	10	40-140%	< 25%	1	-	400
Benzo(k)Fluoranthene	1.66	10	40-140%	< 25%	1	-	100
Benzo(a)Pyrene	1.54	10	40-140%	< 25%	0.2	-	500
Indeno(1,2,3-cd)Pyrene	1.96	10	40-140%	< 25%	0.5	-	100
Dibenzo(a,h)Anthracene	1.74	10	40-140%	< 25%	0.5	-	40
Benzo(g,h,i)perylene	2.04	10	40-140%	< 25%	50	-	20
c9-c18	N/A	100	40-140%	< 25%	700	5000	50000
c19-c369	N/A	100	40-140%	< 25%	14000	-	50000
c11-c22	N/A	100	40-140%	< 25%	200	50000	5000

Surrogates	**% Recovery**
1-Chloro-Octadecane	40-140%
2-Fluorobiphenyl	40-140%
2-Bromonaphthalene	40-140%
o-Terphenyl	40-140%

EPH/PAH-SIM - Soil							
Analytes	MDL mg/Kg	RL mg/Kg	LCS/MS % Rec	MS/MSD % RPD	MCP METHOD 1 S-1/GW-1	MCP METHOD 1 S-1/GW-2	MCP METHOD 1 S-1/GW-3
2-Methyl-Naphthalene	0.00827	0.027	40-140%	< 25%	0.7	80	300
Acenaphthene	0.00791	0.027	40-140%	< 25%	4	1000	1000
Acenphthalene	0.00815	0.027	40-140%	< 25%	1	600	10
Anthracene	0.00753	0.027	40-140%	< 25%	1000	1000	1000
Benzo(a)Anthracene	0.00627	0.027	40-140%	< 25%	7	7	7
Benzo(a)Pyrene	0.00669	0.027	40-140%	< 25%	2	2	2
Benzo(b)Fluoranthene	0.00767	0.027	40-140%	< 25%	7	7	7
Benzo(g,h,i)perylene	0.00864	0.027	40-140%	< 25%	1000	1000	1000
Benzo(k)Fluoranthene	0.00724	0.027	40-140%	< 25%	70	70	70
Chrysene	0.00853	0.027	40-140%	< 25%	70	70	70
Dibenzo(a,h)Anthracene	0.00838	0.027	40-140%	< 25%	0.7	0.7	0.7
Fluoranthene	0.00791	0.027	40-140%	< 25%	1000	1000	1000
Fluorene	0.00859	0.027	40-140%	< 25%	1000	1000	1000
Indeno(1,2,3-cd)Pyrene	0.00808	0.027	40-140%	< 25%	7	7	7
Naphthalene	0.00747	0.027	40-140%	< 25%	4	40	500
Phenanthrene	0.00767	0.027	40-140%	< 25%	10	500	500
Pyrene	0.00832	0.027	40-140%	< 25%	1000	1000	1000

Surrogates	% Recovery
o-Terphenyl	40-140%

EPH/PAH SIM - Liquid							
Analytes	MDL ug/L	RL ug/L	LCS/MS % Rec	MS/MSD % RPD	MCP METHOD 1 GW-1	MCP METHOD 1 GW-2	MCP METHOD 1 GW-3
2-Methyl-Naphthalene	0.108	0.4	40-140%	< 25%	10	2000	20000
Acenaphthene	0.125	0.4	40-140%	< 25%	20	-	6000
Acenphthalene	0.124	0.4	40-140%	< 25%	30	10000	40
Anthracene	0.116	0.4	40-140%	< 25%	60	-	30
Benzo(a)Anthracene	0.113	0.4	40-140%	< 25%	1	-	1000
Benzo(a)Pyrene	0.129	0.4	40-140%	< 25%	0.2	-	500
Benzo(b)Fluoranthene	0.115	0.4	40-140%	< 25%	1	-	400
Benzo(g,h,i)perylene	0.138	0.4	40-140%	< 25%	50	-	20
Benzo(k)Fluoranthene	0.120	0.4	40-140%	< 25%	1	-	100
Chrysene	0.131	0.4	40-140%	< 25%	2	-	70
Dibenzo(a,h)Anthracene	0.118	0.4	40-140%	< 25%	0.5	-	40
Fluoranthene	0.120	0.4	40-140%	< 25%	90	-	200
Fluorene	0.122	0.4	40-140%	< 25%	30	-	40
Indeno(1,2,3-cd)Pyrene	0.121	0.4	40-140%	< 25%	0.5	-	100
Naphthalene	0.134	0.4	40-140%	< 25%	140	1000	20000
Phenanthrene	0.125	0.4	40-140%	< 25%	40	-	10000
Pyrene	0.121	0.4	40-140%	< 25%	80	-	20

Surrogates	% Recovery
o-Terphenyl	40-140%

VPH - Soil							
Analytes	**MDL mg/Kg**	**RL mg/Kg**	**LCS/MS % Rec / RPD**	**MS/MSD %Rec/RPD**	**MCP METHOD 1 S-1/GW-1**	**MCP METHOD 1 S-1/GW-2**	**MCP METHOD 1 S-1/GW-3**
Methyl tert butyl ether	0.0173	0.05	70-130 % /< 25%	70-130 % /< 50%	0.1	100	100
Benzene	0.0109	0.1	70-130 % /< 25%	70-130 % /< 50%	2	30	30
Toluene	0.00747	0.1	70-130 % /< 25%	70-130 % /< 50%	30	500	500
Ethylbenzene	0.0116	0.1	70-130 % /< 25%	70-130 % /< 50%	40	500	500
p/m-Xylene	0.0223	0.1	70-130 % /< 25%	70-130 % /< 50%	400	300	500
o-Xylene	0.00920	0.1	70-130 % /< 25%	70-130 % /< 50%	400	300	500
1,2,4-Trimethylbenzene	0.0210	0.1	70-130 % /< 25%	70-130 % /< 50%	-	-	-
Naphthalene	0.0189	0.5	70-130 % /< 25%	70-130 % /< 50%	4	40	500
C9-C10 Aromatics	N/A	2.5	70-130 % /< 25%	70-130 % /< 50%	100	100	100
C5-C8 Aliphatics	N/A	2.5	70-130 % /< 25%	70-130 % /< 50%	100	100	100
C9-C12 Aliphatics	N/A	2.5	70-130 % /< 25%	70-130 % /< 50%	1000	1000	1000

Surrogates	**% Recovery**
2,5-Dibromotoluene	70-130%

VPH - Liquid							
Analytes	**MDL ug/L**	**RL ug/L**	**LCS/MS % Rec / RPD**	**MS/MSD %Rec/RPD**	**MCP METHOD 1 GW-1**	**MCP METHOD 1 GW-2**	**MCP METHOD 1 GW-3**
Methyl tert butyl ether	0.280	3	70-130 % /< 25%	70-130 % /< 50%	70	50000	50000
Benzene	0.214	2	70-130 % /< 25%	70-130 % /< 50%	5	2000	10000
Toluene	0.15	2	70-130 % /< 25%	70-130 % /< 50%	1000	50000	40000
Ethylbenzene	0.232	2	70-130 % /< 25%	70-130 % /< 50%	700	20000	5000
p/m-Xylene	0.445	2	70-130 % /< 25%	70-130 % /< 50%	10000	9000	5000
o-Xylene	0.279	2	70-130 % /< 25%	70-130 % /< 50%	10000	9000	5000
1,2,4-Trimethylbenzene	0.226	2	70-130 % /< 25%	70-130 % /< 50%	-	-	-
Naphthalene	0.377	10	70-130 % /< 25%	70-130 % /< 50%	140	1000	20000
C9-C10 Aromatics	N/A	50	70-130 % /< 25%	70-130 % /< 50%	200	7000	50000
C5-C8 Aliphatics	N/A	50	70-130 % /< 25%	70-130 % /< 50%	300	3000	50000
C9-C12 Aliphatics	N/A	50	70-130 % /< 25%	70-130 % /< 50%	700	5000	50000

Surrogates	**% Recovery**
2,5-Dibromotoluene	70-130%

VOCs in Soil - Low EPA 8260B							
Analytes	MDL mg/Kg	RL mg/Kg	LCS/MS % Rec	MS/MSD % RPD	MCP METHOD 1 S-1/GW-1	MCP METHOD 1 S-1/GW-2	MCP METHOD 1 S-1/GW-3
Acetone	3.23E-03	0.01		< 30%	6	50	400
Acrylonitrile	3.76E-04	0.01		< 30%	-	-	-
Benzene	1.29E-04	0.001	66-142%	< 30%	2	30	30
Bromobenzene	2.01E-04	0.005		< 30%	-	-	-
Bromochloromethane	3.02E-04	0.005		< 30%	-	-	-
Bromodichloromethane	2.29E-04	0.001		< 30%	0.1	0.1	20
Bromoform	4.15E-04	0.004		< 30%	0.1	1	200
Bromomethane	6.48E-04	0.002		< 30%	0.5	0.5	30
Carbon disulfide	1.49E-04	0.01		< 30%	-	-	-
Carbon tetrachloride	1.90E-04	0.001		< 30%	10	5	10
Chlorobenzene	3.48E-04	0.001	60-133%	< 30%	1	3	100
Chlorodibromomethane	3.08E-04	0.001		< 30%	-	-	-
Chloroethane	4.38E-04	0.002		< 30%	-	-	-
Chloroform	3.70E-04	0.0015		< 30%	0.4	0.3	400
Chloromethane	7.83E-04	0.005		< 30%	-	-	-
cis-1,2-Dichloroethene	2.56E-04	0.001		< 30%	0.3	0.4	100
cis-1,3-Dichloropropene	2.67E-04	0.001		< 30%	0.01	0.4	9
Dibromomethane	4.35E-04	0.01		< 30%	-	-	-
Dichlorodifluoromethane	3.17E-04	0.01		< 30%	-	-	-
Ethyl benzene	1.50E-04	0.001		< 30%	40	500	500
ethyl ether	3.80E-04	0.005		< 30%	-	-	-
Ethyl-methacrylate	6.39E-04	0.001		< 30%	-	-	-
Hexachlorobutadiene	4.22E-04	0.005		< 30%	6	6	6
Isopropylbenzene	1.68E-04	0.001		< 30%	-	-	-
Methylene chloride	8.16E-04	0.002		< 30%	0.1	20	200
Methyl-tert-butyl ether	4.87E-04	0.01		< 30%	0.1	100	100
Naphthalene	7.70E-04	0.005		< 30%	4	40	500
n-Butylbenzene	1.98E-04	0.001		< 30%	-	-	-
n-Propylbenzene	1.88E-04	0.001		< 30%	-	-	-
o-Xylene	2.71E-04	0.002		< 30%	400	300	500
p/m-Xylene	3.23E-04	0.002		< 30%	400	300	500
p-Isopropyltoluene	1.91E-04	0.001		< 30%	-	-	-
sec-Butylbenzene	2.06E-04	0.001		< 30%	-	-	-
Styrene	5.52E-04	0.002		< 30%	3	4	30
tert-Butylbenzene	5.61E-04	0.005		< 30%	-	-	-
Tetrachloroethene	1.60E-04	0.001		< 30%	1	10	30
Tetrahydrofuran	3.40E-04	0.02		< 30%	-	-	-
Toluene	1.75E-04	0.0015	59-139%	< 30%	30	500	500
trans-1,2-Dichloroethene	1.78E-04	0.0015		< 30%	1	1	500
trans-1,3-Dichloropropene	1.43E-04	0.001		< 30%	0.01	0.4	9
trans-1,4-Dichloro-2-butene	1.48E-03	0.005		< 30%	-	-	-
Trichloroethene	1.87E-04	0.001	62-137%	< 30%	0.3	2	90
Trichlorofluoromethane	2.31E-04	0.005		< 30%	-	-	-
Vinyl Acetate	8.85E-04	0.01		< 30%	-	-	-
Vinyl chloride	3.61E-04	0.002		< 30%	0.6	0.6	0.6
1,1-Dichloroethane	2.06E-04	0.01		< 30%	0.4	5	500
1,1-Dichloroethene	1.78E-04	0.001	59-172%	< 30%	3	40	500
1,1-Dichloropropene	4.56E-04	0.005		< 30%	-	-	-
1,1,1-Trichloroethane	1.93E-04	0.001		< 30%	30	500	500
1,1,2-Trichloroethane	2.48E-04	0.0015		< 30%	0.1	2	4
1,1,1,2-Tetrachloroethane	3.18E-04	0.001		< 30%	0.1	0.1	7
1,1,2,2-Tetrachloroethane	2.40E-04	0.001		< 30%	0.005	0.02	0.8
1,2-Dibromo-3-chloropropane	8.37E-04	0.005		< 30%	-	-	-
1,2-Dibromoethane	2.11E-04	0.004		< 30%	0.1	0.1	0.7
1,2-Dichlorobenzene	3.64E-04	0.005		< 30%	9	30	300
1,2-Dichloroethane	2.07E-04	0.001		< 30%	0.1	0.1	10
1,2-Dichloropropane	2.33E-04	0.0035		< 30%	0.1	0.1	10
1,2,3-Trichlorobenzene	4.03E-04	0.005		< 30%	-	-	-
1,2,3-Trichloropropane	3.87E-04	0.01		< 30%	-	-	-
1,2,4-Trichlorobenzene	7.90E-04	0.005		< 30%	2	70	500
1,2,4-Trimethylbenzene	5.73E-04	0.005		< 30%	-	-	-
1,3-Dichlorobenzene	2.25E-04	0.005		< 30%	1	40	100
1,3-Dichloropropane	1.73E-04	0.005		< 30%	-	-	-
1,3,5-Trimethylbenzene	1.64E-04	0.005		< 30%	-	-	-
1,4-Dichlorobenzene	3.01E-04	0.005		< 30%	0.7	4	50
1,4-Dichloro-2-butane	1.20E-04	0.01		< 30%	-	-	-
2-Butanone	5.00E-04	0.01		< 30%	4	50	400
2-Chlorotoluene	3.13E-04	0.005		< 30%	-	-	-
2,2-Dichloropropene	7.67E-04	0.005		< 30%	-	-	-
4-Chlorotoluene	2.08E-04	0.005		< 30%	-	-	-
4-methyl-2-pentanone	4.54E-04	0.01		< 30%	0.4	50	400

Non-Standard Compounds							
1,2,4,5-tetramethylbenzene	9.05E-04	0.001		< 30%	-	-	-
1,4-Dioxane	1.74E-02	0.1		< 30%	0.2	6	70
2-Chloroethylvinyl ether	6.16E-04	0.005		< 30%	-	-	-
2-Hexanone	3.96E-04	0.01		< 30%	-	-	-
4-ethyltoluene	4.85E-04	0.001		< 30%	-	-	-
Acrolein	3.01E-03	0.025		< 30%	-	-	-
cyclohexane	6.25E-04	0.005		< 30%	-	-	-
Diisopropyl ether	1.49E-04	0.004		< 30%	-	-	-
Ethyl Acetate	1.28E-04	0.001		< 30%	-	-	-
Ethyl-tert-butyl ether	4.23E-04	0.004		< 30%	-	-	-
Freon-113	2.15E-04	0.02		< 30%	-	-	-
Halothane	1.50E-04	0.005		< 30%	-	-	-
Iodomethane	1.27E-03	0.01		< 30%	-	-	-
Methyl acetate	4.66E-04	0.01		< 30%	-	-	-
methyl cyclohexane	6.99E-04	0.0035		< 30%	-	-	-
p-diethylbenzene	1.00E-03	0.001		< 30%	-	-	-
Tert-Butyl Alcohol	6.42E-04	0.06		< 30%	-	-	-
Tertiary-amyl methyl ether	5.76E-04	0.004		< 30%	-	-	-

Surrogates	% Recovery
dibromofluoromethane	70-130%
1,2-dichloroethane-d4	70-130%
toluene-d8	70-130%
4-bromofluorobenzene	70-130%

VOCs in Soil - High EPA 8260B							
Analytes	MDL* ug/Kg	RL* ug/Kg	LCS/MS % Rec	MS/MSD % RPD	MCP METHOD 1 S-1/GW-1	MCP METHOD 1 S-1/GW-2	MCP METHOD 1 S-1/GW-3
Acetone	1.62E-01	0.5		< 30%	6	50	400
Acrylonitrile	6.01E-02	0.2		< 30%	-	-	-
Benzene	9.62E-03	0.05	66-142%	< 30%	2	30	30
Bromobenzene	1.66E-02	0.25		< 30%	-	-	-
Bromochloromethane	1.79E-02	0.25		< 30%	-	-	-
Bromodichloromethane	1.92E-02	0.05		< 30%	0.1	0.1	20
Bromoform	5.58E-02	0.2		< 30%	0.1	1	200
Bromomethane	2.91E-02	0.1		< 30%	0.5	0.5	30
Carbon disulfide	1.28E-02	0.5		< 30%	-	-	-
Carbon tetrachloride	1.39E-02	0.05		< 30%	10	5	10
Chlorobenzene	1.23E-02	0.05	60-133%	< 30%	1	3	100
Chlorodibromomethane	1.60E-02	0.05		< 30%	-	-	-
Chloroethane	2.20E-02	0.1		< 30%	-	-	-
Chloroform	1.62E-02	0.075		< 30%	0.4	0.3	400
Chloromethane	3.92E-02	0.25		< 30%	-	-	-
cis-1,2-Dichloroethene	1.28E-02	0.05		< 30%	0.3	0.4	100
cis-1,3-Dichloropropene	1.34E-02	0.05		< 30%	0.01	0.4	9
Dibromomethane	2.17E-02	0.5		< 30%	-	-	-
Dichlorodifluoromethane	8.66E-02	0.5		< 30%	-	-	-
Ethyl benzene	1.90E-02	0.05		< 30%	40	500	500
Ethyl ether	1.80E-02	0.25		< 30%	-	-	-
Ethyl methacrylate	7.36E-02	0.5		< 30%	-	-	-
Hexachlorobutadiene	2.11E-02	0.25		< 30%	6	6	6
Isopropylbenzene	9.66E-03	0.05		< 30%	-	-	-
Methylene chloride	2.28E-02	0.5		< 30%	0.1	20	200
Methyl-tert-butyl ether	5.71E-02	0.1		< 30%	0.1	100	100
Naphthalene	3.30E-02	0.25		< 30%	4	40	500
n-Butylbenzene	4.11E-02	0.05		< 30%	-	-	-
n-Propylbenzene	9.99E-03	0.05		< 30%	-	-	-
o-Xylene	1.17E-02	0.1		< 30%	400	300	500
p/m-Xylene	2.85E-02	0.1		< 30%	400	300	500
p-Isopropyltoluene	9.75E-03	0.05		< 30%	-	-	-
sec-Butylbenzene	1.06E-02	0.05		< 30%	-	-	-
Styrene	3.07E-02	0.1		< 30%	3	4	30
tert-Butylbenzene	2.80E-02	0.25		< 30%	-	-	-
Tetrachloroethene	1.45E-02	0.05		< 30%	1	10	30
Tetrahydrofuran	5.64E-02	1		< 30%	-	-	-
Toluene	9.49E-03	0.075	59-139%	< 30%	30	500	500

trans-1,2-Dichloroethene	1.50E-02	0.075		< 30%	1	1	500
trans-1,3-Dichloropropene	1.68E-02	0.05		< 30%	0.01	0.4	9
trans-1,4-Dichloro-2-butene	7.39E-02	0.25		< 30%	-	-	-
Trichloroethene	1.41E-02	0.05	62-137%	< 30%	0.3	2	90
Trichlorofluoromethane	2.18E-02	0.25		< 30%	-	-	-
Vinyl acetate	6.83E-02	0.5		< 30%	-	-	-
Vinyl chloride	2.77E-02	0.1		< 30%	0.6	0.6	0.6
1,1-Dichloroethane	1.18E-02	0.075		< 30%	0.4	5	500
1,1-Dichloroethene	1.66E-02	0.05	59-172%	< 30%	3	40	500
1,1-Dichloropropene	2.28E-02	0.25		< 30%	-	-	-
1,1,1-Trichloroethane	1.02E-02	0.05		< 30%	30	500	500
1,1,2-Trichloroethane	2.05E-02	0.075		< 30%	0.1	2	4
1,1,1,2-Tetrachloroethane	1.64E-02	0.05		< 30%	0.1	0.1	7
1,1,2,2-Tetrachloroethane	1.45E-02	0.05		< 30%	0.005	0.02	0.8
1,2-Dibromo-3-chloropropane	7.41E-02	0.25		< 30%	-	-	-
1,2-Dibromoethane	1.07E-02	0.2		< 30%	0.1	0.1	0.7
1,2-Dichlorobenzene	1.82E-02	0.25		< 30%	9	30	300
1,2-Dichloroethane	1.47E-02	0.05		< 30%	0.1	0.1	10
1,2-Dichloropropane	1.26E-02	0.18		< 30%	0.1	0.1	10
1,2,3-Trichlorobenzene	4.62E-02	0.25		< 30%	-	-	-
1,2,3-Trichloropropane	2.09E-02	0.5		< 30%	-	-	-
1,2,4-Trichlorobenzene	4.35E-02	0.25		< 30%	2	70	500
1,2,4-Trimethylbenzene	7.63E-02	0.25		< 30%	-	-	-
1,3-Dichlorobenzene	1.88E-02	0.25		< 30%	1	40	100
1,3-Dichloropropane	1.17E-02	0.25		< 30%	-	-	-
1,3,5-Trimethylbenzene	6.86E-02	0.25		< 30%	-	-	-
1,4-Dichlorobenzene	1.53E-02	0.25		< 30%	0.7	4	50
1,4-Dichlorobutane	3.92E-02	0.5		< 30%	-	-	-
2-Butanone	1.94E-01	0.5		< 30%	4	50	400
2-Chlorotoluene	1.56E-02	0.25		< 30%	-	-	-
2,2-Dichloropropane	6.06E-02	0.25		< 30%	-	-	-
4-Chlorotoluene	1.42E-02	0.25		< 30%	-	-	-
4-Methyl-2-pentanone	8.84E-02	0.5		< 30%	0.4	50	400
2-Hexanone	6.30E-02	0.5		< 30%	-	-	-
Non-Standard Compounds							
1,4-Dioxane	8.70E-01	5		< 30%	0.2	6	70
2-Chloroethylvinyl ether	1.56E-02	1		< 30%	-	-	-
4-ethyltoluene	2.43E-02	0.05		< 30%	-	-	-
Acrolein	1.50E-01	1.2		< 30%	-	-	-
Diisopropyl ether	4.77E-02	0.2		< 30%	-	-	-
Ethyl-Tert-Butyl-Ether	4.38E-02	0.2		< 30%	-	-	-
Freon-113	4.66E-02	0.2		< 30%	-	-	-
Iodomethane	6.33E-02	0.5		< 30%	-	-	-
Tert-Butyl Alcohol	6.25E-02	0.5		< 30%	-	-	-
Tertiary-Amyl Methyl Ether	5.05E-02	0.2		< 30%	-	-	-

Surrogates	**% Recovery**
dibromofluoromethane	70-130%
1,2-dichloroethane-d4	70-130%
toluene-d8	70-130%
4-bromofluorobenzene	70-130%
Surrogates	**% Recovery**
dibromofluoromethane	70-130%
1,2-dichloroethane-d4	70-130%
toluene-d8	70-130%
4-bromofluorobenzene	70-130%

* Multiplier for Medium/High-Level VOC MDLs and RLs is 50x Low-Level MDLs and RLs

SVOCs in soil EPA 8270C							
Analytes	MDL mg/Kg	RL mg/Kg	LCS/MS % Rec	MS/MSD % RPD	MCP METHOD 1 S-1/GW-1	MCP METHOD 1 S-1/GW-2	MCP METHOD 1 S-1/GW-3
1,2,4,5-Tetrachlorobenzene	0.110	0.333	40-140%	< 50%	-	-	-
1,2,4-Trichlorobenzene	0.099	0.333	38-107%	< 50%	2	70	500
1,2-Dichlorobenzene	0.077	0.333	40-140%	< 50%	9	30	300
1,3-Dichlorobenzene	0.104	0.333	40-140%	< 50%	1	40	100
1,4-Dichlorobenzene	0.068	0.333	28-104%	< 50%	0.7	4	50
1-Methylnaphthalene	0.124	0.333	40-140%	< 50%	-	-	-
2,4,5-Trichlorophenol	0.092	0.333	30-130%	< 50%	-	-	-
2,4,6-Trichlorophenol	0.104	0.333	30-130%	< 50%	-	-	-
2,4-Dichlorophenol	0.237	0.67	30-130%	< 50%	-	-	-
2,4-Dimethylphenol	0.190	0.333	30-130%	< 50%	-	-	-
2,4-Dinitrophenol	1.240	3	4-130%	< 50%	-	-	-
2,4-Dinitrotoluene	0.105	0.333	28-89%	< 50%	-	-	-
2,6-Dinitrotoluene	0.117	0.333	40-140%	< 50%	-	-	-
2-Chloronaphthalene	0.105	0.4	40-140%	< 50%	-	-	-
2-Chlorophenol	0.118	0.4	25-102%	< 50%	-	-	-
2-Methylnaphthalene	0.113	0.333	40-140%	< 50%	0.7	80	300
2-Methylphenol	0.287	0.4	30-130%	< 50%	-	-	-
2-Nitroaniline	0.075	0.333	40-140%	< 50%	-	-	-
2-Nitrophenol	0.129	1.3	30-130%	< 50%	-	-	-
3,3'-Dichlorobenzidine	0.126	0.67	30-140%	< 50%	-	-	-
3-Methylphenol/4-Methyphen	0.185	0.4	30-130%	< 50%	-	-	-
3-Nitroaniline	0.161	0.333	40-140%	< 50%	-	-	-
4,6-Dinitro-o-cresol	0.149	1.3	30-130%	< 50%	-	-	-
4-Bromophenyl phenyl ether	0.102	0.333	40-140%	< 50%	-	-	-
4-Chloroaniline	0.170	0.333	30-140%	< 50%	-	-	-
4-Chlorophenyl phenyl	0.092	0.333	40-140%	< 50%	-	-	-
4-Nitroaniline	0.116	0.47	40-140%	< 50%	-	-	-
4-Nitrophenol	0.441	0.67	11-114%	< 50%	-	-	-
Acenaphthene	0.103	0.333	31-137%	< 50%	4	1000	1000
Acenaphthylene	0.211	0.333	40-140%	< 50%	1	600	10
Acetophenone	0.105	1.3	40-140%	< 50%	-	-	-
Aniline	0.173	0.67	30-140%	< 50%	-	-	-
Anthracene	0.115	0.333	40-140%	< 50%	1000	1000	1000
Azobenzene	0.114	0.333	40-140%	< 50%	-	-	-
Benzidine	0.543	3.3	30-140%	< 50%	-	-	-
Benzo(a)anthracene	0.070	0.333	40-140%	< 50%	7	7	7
Benzo(a)pyrene	0.087	0.333	40-140%	< 50%	2	2	2
Benzo(b)fluoranthene	0.082	0.333	40-140%	< 50%	7	7	7
Benzo(ghi)perylene	0.144	0.333	40-140%	< 50%	1000	1000	1000
Benzo(k)fluoranthene	0.078	0.333	40-140%	< 50%	70	70	70
Benzoic acid	1.349	3.3	40-140%	< 50%	-	-	-
Benzyl alcohol	0.091	0.67	40-140%	< 50%	-	-	-
Biphenyl	0.095	0.333	40-140%	< 50%	-	-	-
Bis(2-chloroethoxy)methane	0.098	0.333	40-140%	< 50%	-	-	-
Bis(2-chloroethyl)ether	0.103	0.333	40-140%	< 50%	-	-	-
Bis(2-chloroisopropyl)ether	0.107	0.333	40-140%	< 50%	-	-	-
Bis(2-ethylhexyl)phthalate	0.179	0.67	40-140%	< 50%	-	-	-
Butyl benzyl phthalate	0.114	0.333	40-140%	< 50%	-	-	-
Carbazole	0.089	0.333	40-140%	< 50%	-	-	-
Chrysene	0.100	0.333	40-140%	< 50%	70	70	70
Dibenzo(a,h)anthracene	0.116	0.2	40-140%	< 50%	0.7	0.7	0.7
Dibenzofuran	0.100	0.333	40-140%	< 50%	-	-	-
Diethyl phthalate	0.092	0.333	40-140%	< 50%	-	-	-
Dimethyl phthalate	0.099	0.333	40-140%	< 50%	-	-	-
Di-n-butylphthalate	0.117	0.333	40-140%	< 50%	-	-	-
Di-n-octylphthalate	0.072	0.333	40-140%	< 50%	-	-	-
Fluoranthene	0.096	0.333	40-140%	< 50%	1000	1000	1000
Fluorene	0.093	0.333	40-140%	< 50%	1000	1000	1000
Hexachlorobenzene	0.092	0.333	40-140%	< 50%	-	-	-
Hexachlorobutadiene	0.144	0.67	40-140%	< 50%	6	6	6
Hexachlorocyclopentadiene	0.358	0.67	40-140%	< 50%	-	-	-
Hexachloroethane	0.119	0.333	40-140%	< 50%	-	-	-
Indeno(1,2,3-cd)pyrene	0.129	0.333	40-140%	< 50%	7	7	7
Isophorone	0.085	0.333	40-140%	< 50%	-	-	-
Naphthalene	0.102	0.333	40-140%	< 50%	4	40	500
NDPA/DPA	0.233	1	40-140%	< 50%	-	-	-
Nitrobenzene	0.113	0.333	40-140%	< 50%	-	-	-
n-Nitrosodimethylamine	0.104	3.3	30-140%	< 50%	-	-	-
n-Nitrosodi-n-propylamine	0.131	0.333	41-126%	< 50%	-	-	-
p-Chloro-m-cresol	0.059	0.333	26-103%	< 50%	-	-	-
Pentachlorophenol	0.252	1.3	17-109%	< 50%	-	-	-
Phenanthrene	0.097	0.333	40-140%	< 50%	10	500	500

Phenol	0.119	0.47	28-90%	< 50%	-	-	-
Pyrene	0.085	0.333	35-142%	< 50%	1000	1000	1000
Pyridine	0.405	3.3	30-140%	< 50%	-	-	-

Surrogates	% Recovery
2-Fluorophenol	25-120%
Phenol-d6	10-120%
Nitrobenzene-d5	23-120%
2-Fluorobiphenyl	30-120%
2,4,6-Tribromophenol	0-136%
4-Terphenyl-d14	18-120%

SVOCs in liquid EPA 8270C / EPA 625							
Analytes	MDL ug/L	RL ug/L	LCS/MS % Rec	MS/MSD % RPD	MCP METHOD 1 GW-1	MCP METHOD 1 GW-2	MCP METHOD 1 GW-3
1,2,4,5-Tetrachlorobenzene	1.85	20	40-140%	< 30%	-	-	-
1,2,4-Trichlorobenzene	1.92	5	39-98%	< 30%	70	2000	50000
1,2-Dichlorobenzene	1.78	5	40-140%	< 30%	600	2000	2000
1,3-Dichlorobenzene	1.41	5	40-140%	< 30%	40	2000	50000
1,4-Dichlorobenzene	1.55	5	36-97%	< 30%	5	200	8000
2,4,5-Trichlorophenol	1.48	5	30-130%	< 30%	-	-	-
2,4,6-Trichlorophenol	1.63	5	30-130%	< 30%	-	-	-
2,4-Dichlorophenol	1.60	10	30-130%	< 30%	-	-	-
2,4-Dimethylphenol	1.15	10	30-130%	< 30%	-	-	-
2,4-Dinitrophenol	7.77	30	30-130%	< 30%	-	-	-
2,4-Dinitrotoluene	1.64	6	24-96%	< 30%	-	-	-
2,6-Dinitrotoluene	1.54	5	40-140%	< 30%	-	-	-
2-Chloronaphthalene	1.53	6	40-140%	< 30%	-	-	-
2-Chlorophenol	1.59	6	27-123%	< 30%	-	-	-
2-Methylnaphthalene	1.57	5	40-140%	< 30%	10	2000	20000
2-Methylphenol	2.35	6	30-130%	< 30%	-	-	-
2-Nitroaniline	1.61	5		< 30%	-	-	-
2-Nitrophenol	1.74	20	30-130%	< 30%	-	-	-
3,3'-Dichlorobenzidine	4.78	50	40-140%	< 30%	-	-	-
3-Methylphenol/4-Methylpher	2.03	6	30-130%	< 30%	-	-	-
3-Nitroaniline	1.91	5		< 30%	-	-	-
4,6-Dinitro-o-cresol	7.82	20		< 30%	-	-	-
4-Bromophenyl phenyl ether	1.03	5	40-140%	< 30%	-	-	-
4-Chloroaniline	1.64	5	40-140%	< 30%	-	-	-
4-Chlorophenyl phenyl ether	1.21	5	40-140%	< 30%	-	-	-
4-Nitroaniline	2.05	7		< 30%	-	-	-
4-Nitrophenol	1.78	10	10-80%	< 30%	-	-	-
Acenaphthene	1.31	5	46-118%	< 30%	20	-	6000
Acenaphthylene	1.40	5	40-140%	< 30%	30	10000	40
Acetophenone	3.35	20	40-140%	< 30%	-	-	-
Aniline	0.992	20	40-140%	< 30%	-	-	-
Anthracene	1.25	5	40-140%	< 30%	60	-	30
Azobenzene	1.11	5	40-140%	< 30%	-	-	-
Benzidine	11.9	50		< 30%	-	-	-
Benzo(a)anthracene	0.661	5	40-140%	< 30%	1	-	1000
Benzo(a)pyrene	0.869	5	40-140%	< 30%	0.2	-	500
Benzo(b)fluoranthene	0.891	5	40-140%	< 30%	1	-	400
Benzo(ghi)perylene	1.45	5	40-140%	< 30%	50	-	20
Benzo(k)fluoranthene	0.805	5	40-140%	< 30%	1	-	100
Benzoic acid	4.52	50		< 30%	-	-	-
Benzyl Alcohol	2.85	10		< 30%	-	-	-
Biphenyl	1.60	5		< 30%	-	-	-
Bis(2-chloroethoxy)methane	1.67	5	40-140%	< 30%	-	-	-
Bis(2-chloroethyl)ether	1.35	5	40-140%	< 30%	-	-	-
Bis(2-chloroisopropyl)ether	1.64	5	40-140%	< 30%	-	-	-
Bis(2-ethylhexyl)phthalate	0.834	5	40-140%	< 30%	-	-	-
Butyl benzyl phthlate	1.73	5	40-140%	< 30%	-	-	-
Carbazole	1.41	5		< 30%	-	-	-
Chrysene	0.817	5	40-140%	< 30%	2	-	70
Dibenzo(a,h)anthracene	0.886	5	40-140%	< 30%	0.5	-	40
Dibenzofuran	1.39	5	40-140%	< 30%	-	-	-
Diethyl phthalate	0.95	5	40-140%	< 30%	-	-	-
Dimethyl phthalate	1.05	5	40-140%	< 30%	-	-	-
Di-n-butylphthalate	1.05	5	40-140%	< 30%	-	-	-
Di-n-octylphthalate	0.852	5	40-140%	< 30%	-	-	-
Fluoranthene	1.16	5	40-140%	< 30%	90	-	200
Fluorene	1.11	5	40-140%	< 30%	30	-	40
Hexachlorobenzene	1.31	5	40-140%	< 30%	-	-	-
Hexachlorobutadiene	2.09	10	40-140%	< 30%	0.6	1	3000

Hexachlorocyclopentadiene	6.51	30	40-140%	< 30%	-	-	-
Hexachloroethane	1.91	5	40-140%	< 30%	-	-	-
Indeno(1,2,3-cd)pyrene	1.27	7	40-140%	< 30%	0.5	-	100
Isophorone	1.90	5	40-140%	< 30%	-	-	-
Naphthalene	1.49	5	40-140%	< 30%	140	1000	20000
NDPA/DPA	4.54	15		< 30%	-	-	-
Nitrobenzene	1.61	5	40-140%	< 30%	-	-	-
n-Nitrosodimethylamine	1.02	50	40-140%	< 30%	-	-	-
n-Nitrosodi-n-propylamine	1.95	5	40-140%	< 30%	-	-	-
p-Chloro-m-cresol	1.34	5	23-97%	< 30%	-	-	-
Pentachlorophenol	4.91	15	9-103%	< 30%	-	-	-
Phenanthrene	0.868	5	40-140%	< 30%	40	-	10000
Phenol	0.786	7	12-110%	< 30%	-	-	-
Pyrene	1.26	5	26-127%	< 30%	80	-	20
Pyridine	10.0	50		< 30%	-	-	-

Surrogates	**% Recovery**
2-Fluorophenol	21-120%
Phenol-d6	10-120%
Nitrobenzene-d5	23-120%
2-Fluorobiphenyl	15-120%
2,4,6-Tribromophenol	10-120%
4-Terphenyl-d14	33-120%

SVOCs in Soil EPA 8270CSIM							
PAHs - Analytes	MDL mg/Kg	RL mg/Kg	LCS/MS % Rec	MS/MSD % RPD	MCP METHOD 1 S-1/GW-1	MCP METHOD 1 S-1/GW-2	MCP METHOD 1 S-1/GW-3
Acenaphthene	2.81E-03	0.013	31-137%	< 50%	4	1000	1000
Acenaphthylene	2.94E-03	0.013		< 50%	1	600	10
Anthracene	2.63E-03	0.013	40-140%	< 50%	1000	1000	1000
Benzo (a) anthracene	2.16E-03	0.013		< 50%	7	7	7
Benzo (a) pyrene	3.68E-03	0.013		< 50%	2	2	2
Benzo (b) fluoranthene	2.91E-03	0.013		< 50%	7	7	7
Benzo (ghi) perylene	2.91E-03	0.013		< 50%	1000	1000	1000
Benzo (k) fluoranthene	1.33E-02	0.013		< 50%	70	70	70
Chrysene	3.22E-03	0.013		< 50%	70	70	70
Dibenzo (a,h) anthracene	2.31E-03	0.013		< 50%	0.7	0.7	0.7
Fluoranthene	1.98E-03	0.013	40-140%	< 50%	1000	1000	1000
Fluorene	3.45E-03	0.013		< 50%	1000	1000	1000
Indeno (1,2,3-cd) pyrene	2.87E-03	0.013		< 50%	7	7	7
Naphthalene	3.77E-03	0.013		< 50%	4	40	500
Phenanthrene	2.95E-03	0.013		< 50%	10	500	500
Pyrene	2.81E-03	0.013	35-142%	< 50%	1000	1000	1000
1-Methylnaphthalene	1.99E-03	0.013		< 50%	-	-	-
2-Chloronaphthalene	3.10E-03	0.013	40-140%	< 50%	-	-	-
2-Methylnaphthalene	4.09E-03	0.013		< 50%	0.7	80	300
Additional - Analytes							
Hexachlorobutadiene	2.81E-03	0.033		< 50%	6	6	6
Pentachlorophenol	5.33E-02	0.053	17-109%	< 50%	-	-	-
Hexachlorobenzene	2.78E-03	0.053		< 50%	-	-	-
Hexachloroethane	3.00E-03	0.053		< 50%	-	-	-

Surrogates	% Recovery
2-Fluorophenol	25-120%
Phenol-d6	10-120%
Nitrobenzene-d5	23-120%
2-Fluorobiphenyl	30-120%
2,4,6-Tribromophenol	19-120%
4-Terphenyl-d14	18-120%

SVOCs in Liquid EPA 8270CSIM							
PAHs - Analytes	MDL ug/L	RL ug/L	LCS/MS % Rec	MS/MSD % RPD	MCP METHOD 1 GW-1	MCP METHOD 1 GW-2	MCP METHOD 1 GW-3
Acenaphthene	0.064	0.2	37-111%	< 40%	20	-	6000
Acenaphthylene	0.05	0.2		< 40%	30	10000	40
Anthracene	0.063	0.2	40-140%	< 40%	60	-	30
Benzo (a) anthracene	0.057	0.2		< 40%	1	-	1000
Benzo (a) pyrene	0.069	0.2		< 40%	0.2	-	500
Benzo (b) fluoranthene	0.071	0.2		< 40%	1	-	400
Benzo (ghi) perylene	0.07	0.2		< 40%	50	-	20
Benzo (k) fluoranthene	0.068	0.2		< 40%	1	-	100
Chrysene	0.049	0.2		< 40%	2	-	70
Dibenzo (a,h) anthracene	0.073	0.2		< 40%	0.5	-	40
Fluoranthene	0.043	0.2	40-140%	< 40%	90	-	200
Fluorene	0.057	0.2		< 40%	30	-	40
Indeno (1,2,3-cd) pyrene	0.079	0.2		< 40%	0.5	-	100
Naphthalene	0.064	0.2		< 40%	140	1000	20000
Phenanthrene	0.064	0.2		< 40%	40	-	10000
Pyrene	0.057	0.2	26-127%	< 40%	80	-	20
1-Methylnaphthalene	0.056	0.2		< 40%	-	-	-
2-Chloronaphthalene	0.066	0.2	40-140%	< 40%	-	-	-
2-Methylnaphthalene	0.06	0.2		< 40%	10	2000	20000
Additional - Analytes							
Hexachlorobutadiene	0.071	0.5		< 40%	0.6	1	3000
Pentachlorophenol	0.187	0.8	9-103%	< 40%	-	-	-
Hexachlorobenzene	0.0139	0.8		< 40%	-	-	-
Hexachloroethane	0.065	0.8		< 40%	-	-	-

Surrogates	% Recovery
2-Fluorophenol	21-120%
Phenol-d6	10-120%
Nitrobenzene-d5	23-120%
2-Fluorobiphenyl	15-120%
2,4,6-Tribromophenol	10-120%
4-Terphenyl-d14	33-120%

PCBs in soil EPA 8082							
Analytes	**MDL mg/Kg**	**RL mg/Kg**	**LCS/MS % Rec**	**MS/MSD % RPD**	**MCP METHOD 1 S-1/GW-1**	**MCP METHOD 1 S-1/GW-2**	**MCP METHOD 1 S-1/GW-3**
Aroclor 1016	6.58E-03	0.0333	40-140%	< 50%	2	2	2
Aroclor 1221	1.00E-02	0.0333		< 50%	2	2	2
Aroclor 1232	7.07E-03	0.0333		< 50%	2	2	2
Aroclor 1242	6.32E-03	0.0333		< 50%	2	2	2
Aroclor 1248	4.03E-03	0.0333		< 50%	2	2	2
Aroclor 1254	5.25E-03	0.0333		< 50%	2	2	2
Aroclor 1260	5.78E-03	0.0333	40-140%	< 50%	2	2	2
Aroclor 1262	2.46E-03	0.0333		< 50%	2	2	2
Aroclor 1268	4.83E-03	0.0333		< 50%	2	2	2

Surrogate(s)	% Recovery
2,4,5,6-Tetrachloro-m-xylene	30-150%
Decachlorobiphenyl	30-150%

PCB's in Liquid EPA 8082							
Analytes	**MDL ug/L**	**RL ug/L**	**LCS/MS % Rec**	**MS/MSD % RPD**	**MCP METHOD 1 GW-1**	**MCP METHOD 1 GW-2**	**MCP METHOD 1 GW-3**
Aroclor 1016	0.0660	0.25	40-140%	< 30%	0.5	5	10
Aroclor 1221	0.0580	0.25		< 30%	0.5	5	10
Aroclor 1232	0.0370	0.25		< 30%	0.5	5	10
Aroclor 1242	0.0720	0.25		< 30%	0.5	5	10
Aroclor 1248	0.0670	0.25		< 30%	0.5	5	10
Aroclor 1254	0.0410	0.25		< 30%	0.5	5	10
Aroclor 1260	0.0380	0.25	40-140%	< 30%	0.5	5	10
Aroclor 1262	0.0350	0.25		< 30%	0.5	5	10
Aroclor 1268	0.0290	0.25		< 30%	0.5	5	10

Surrogate(s)	% Recovery
2,4,5,6-Tetrachloro-m-xylene	30-150%
Decachlorobiphenyl	30-150%

Trace Metals Soil - EPA 6010B, 7471A							
Element	MDL mg/Kg	RL mg/Kg	LCS/MS % Rec	MSD RPD	MCP METHOD 1 S-1/GW-1	MCP METHOD 1 S-1/GW-2	MCP METHOD 1 S-1/GW-3
Aluminum	0.891	4.0	75-125%	< 35%	-	-	-
Antimony	0.383	2.0	75-125%	< 35%	20	20	20
Arsenic	0.0768	0.4	75-125%	< 35%	20	20	20
Barium	0.0338	0.4	75-125%	< 35%	1000	1000	1000
Beryllium	0.0140	0.2	75-125%	< 35%	100	100	100
Boron	0.326	0.8	75-125%	< 35%	-	-	-
Cadmium	0.0254	0.2	75-125%	< 35%	2	2	2
Calcium	0.916	4.0	75-125%	< 35%	-	-	-
Chromium	0.0812	0.4	75-125%	< 35%	30	30	30
Cobalt	0.0859	0.8	75-125%	< 35%	-	-	-
Copper	0.186	0.4	75-125%	< 35%	-	-	-
Iron	0.692	2.0	75-125%	< 35%	-	-	-
Lead	0.112	2	75-125%	< 35%	300	300	300
Magnesium	1.798	4.0	75-125%	< 35%	-	-	-
Manganese	0.0405	0.4	75-125%	< 35%	-	-	-
Mercury	0.0176	0.08	80-120%	< 20%	20	20	20
Molybdenum	0.174	2.0	75-125%	< 35%	-	-	-
Nickel	0.111	1.0	75-125%	< 35%	20	20	20
Potassium	31.9	100	75-125%	< 35%	-	-	-
Selenium	0.131	0.8	75-125%	< 35%	400	400	400
Silicon	5.57	20	75-125%	< 35%	-	-	-
Silver	0.0656	0.28	75-125%	< 35%	100	100	100
Sodium	31.8	80	75-125%	< 35%	-	-	-
Strontium	0.0614	0.4	75-125%	< 35%	-	-	-
Thallium	0.249	0.8	75-125%	< 35%	8	8	8
Tin	0.177	2.0	75-125%	< 35%	-	-	-
Titanium	0.0757	0.4	75-125%	< 35%	-	-	-
Vanadium	0.0892	0.4	75-125%	< 35%	600	600	600
Zinc	0.216	2.0	75-125%	< 35%	2500	2500	2500

Trace Metals Liquid - EPA 6010B, 7470A							
Element	MDL ug/L	RL ug/L	LCS % Rec	MS/MSD %Rec/RPD	MCP METHOD 1 GW-1	MCP METHOD 1 GW-2	MCP METHOD 1 GW-3
Aluminum	22.277	100	80-120%	75-125%/ <20%	-	-	-
Antimony	9.563	50	80-120%	75-125%/ <20%	6	-	8000
Arsenic	1.920	5	80-120%	75-125%/ <20%	10	-	900
Barium	0.845	10	80-120%	75-125%/ <20%	2000	-	50000
Beryllium	0.350	5	80-120%	75-125%/ <20%	4	-	200
Boron	8.154	20	80-120%	75-125%/ <20%	-	-	-
Cadmium	0.635	5	80-120%	75-125%/ <20%	5	-	4
Calcium	22.890	100	80-120%	75-125%/ <20%	-	-	-
Chromium	2.030	10	80-120%	75-125%/ <20%	100	-	300
Cobalt	2.147	20	80-120%	75-125%/ <20%	-	-	-
Copper	4.642	10	80-120%	75-125%/ <20%	-	-	-
Iron	17.300	50	80-120%	75-125%/ <20%	-	-	-
Lead	2.802	10	80-120%	75-125%/ <20%	15	-	10
Magnesium	44.941	100	80-120%	75-125%/ <20%	-	-	-
Manganese	1.013	10	80-120%	75-125%/ <20%	-	-	-
Mercury	0.069	0.2	80-120%	70-130% / < 20%	2	-	20
Molybdenum	4.343	50	80-120%	75-125%/ <20%	-	-	-
Nickel	2.787	25	80-120%	75-125%/ <20%	100	-	200
Potassium	798.578	2500	80-120%	75-125%/ <20%	-	-	-
Selenium	3.277	10	80-120%	75-125%/ <20%	50	-	100
Silicon	139.321	500	80-120%	75-125%/ <20%	-	-	-
Silver	1.640	7	80-120%	75-125%/ <20%	100	-	7
Sodium	795.200	2000	80-120%	75-125%/ <20%	-	-	-
Strontium	1.536	10	80-120%	75-125%/ <20%	-	-	-
Thallium	6.234	20	80-120%	75-125%/ <20%	2	-	3000
Tin	4.431	50	80-120%	75-125%/ <20%	-	-	-
Titanium	1.891	10	80-120%	75-125%/ <20%	-	-	-
Vanadium	2.229	10	80-120%	75-125%/ <20%	30	-	4000
Zinc	5.409	50	80-120%	75-125%/ <20%			

APPENDIX C

QAPP PROJECT PERSONNEL LOG SHEET

QAPP PROJECT PERSONNEL LOG SHEET

By signing this QAPP Project Personnel Log Sheet, you are verifying that you have read the attached QAPP and agree to follow the procedures described therein.

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

Name:_____

Company:_____

Signature:_____Date:_____

APPENDIX D

ASPHALT SAMPLING PROGRAM ANALYTICAL RESULTS

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

July 25, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension
Client Job Number:
Project Number: 2012096.01-A
Laboratory Work Order Number: 13G0742

Enclosed are results of analyses for samples received by the laboratory on July 18, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 7/25/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.01-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13G0742

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SW Asphalt 6in	13G0742-01	Product/Solid		SW-846 8082A	
SW Asphalt 6in Dup	13G0742-02	Product/Solid		SW-846 8082A	
Center Asphalt 6in	13G0742-03	Product/Solid		SW-846 8082A	
SE Asphalt 6in	13G0742-04	Product/Solid		SW-846 8082A	
E Asphalt 6in	13G0742-05	Product/Solid		SW-846 8082A	
NW Window Soil 12in (6-12in)	13G0742-06	Soil		SM 2540G	
				SW-846 8082A	
Center Window Soil 6in (0-6in)	13G0742-07	Soil		SM 2540G	
				SW-846 8082A	
NW Window Soil 24in (0-6in)	13G0742-08	Soil		SM 2540G	
				SW-846 8082A	
NW Window Soil 36in (0-6in)	13G0742-09	Soil		SM 2540G	
				SW-846 8082A	
Center Window Soil 24in (0-6in)	13G0742-10	Soil		SM 2540G	
				SW-846 8082A	
Center Window Soil 36in (0-6in)	13G0742-11	Soil		SM 2540G	
				SW-846 8082A	
Equip Blank	13G0742-12	Equipment Blank Water		SW-846 8082A	
NW Window Soil 48in (0-6in)	13G0742-13	Soil		SM 2540G	
				SW-846 8082A	
NE Window Soil 12in (6-12in)	13G0742-14	Soil		SM 2540G	
				SW-846 8082A	
NE Window Soil 24in (0-6in)	13G0742-15	Soil		SM 2540G	
				SW-846 8082A	
NE Window Soil 36in (0-6in)	13G0742-16	Soil		SM 2540G	
				SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8082A

Qualifications:

Matrix spike and spike duplicate recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery.
Possiblity of matrix effects that lead to low bias or non-homogeneous sample aliquot cannot be eliminated.

Analyte & Samples(s) Qualified:

Aroclor-1260, Aroclor-1260 [2C]

B077113-MS1, B077113-MSD1

Sample contains two incompletely resolved aroclors. Aroclor with the closest matching pattern is reported.

Analyte & Samples(s) Qualified:

Aroclor-1260, Aroclor-1260 [2C]

13G0742-06[NW Window Soil 12in (6-12in)], 13G0742-07[Center Window Soil 6in (0-6in)], 13G0742-08[NW Window Soil 24in (0-6in)], 13G0742-09[NW Window Soil 36in (0-6in)]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: SW Asphalt 6in | Sampled: 7/17/2013 08:35

Sample ID: 13G0742-01

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1221 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1232 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1242 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1248 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1254 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1260 [2]	0.26	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1262 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1268 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	76.6	30-150		7/23/13 12:11
Decachlorobiphenyl [2]	75.4	30-150		7/23/13 12:11
Tetrachloro-m-xylene [1]	103	30-150		7/23/13 12:11
Tetrachloro-m-xylene [2]	101	30-150		7/23/13 12:11

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: SW Asphalt 6in Dup | Sampled: 7/17/2013 08:35

Sample ID: 13G0742-02

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1221 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1232 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1242 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1248 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1254 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1260 [2]	0.29	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1262 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1268 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	63.5	30-150		7/23/13 12:24
Decachlorobiphenyl [2]	63.6	30-150		7/23/13 12:24
Tetrachloro-m-xylene [1]	78.5	30-150		7/23/13 12:24
Tetrachloro-m-xylene [2]	84.3	30-150		7/23/13 12:24

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Asphalt 6in | Sampled: 7/17/2013 08:50

Sample ID: 13G0742-03

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1221 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1232 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1242 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1248 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1254 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1260 [1]	1.9	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1262 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1268 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	73.4	30-150		7/22/13 18:20
Decachlorobiphenyl [2]	75.1	30-150		7/22/13 18:20
Tetrachloro-m-xylene [1]	102	30-150		7/22/13 18:20
Tetrachloro-m-xylene [2]	96.0	30-150		7/22/13 18:20

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: SE Asphalt 6in | Sampled: 7/17/2013 09:00

Sample ID: 13G0742-04

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1221 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1232 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1242 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1248 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1254 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1260 [1]	2.5	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1262 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1268 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	73.4	30-150		7/22/13 18:32
Decachlorobiphenyl [2]	75.9	30-150		7/22/13 18:32
Tetrachloro-m-xylene [1]	103	30-150		7/22/13 18:32
Tetrachloro-m-xylene [2]	95.4	30-150		7/22/13 18:32

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: E Asphalt 6in | Sampled: 7/17/2013 09:15

Sample ID: 13G0742-05

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1221 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1232 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1242 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1248 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1254 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1260 [1]	1.1	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1262 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1268 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	77.2	30-150		7/22/13 18:45
Decachlorobiphenyl [2]	80.5	30-150		7/22/13 18:45
Tetrachloro-m-xylene [1]	104	30-150		7/22/13 18:45
Tetrachloro-m-xylene [2]	98.3	30-150		7/22/13 18:45

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 12in (6-12in) | Sampled: 7/17/2013 09:40

Sample ID: 13G0742-06

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1260 [2]	0.83	0.11	mg/Kg dry	5	O-03	SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	89.7	30-150		7/23/13 11:11
Decachlorobiphenyl [2]	84.9	30-150		7/23/13 11:11
Tetrachloro-m-xylene [1]	98.9	30-150		7/23/13 11:11
Tetrachloro-m-xylene [2]	97.9	30-150		7/23/13 11:11

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 12in (6-12in)
Sampled: 7/17/2013 09:40

Sample ID: 13G0742-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.1		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 6in (0-6in) | Sampled: 7/17/2013 10:15

Sample ID: 13G0742-07

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1221 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1232 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1242 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1248 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1254 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1260 [2]	2.8	0.44	mg/Kg dry	20	O-03	SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1262 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1268 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	91.5	30-150		7/23/13 11:24
Decachlorobiphenyl [2]	89.6	30-150		7/23/13 11:24
Tetrachloro-m-xylene [1]	95.2	30-150		7/23/13 11:24
Tetrachloro-m-xylene [2]	95.2	30-150		7/23/13 11:24

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: **Center Window Soil 6in (0-6in)**
Sampled: 7/17/2013 10:15

Sample ID: 13G0742-07

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.6		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 24in (0-6in) | Sampled: 7/17/2013 10:25

Sample ID: 13G0742-08

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1221 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1232 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1242 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1248 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1254 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1260 [2]	1.5	0.21	mg/Kg dry	10	O-03	SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1262 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1268 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	78.2	30-150		7/23/13 11:37
Decachlorobiphenyl [2]	75.1	30-150		7/23/13 11:37
Tetrachloro-m-xylene [1]	86.5	30-150		7/23/13 11:37
Tetrachloro-m-xylene [2]	83.8	30-150		7/23/13 11:37

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 24in (0-6in)
Sampled: 7/17/2013 10:25

Sample ID: 13G0742-08

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.9		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 36in (0-6in) | Sampled: 7/17/2013 10:45

Sample ID: 13G0742-09

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1260 [2]	0.68	0.11	mg/Kg dry	5	O-03	SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	81.1	30-150		7/23/13 11:50
Decachlorobiphenyl [2]	77.5	30-150		7/23/13 11:50
Tetrachloro-m-xylene [1]	90.8	30-150		7/23/13 11:50
Tetrachloro-m-xylene [2]	90.3	30-150		7/23/13 11:50

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 36in (0-6in)
Sampled: 7/17/2013 10:45

Sample ID: 13G0742-09

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.2		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 24in (0-6in) | Sampled: 7/17/2013 10:50

Sample ID: 13G0742-10

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1260 [2]	0.99	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	72.1	30-150		7/22/13 22:38
Decachlorobiphenyl [2]	79.9	30-150		7/22/13 22:38
Tetrachloro-m-xylene [1]	82.7	30-150		7/22/13 22:38
Tetrachloro-m-xylene [2]	77.5	30-150		7/22/13 22:38

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 24in (0-6in)
Sampled: 7/17/2013 10:50

Sample ID: 13G0742-10

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.6		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 36in (0-6in) | Sampled: 7/17/2013 11:00

Sample ID: 13G0742-11

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1260 [2]	0.88	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	74.1	30-150		7/23/13 12:03
Decachlorobiphenyl [2]	70.8	30-150		7/23/13 12:03
Tetrachloro-m-xylene [1]	87.3	30-150		7/23/13 12:03
Tetrachloro-m-xylene [2]	85.0	30-150		7/23/13 12:03

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 36in (0-6in)
Sampled: 7/17/2013 11:00

Sample ID: 13G0742-11

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.2		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Equip Blank | Sampled: 7/17/2013 11:10

Sample ID: 13G0742-12

Sample Matrix: Equipment Blank Water

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1221 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1232 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1242 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1248 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1254 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1260 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1262 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1268 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	82.1	30-150		7/22/13 12:28
Decachlorobiphenyl [2]	80.7	30-150		7/22/13 12:28
Tetrachloro-m-xylene [1]	64.8	30-150		7/22/13 12:28
Tetrachloro-m-xylene [2]	65.5	30-150		7/22/13 12:28

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 48in (0-6in) | Sampled: 7/17/2013 11:20

Sample ID: 13G0742-13

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1254 [1]	0.12	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1260 [2]	0.38	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	78.6	30-150		7/23/13 12:16
Decachlorobiphenyl [2]	73.4	30-150		7/23/13 12:16
Tetrachloro-m-xylene [1]	79.9	30-150		7/23/13 12:16
Tetrachloro-m-xylene [2]	80.6	30-150		7/23/13 12:16

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 48in (0-6in)
Sampled: 7/17/2013 11:20

Sample ID: 13G0742-13

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.0		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 12in (6-12in) | Sampled: 7/17/2013 11:40

Sample ID: 13G0742-14

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1221 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1232 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1242 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1248 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1254 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1260 [2]	2.3	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1262 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1268 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	87.7	30-150		7/23/13 12:29
Decachlorobiphenyl [2]	84.3	30-150		7/23/13 12:29
Tetrachloro-m-xylene [1]	95.0	30-150		7/23/13 12:29
Tetrachloro-m-xylene [2]	98.0	30-150		7/23/13 12:29

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 12in (6-12in)
Sampled: 7/17/2013 11:40

Sample ID: 13G0742-14

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.8		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 24in (0-6in) | Sampled: 7/17/2013 11:45

Sample ID: 13G0742-15

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1221 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1232 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1242 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1248 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1254 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1260 [2]	3.2	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1262 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1268 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	103	30-150		7/23/13 12:42
Decachlorobiphenyl [2]	101	30-150		7/23/13 12:42
Tetrachloro-m-xylene [1]	110	30-150		7/23/13 12:42
Tetrachloro-m-xylene [2]	108	30-150		7/23/13 12:42

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 24in (0-6in)
Sampled: 7/17/2013 11:45

Sample ID: 13G0742-15

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.6		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 36in (0-6in) | Sampled: 7/17/2013 11:50

Sample ID: 13G0742-16

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1221 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1232 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1242 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1248 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1254 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1260 [2]	2.0	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1262 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1268 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	92.5	30-150		7/23/13 12:55
Decachlorobiphenyl [2]	92.3	30-150		7/23/13 12:55
Tetrachloro-m-xylene [1]	97.6	30-150		7/23/13 12:55
Tetrachloro-m-xylene [2]	96.4	30-150		7/23/13 12:55

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 36in (0-6in)
Sampled: 7/17/2013 11:50

Sample ID: 13G0742-16

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.0		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
13G0742-06 [NW Window Soil 12in (6-12in)]	B077296	07/23/13
13G0742-07 [Center Window Soil 6in (0-6in)]	B077296	07/23/13
13G0742-08 [NW Window Soil 24in (0-6in)]	B077296	07/23/13
13G0742-09 [NW Window Soil 36in (0-6in)]	B077296	07/23/13
13G0742-10 [Center Window Soil 24in (0-6in)]	B077296	07/23/13
13G0742-11 [Center Window Soil 36in (0-6in)]	B077296	07/23/13
13G0742-13 [NW Window Soil 48in (0-6in)]	B077296	07/23/13
13G0742-14 [NE Window Soil 12in (6-12in)]	B077296	07/23/13
13G0742-15 [NE Window Soil 24in (0-6in)]	B077296	07/23/13
13G0742-16 [NE Window Soil 36in (0-6in)]	B077296	07/23/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G0742-01 [SW Asphalt 6in]	B077097	2.16	10.0	07/19/13
13G0742-02 [SW Asphalt 6in Dup]	B077097	2.41	10.0	07/19/13
13G0742-03 [Center Asphalt 6in]	B077097	2.26	10.0	07/19/13
13G0742-04 [SE Asphalt 6in]	B077097	2.61	10.0	07/19/13
13G0742-05 [E Asphalt 6in]	B077097	2.18	10.0	07/19/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G0742-06 [NW Window Soil 12in (6-12in)]	B077113	10.0	10.0	07/19/13
13G0742-07 [Center Window Soil 6in (0-6in)]	B077113	10.2	10.0	07/19/13
13G0742-08 [NW Window Soil 24in (0-6in)]	B077113	10.5	10.0	07/19/13
13G0742-09 [NW Window Soil 36in (0-6in)]	B077113	10.1	10.0	07/19/13
13G0742-10 [Center Window Soil 24in (0-6in)]	B077113	10.4	10.0	07/19/13
13G0742-11 [Center Window Soil 36in (0-6in)]	B077113	10.2	10.0	07/19/13
13G0742-13 [NW Window Soil 48in (0-6in)]	B077113	10.2	10.0	07/19/13
13G0742-14 [NE Window Soil 12in (6-12in)]	B077113	10.1	10.0	07/19/13
13G0742-15 [NE Window Soil 24in (0-6in)]	B077113	10.2	10.0	07/19/13
13G0742-16 [NE Window Soil 36in (0-6in)]	B077113	10.3	10.0	07/19/13

Prep Method: SW-846 3510C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
13G0742-12 [Equip Blank]	B077096	1000	10.0	07/19/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077096 - SW-846 3510C										
Blank (B077096-BLK1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	ND	0.20	µg/L							
Aroclor-1016 [2C]	ND	0.20	µg/L							
Aroclor-1221	ND	0.20	µg/L							
Aroclor-1221 [2C]	ND	0.20	µg/L							
Aroclor-1232	ND	0.20	µg/L							
Aroclor-1232 [2C]	ND	0.20	µg/L							
Aroclor-1242	ND	0.20	µg/L							
Aroclor-1242 [2C]	ND	0.20	µg/L							
Aroclor-1248	ND	0.20	µg/L							
Aroclor-1248 [2C]	ND	0.20	µg/L							
Aroclor-1254	ND	0.20	µg/L							
Aroclor-1254 [2C]	ND	0.20	µg/L							
Aroclor-1260	ND	0.20	µg/L							
Aroclor-1260 [2C]	ND	0.20	µg/L							
Aroclor-1262	ND	0.20	µg/L							
Aroclor-1262 [2C]	ND	0.20	µg/L							
Aroclor-1268	ND	0.20	µg/L							
Aroclor-1268 [2C]	ND	0.20	µg/L							
Surrogate: Decachlorobiphenyl	*1.88*		µg/L	2.00		93.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.85*		µg/L	2.00		92.4	30-150			
Surrogate: Tetrachloro-m-xylene	*1.57*		µg/L	2.00		78.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.59*		µg/L	2.00		79.4	30-150			
LCS (B077096-BS1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.45	0.20	µg/L	0.500		89.5	40-140			
Aroclor-1016 [2C]	0.45	0.20	µg/L	0.500		89.7	40-140			
Aroclor-1260	0.49	0.20	µg/L	0.500		97.0	40-140			
Aroclor-1260 [2C]	0.48	0.20	µg/L	0.500		95.1	40-140			
Surrogate: Decachlorobiphenyl	*2.01*		µg/L	2.00		100	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.98*		µg/L	2.00		98.8	30-150			
Surrogate: Tetrachloro-m-xylene	*1.53*		µg/L	2.00		76.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.55*		µg/L	2.00		77.3	30-150			
LCS Dup (B077096-BSD1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.45	0.20	µg/L	0.500		90.6	40-140	1.22	20	
Aroclor-1016 [2C]	0.45	0.20	µg/L	0.500		90.9	40-140	1.28	20	
Aroclor-1260	0.47	0.20	µg/L	0.500		94.4	40-140	2.74	20	
Aroclor-1260 [2C]	0.46	0.20	µg/L	0.500		91.9	40-140	3.43	20	
Surrogate: Decachlorobiphenyl	*1.85*		µg/L	2.00		92.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.83*		µg/L	2.00		91.4	30-150			
Surrogate: Tetrachloro-m-xylene	*1.55*		µg/L	2.00		77.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.57*		µg/L	2.00		78.6	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077097 - SW-846 3540C										
Blank (B077097-BLK1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*1.04*		mg/Kg	1.00		104	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.935*		mg/Kg	1.00		93.5	30-150			
Surrogate: Tetrachloro-m-xylene	*0.908*		mg/Kg	1.00		90.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.940*		mg/Kg	1.00		94.0	30-150			
LCS (B077097-BS1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.28	0.10	mg/Kg	0.250		110	40-140			
Aroclor-1016 [2C]	0.29	0.10	mg/Kg	0.250		116	40-140			
Aroclor-1260	0.28	0.10	mg/Kg	0.250		113	40-140			
Aroclor-1260 [2C]	0.27	0.10	mg/Kg	0.250		107	40-140			
Surrogate: Decachlorobiphenyl	*1.04*		mg/Kg	1.00		104	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.933*		mg/Kg	1.00		93.3	30-150			
Surrogate: Tetrachloro-m-xylene	*0.907*		mg/Kg	1.00		90.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.927*		mg/Kg	1.00		92.7	30-150			
LCS Dup (B077097-BSD1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.28	0.10	mg/Kg	0.250		112	40-140	1.70	30	
Aroclor-1016 [2C]	0.27	0.10	mg/Kg	0.250		107	40-140	8.66	30	
Aroclor-1260	0.28	0.10	mg/Kg	0.250		111	40-140	2.06	30	
Aroclor-1260 [2C]	0.25	0.10	mg/Kg	0.250		102	40-140	5.03	30	
Surrogate: Decachlorobiphenyl	*1.01*		mg/Kg	1.00		101	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.900*		mg/Kg	1.00		90.0	30-150			
Surrogate: Tetrachloro-m-xylene	*0.897*		mg/Kg	1.00		89.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.926*		mg/Kg	1.00		92.6	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077113 - SW-846 3540C										
Blank (B077113-BLK1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.154*		mg/Kg wet	0.200		77.0	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.153*		mg/Kg wet	0.200		76.7	30-150			
Surrogate: Tetrachloro-m-xylene	*0.148*		mg/Kg wet	0.200		74.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.150*		mg/Kg wet	0.200		75.0	30-150			
LCS (B077113-BS1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.17	0.10	mg/Kg wet	0.200		83.7	40-140			
Aroclor-1016 [2C]	0.19	0.10	mg/Kg wet	0.200		95.3	40-140			
Aroclor-1260	0.17	0.10	mg/Kg wet	0.200		84.7	40-140			
Aroclor-1260 [2C]	0.21	0.10	mg/Kg wet	0.200		103	40-140			
Surrogate: Decachlorobiphenyl	*0.177*		mg/Kg wet	0.200		88.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.177*		mg/Kg wet	0.200		88.7	30-150			
Surrogate: Tetrachloro-m-xylene	*0.161*		mg/Kg wet	0.200		80.6	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.158*		mg/Kg wet	0.200		78.8	30-150			
LCS Dup (B077113-BSD1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.17	0.10	mg/Kg wet	0.200		83.5	40-140	0.227	30	
Aroclor-1016 [2C]	0.19	0.10	mg/Kg wet	0.200		93.4	40-140	2.00	30	
Aroclor-1260	0.16	0.10	mg/Kg wet	0.200		82.1	40-140	3.13	30	
Aroclor-1260 [2C]	0.20	0.10	mg/Kg wet	0.200		98.5	40-140	4.47	30	
Surrogate: Decachlorobiphenyl	*0.157*		mg/Kg wet	0.200		78.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.160*		mg/Kg wet	0.200		79.8	30-150			
Surrogate: Tetrachloro-m-xylene	*0.159*		mg/Kg wet	0.200		79.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.156*		mg/Kg wet	0.200		78.0	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B077113 - SW-846 3540C											
Matrix Spike (B077113-MS1)		**Source: 13G0742-06**		Prepared: 07/19/13 Analyzed: 07/23/13							
Aroclor-1016	0.19	0.11	mg/Kg dry	0.217	0.0	86.2		40-140			
Aroclor-1016 [2C]	0.23	0.11	mg/Kg dry	0.217	0.0	105		40-140			
Aroclor-1260	0.68	0.11	mg/Kg dry	0.217	0.78	**-48.0**	*	40-140			MS-07A
Aroclor-1260 [2C]	0.75	0.11	mg/Kg dry	0.217	0.83	**-35.6**	*	40-140			MS-07A
Surrogate: Decachlorobiphenyl	*0.133*		mg/Kg dry	0.217		61.1		30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.136*		mg/Kg dry	0.217		62.8		30-150			
Surrogate: Tetrachloro-m-xylene	*0.161*		mg/Kg dry	0.217		74.0		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.172*		mg/Kg dry	0.217		79.3		30-150			
Matrix Spike Dup (B077113-MSD1)		**Source: 13G0742-06**		Prepared: 07/19/13 Analyzed: 07/23/13							
Aroclor-1016	0.25	0.11	mg/Kg dry	0.217	0.0	114		40-140	27.4	50	
Aroclor-1016 [2C]	0.26	0.11	mg/Kg dry	0.217	0.0	120		40-140	13.1	50	
Aroclor-1260	0.75	0.11	mg/Kg dry	0.217	0.78	**-13.9**	*	40-140	10.3	50	MS-07A
Aroclor-1260 [2C]	0.84	0.11	mg/Kg dry	0.217	0.83	**5.55**	*	40-140	11.2	50	MS-07A
Surrogate: Decachlorobiphenyl	*0.157*		mg/Kg dry	0.217		72.2		30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.162*		mg/Kg dry	0.217		74.4		30-150			
Surrogate: Tetrachloro-m-xylene	*0.199*		mg/Kg dry	0.217		91.5		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.199*		mg/Kg dry	0.217		91.8		30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077296 - % Solids										
Duplicate (B077296-DUP1)		**Source: 13G0742-08**		Prepared: 07/23/13 Analyzed: 07/24/13						
% Solids	87.6		% Wt		88.9			1.47	20	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
MS-07A	Matrix spike and spike duplicate recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possiblity of matrix effects that lead to low bias or non-homogeneous sample aliquot cannot be eliminated.
O-03	Sample contains two incompletely resolved aroclors. Aroclor with the closest matching pattern is reported.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Product/Solid	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
SW-846 8082A in Water	
Aroclor-1016	CT,NH,NY,NC,ME,VA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1221	CT,NH,NY,NC,ME,VA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1232	CT,NH,NY,NC,ME,VA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1242	CT,NH,NY,NC,ME,VA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1248	CT,NH,NY,NC,ME,VA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1254	CT,NH,NY,NC,ME,VA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1260	CT,NH,NY,NC,ME,VA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1262	NC
Aroclor-1262 [2C]	NC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Water	
Aroclor-1268	NC
Aroclor-1268 [2C]	NC

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0742

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
01	SW Asphalt 6"	7/17/13	8:35	X		o	U	✓	
02	SW Asphalt 6"_Dup	7/17/13	8:35	X		o	U	✓	
03	Center Asphalt 6"	7/17/13	8:50	X		o	U	✓	
04	SE Asphalt 6"	7/17/13	9:00	X		o	U	✓	
05	E Asphalt 6"	7/17/13	9:15	X		o	U	✓	
06	NW Window Soil 12" (6-12")	7/17/13	9:40	X		s	U	✓	
—	NW Window Soil 12" (12-18")	7/17/13	10:00	X		s	U		✓
07	Center Window Soil 6" (0-6")	7/17/13	10:15	X		s	U	✓	
08	NW Window Soil 24" (0-6")	7/17/13	10:25	X		s	U	✓	
09	NW Window Soil 36" (0-6")	7/17/13	10:45	X		s	U	✓	

ANALYSIS REQUESTED

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments: 1) For asphalt samples - please grind + composite full contents of each jar
2) HOLD samples in second column pending further instruction from Kleinfelder.
3) All soil samples are fill soil + may contain glass.

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time:
[signature] 7/18/13	750
Received by: (signature) [signature] 7-18-13	Date/Time:
Relinquished by: (signature) [signature] 7-18-13	Date/Time: 1900
Received by: (signature) [signature] 7/18/13	Date/Time: 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
☒ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G07402

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705 (540)
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
10	Center Window Soil 24" (0-6")	7/17/13	10:50	X		S	U	✓	
11	Center Window Soil 36" (0-6")	7/17/13	11:00	X		S	U	✓	
12	Equip Blank	7/17/13	11:10	X		W	U	✓	
13	NW Window Soil 48" (0-6")	7/17/13	11:20	X		S	U	✓	
14	NE Window Soil 12" (6-12")	7/17/13	11:40	X		S	U	✓	
15	NE Window Soil 24" (0-6")	7/17/13	11:45	X		S	U	✓	
16	NE Window Soil 36" (0-6")	7/17/13	11:50	X		S	U	✓	
—	Center Window Soil 6" (6-12)	7/17/13	13:00	X		S	U		✓
—	Center Window Soil 24" (6 - 12")	7/17/13	13:05	X		S	U		✓
—	Center Window Soil 36" (6 - 12")	7/17/13	13:15	X		S	U		✓

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments: Equip blank → collected from open side hand auger

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 7/18/13 750	
Received by: (signature)	Date/Time: 7-18-13	
Relinquished by: (signature)	Date/Time: 7-18-13 1710	
Received by: (signature)	Date/Time: 7/18/13 1910	

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0742

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD									
																		# of Containers
																		** Preservation
																		***Container Code
								A	A									
	Center Window Soil 36" (12 - 18")	7/17/13	13:20	X		S	U		✓									
	NE Window Soil 12" (12 - 18")	7/17/13	13:55	X		S	U		✓									
	NE Window Soil 24" (6-12")	7/17/13	13:50	X		S	U		✓									
	NE Window Soil 24" (12 - 18")	7/17/13	14:15	X		S	U		✓									
	NE Window Soil 36" (6-12")	7/17/13	14:20	X		S	U		✓									
	NE Window Soil 36" (12-18")	7/17/13	14:35	X		S	U		✓									
	NW Window Soil 24" (6-12")	7/17/13	14:55	X		S	U		✓									
	NW Window Soil 24" (6-12")_DUP	7/17/13	14:55	X		S	U		✓									
	Equip Blank 2	7/17/13	14:55	X		W	U		✓									
	NW-Window-Soil 24" (12-18")	7/17/13	15:15	X		S	U		✓									

Comments: Equip Blank 2 - collected from closed side hand auger

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Relinquished by: (signature)	Date/Time: 7/18/13 7:50
Received by: (signature)	Date/Time: 7-18-13 7:50
Relinquished by: (signature)	Date/Time: 7-18-13 1100
Received by: (signature)	Date/Time: 7/18/13 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0742

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
	NW Window Soil 36" (6-12")	7/17/13	15:30	X		S	U		✓
	NW Window Soil 36" (12-14")	7/17/13	16:00	X		S	U		✓
	NW Window Soil 48" (6-10")	7/17/13	16:10	X		S	U		✓
	NW Window Soil 36" (0-6") Dup								

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Relinquished by: (signature)	Date/Time:
[signature] 7/18/13	250
Received by: (signature) [signature] 7/18/13	Date/Time:
Relinquished by: (signature) [signature] 7/18/13	Date/Time:
Received by: (signature) [signature] 7/18/13	Date/Time: 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

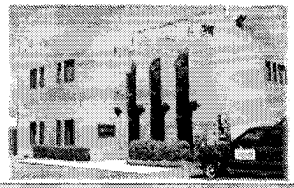
†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Page 42 of 44 CRWPDF87 07/25/13 11:04:23

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY



Sample Receipt Checklist

CLIENT NAME: Kleinfelder **RECEIVED BY:** JMM **DATE:** 7/18/13

1) Was the chain(s) of custody relinquished and signed? (Yes) No **No CoC Included**

2) Does the chain agree with the samples? (Yes) No

If not, explain:

3) Are all the samples in good condition? (Yes) No

If not, explain:

4) How were the samples received:

On Ice ☒ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☒

Were the samples received in Temperature Compliance of (2-6°C)? (Yes) No N/A

Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.9

5) Are there Dissolved samples for the lab to filter? Yes (No)

Who was notified _____ Date _____ Time _____

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes (No)

Who was notified _____ Date _____ Time _____

7) Location where samples are stored: 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: _____

8) Do all samples have the proper Acid pH: Yes No (N/A) _____

9) Do all samples have the proper Base pH: Yes No (N/A) _____

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes No (N/A)

Containers received at Con-Test

	# of containers			# of containers
1 Liter Amber	2		8 oz amber/clear jar	3
500 mL Amber			4 oz amber/clear jar	
250 mL Amber (8oz amber)			2 oz amber/clear jar	
1 Liter Plastic			Air Cassette	
500 mL Plastic			Hg/Hopcalite Tube	
250 mL plastic			Plastic Bag / Ziploc	
40 mL Vial - type listed below			PM 2.5 / PM 10	
Colisure / bacteria bottle			PUF Cartridge	
Dissolved Oxygen bottle			SOC Kit	
Encore			TO-17 Tubes	
Flashpoint bottle			Non-ConTest Container	
Perchlorate Kit			Other glass jar	
Other			Other	

Laboratory Comments: * received NW window sill 36" (0.6") - Dup not on CoC

40 mL vials: # HCl _____ # Methanol _____

Bisulfate _____ # DI Water _____

Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test Analytical Laboratory	Project #: 13G0742
Project Location: Green Line Extension	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

13G0742-01 thru 13G0742-16

Matrices: Product/Solid Soil Water

CAM Protocol (check all that below)

8260 VOC CAM II A ( )	7470/7471 Hg CAM IIIB ( )	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 A ( )	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )	

Affirmative response to Questions A throughF is 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	☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specificed in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
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	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

***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 perfomance standards specified in the CAM protocol(s) achieved?	☐ Yes	☑ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case 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: M Erickson Position: Laboratory Director

Printed Name: Michael A. Erickson Date: 07/25/13

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

August 7, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension
Client Job Number:
Project Number: 2012096.01-A
Laboratory Work Order Number: 13G1261

Enclosed are results of analyses for samples received by the laboratory on July 31, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 8/7/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.01-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13G1261

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
West Asphalt 6in	13G1261-01	Product/Solid		SW-846 8082A	
West 2 Asphalt 12in	13G1261-03	Product/Solid		SW-846 8082A	
West 2 Asphalt 24in	13G1261-04	Product/Solid		SW-846 8082A	
West 3 Asphalt 6in	13G1261-05	Product/Solid		SW-846 8082A	
Southwest Corner Asphalt 12in	13G1261-07	Product/Solid		SW-846 8082A	
Southwest Corner Asphalt 12 in DUP	13G1261-08	Product/Solid		SW-846 8082A	
Southwest Asphalt 12in	13G1261-09	Product/Solid		SW-846 8082A	
Southwest Asphalt 24in	13G1261-10	Product/Solid		SW-846 8082A	
Southeast Asphalt 12in	13G1261-12	Product/Solid		SW-846 8082A	
Center Asphalt 12in	13G1261-13	Product/Solid		SW-846 8082A	
Center Asphalt 24in	13G1261-14	Product/Solid		SW-846 8082A	
Southeast 2 Asphalt 24in	13G1261-17	Product/Solid		SW-846 8082A	
Southeast Corner Asphalt 24in	13G1261-18	Product/Solid		SW-846 8082A	
East Asphalt 12in	13G1261-19	Product/Solid		SW-846 8082A	
East Asphalt 24in	13G1261-20	Product/Solid		SW-846 8082A	
East 3 Asphalt 12in	13G1261-21	Product/Solid		SW-846 8082A	
East 3 Asphalt 24in	13G1261-22	Product/Solid		SW-846 8082A	
Southwest Corner Asphalt 24in	13G1261-25	Product/Solid		SW-846 8082A	
Center Window Soil 44in (0-6)	13G1261-27	Soil		SM 2540G	
				SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8082A

Qualifications:

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

Analyte & Samples(s) Qualified:

Aroclor-1260, Aroclor-1260 [2C]

B077963-MS1, B077963-MSD1

Due to continuing calibration non-conformance on the confirmatory detector, the lower of two results was reported.

Analyte & Samples(s) Qualified:

Aroclor-1260

13G1261-22[East 3 Asphalt 24in]

Continuing calibration did not meet method specifications and was biased on the low side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

Aroclor-1260 [2C]

B077963-BLK1, B077963-BS1, B077963-BSD1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: West Asphalt 6in | Sampled: 7/31/2013 08:25

Sample ID: 13G1261-01

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1221 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1232 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1242 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1248 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1254 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1260 [2]	2.8	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1262 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1268 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	90.7	30-150		8/7/13 2:14
Decachlorobiphenyl [2]	93.2	30-150		8/7/13 2:14
Tetrachloro-m-xylene [1]	107	30-150		8/7/13 2:14
Tetrachloro-m-xylene [2]	112	30-150		8/7/13 2:14

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: West 2 Asphalt 12in | Sampled: 7/31/2013 09:00

Sample ID: 13G1261-03

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1221 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1232 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1242 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1248 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1254 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1260 [2]	1.8	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1262 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1268 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	88.0	30-150		8/7/13 2:28
Decachlorobiphenyl [2]	93.1	30-150		8/7/13 2:28
Tetrachloro-m-xylene [1]	101	30-150		8/7/13 2:28
Tetrachloro-m-xylene [2]	108	30-150		8/7/13 2:28

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: West 2 Asphalt 24in | Sampled: 7/31/2013 09:25

Sample ID: 13G1261-04

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1254 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1260 [2]	0.89	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	88.6	30-150		8/7/13 13:00
Decachlorobiphenyl [2]	108	30-150		8/7/13 13:00
Tetrachloro-m-xylene [1]	100	30-150		8/7/13 13:00
Tetrachloro-m-xylene [2]	108	30-150		8/7/13 13:00

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: West 3 Asphalt 6in | Sampled: 7/31/2013 09:50

Sample ID: 13G1261-05

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1221 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1232 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1242 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1248 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1254 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1260 [2]	0.21	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1262 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1268 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	82.7	30-150		8/7/13 13:14
Decachlorobiphenyl [2]	100	30-150		8/7/13 13:14
Tetrachloro-m-xylene [1]	101	30-150		8/7/13 13:14
Tetrachloro-m-xylene [2]	105	30-150		8/7/13 13:14

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Corner Asphalt 12in | Sampled: 7/31/2013 10:00

Sample ID: 13G1261-07

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1254 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1260 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	80.3	30-150		8/7/13 13:28
Decachlorobiphenyl [2]	96.8	30-150		8/7/13 13:28
Tetrachloro-m-xylene [1]	104	30-150		8/7/13 13:28
Tetrachloro-m-xylene [2]	111	30-150		8/7/13 13:28

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Corner Asphalt 12 in DUP | Sampled: 7/31/2013 10:00

Sample ID: 13G1261-08

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1221 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1232 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1242 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1248 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1254 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1260 [2]	0.099	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1262 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1268 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	77.7	30-150		8/7/13 13:42
Decachlorobiphenyl [2]	94.7	30-150		8/7/13 13:42
Tetrachloro-m-xylene [1]	109	30-150		8/7/13 13:42
Tetrachloro-m-xylene [2]	117	30-150		8/7/13 13:42

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Asphalt 12in | Sampled: 7/31/2013 10:30

Sample ID: 13G1261-09

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1221 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1232 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1242 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1248 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1254 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1260 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1262 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1268 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	72.3	30-150		8/7/13 13:56
Decachlorobiphenyl [2]	88.1	30-150		8/7/13 13:56
Tetrachloro-m-xylene [1]	103	30-150		8/7/13 13:56
Tetrachloro-m-xylene [2]	112	30-150		8/7/13 13:56

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Asphalt 24in | Sampled: 7/31/2013 10:40

Sample ID: 13G1261-10

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1221 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1232 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1242 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1248 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1254 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1260 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1262 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1268 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	85.8	30-150		8/7/13 14:10
Decachlorobiphenyl [2]	103	30-150		8/7/13 14:10
Tetrachloro-m-xylene [1]	111	30-150		8/7/13 14:10
Tetrachloro-m-xylene [2]	119	30-150		8/7/13 14:10

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southeast Asphalt 12in | Sampled: 7/31/2013 11:20

Sample ID: 13G1261-12

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1221 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1232 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1242 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1248 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1254 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1260 [2]	0.56	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1262 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1268 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	82.8	30-150		8/7/13 14:24
Decachlorobiphenyl [2]	96.6	30-150		8/7/13 14:24
Tetrachloro-m-xylene [1]	105	30-150		8/7/13 14:24
Tetrachloro-m-xylene [2]	113	30-150		8/7/13 14:24

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Center Asphalt 12in | Sampled: 7/31/2013 11:00

Sample ID: 13G1261-13

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1221 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1232 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1242 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1248 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1254 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1260 [2]	1.4	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1262 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1268 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	79.1	30-150		8/7/13 5:14
Decachlorobiphenyl [2]	88.6	30-150		8/7/13 5:14
Tetrachloro-m-xylene [1]	97.8	30-150		8/7/13 5:14
Tetrachloro-m-xylene [2]	108	30-150		8/7/13 5:14

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Center Asphalt 24in | Sampled: 7/31/2013 11:15

Sample ID: 13G1261-14

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1221 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1232 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1242 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1248 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1254 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1260 [2]	1.1	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1262 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1268 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	94.9	30-150		8/7/13 5:28
Decachlorobiphenyl [2]	106	30-150		8/7/13 5:28
Tetrachloro-m-xylene [1]	116	30-150		8/7/13 5:28
Tetrachloro-m-xylene [2]	131	30-150		8/7/13 5:28

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southeast 2 Asphalt 24in | Sampled: 7/31/2013 12:15

Sample ID: 13G1261-17

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1221 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1232 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1242 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1248 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1254 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1260 [2]	1.9	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1262 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1268 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	87.1	30-150		8/7/13 5:42
Decachlorobiphenyl [2]	99.6	30-150		8/7/13 5:42
Tetrachloro-m-xylene [1]	106	30-150		8/7/13 5:42
Tetrachloro-m-xylene [2]	119	30-150		8/7/13 5:42

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southeast Corner Asphalt 24in | Sampled: 7/31/2013 12:45

Sample ID: 13G1261-18

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1221 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1232 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1242 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1248 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1254 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1260 [2]	0.26	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1262 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1268 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	72.4	30-150		8/7/13 14:38
Decachlorobiphenyl [2]	84.9	30-150		8/7/13 14:38
Tetrachloro-m-xylene [1]	91.3	30-150		8/7/13 14:38
Tetrachloro-m-xylene [2]	96.9	30-150		8/7/13 14:38

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: East Asphalt 12in | Sampled: 7/31/2013 12:50

Sample ID: 13G1261-19

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1254 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1260 [2]	0.63	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	87.7	30-150		8/7/13 14:52
Decachlorobiphenyl [2]	102	30-150		8/7/13 14:52
Tetrachloro-m-xylene [1]	101	30-150		8/7/13 14:52
Tetrachloro-m-xylene [2]	111	30-150		8/7/13 14:52

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: East Asphalt 24in | Sampled: 7/31/2013 13:00

Sample ID: 13G1261-20

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1221 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1232 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1242 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1248 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1254 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1260 [2]	1.1	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1262 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1268 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	105	30-150		8/5/13 21:55
Decachlorobiphenyl [2]	112	30-150		8/5/13 21:55
Tetrachloro-m-xylene [1]	114	30-150		8/5/13 21:55
Tetrachloro-m-xylene [2]	115	30-150		8/5/13 21:55

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: East 3 Asphalt 12in | Sampled: 7/31/2013 13:00

Sample ID: 13G1261-21

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1221 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1232 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1242 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1248 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1254 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1260 [2]	2.0	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1262 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1268 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	86.9	30-150		8/5/13 22:07
Decachlorobiphenyl [2]	91.9	30-150		8/5/13 22:07
Tetrachloro-m-xylene [1]	96.2	30-150		8/5/13 22:07
Tetrachloro-m-xylene [2]	97.9	30-150		8/5/13 22:07

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: East 3 Asphalt 24in | Sampled: 7/31/2013 13:20

Sample ID: 13G1261-22

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1221 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1232 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1242 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1248 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1254 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1260 [1]	0.51	0.092	mg/Kg	1	P-04	SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1262 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1268 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	102	30-150		8/6/13 14:15
Decachlorobiphenyl [2]	86.1	30-150		8/6/13 14:15
Tetrachloro-m-xylene [1]	97.1	30-150		8/6/13 14:15
Tetrachloro-m-xylene [2]	89.5	30-150		8/6/13 14:15

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Corner Asphalt 24in | Sampled: 7/31/2013 10:15

Sample ID: 13G1261-25

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1254 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1260 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	88.2	30-150		8/6/13 14:27
Decachlorobiphenyl [2]	73.0	30-150		8/6/13 14:27
Tetrachloro-m-xylene [1]	94.0	30-150		8/6/13 14:27
Tetrachloro-m-xylene [2]	84.8	30-150		8/6/13 14:27

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Center Window Soil 44in (0-6) | Sampled: 7/31/2013 14:15

Sample ID: 13G1261-27

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1221 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1232 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1242 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1248 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1254 [1]	0.33	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1260 [1]	0.50	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1262 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1268 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	70.1	30-150		8/5/13 16:46
Decachlorobiphenyl [2]	65.0	30-150		8/5/13 16:46
Tetrachloro-m-xylene [1]	72.3	30-150		8/5/13 16:46
Tetrachloro-m-xylene [2]	70.3	30-150		8/5/13 16:46

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Center Window Soil 44in (0-6)
Sampled: 7/31/2013 14:15

Sample ID: 13G1261-27

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	77.0		% Wt	1		SM 2540G	8/1/13	8/2/13 7:51	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
13G1261-27 [Center Window Soil 44in (0-6)]	B077898	08/01/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G1261-01 [West Asphalt 6in]	B077963	2.06	10.0	08/01/13
13G1261-03 [West 2 Asphalt 12in]	B077963	2.02	10.0	08/01/13
13G1261-04 [West 2 Asphalt 24in]	B077963	2.06	10.0	08/01/13
13G1261-05 [West 3 Asphalt 6in]	B077963	2.04	10.0	08/01/13
13G1261-07 [Southwest Corner Asphalt 12in]	B077963	2.07	10.0	08/01/13
13G1261-08 [Southwest Corner Asphalt 12 in DUP]	B077963	2.09	10.0	08/01/13
13G1261-09 [Southwest Asphalt 12in]	B077963	2.02	10.0	08/01/13
13G1261-10 [Southwest Asphalt 24in]	B077963	2.03	10.0	08/01/13
13G1261-12 [Southeast Asphalt 12in]	B077963	2.08	10.0	08/01/13
13G1261-13 [Center Asphalt 12in]	B077963	2.07	10.0	08/01/13
13G1261-14 [Center Asphalt 24in]	B077963	2.01	10.0	08/01/13
13G1261-17 [Southeast 2 Asphalt 24in]	B077963	2.06	10.0	08/01/13
13G1261-18 [Southeast Corner Asphalt 24in]	B077963	2.04	10.0	08/01/13
13G1261-19 [East Asphalt 12in]	B077963	2.06	10.0	08/01/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G1261-20 [East Asphalt 24in]	B078020	2.16	10.0	08/02/13
13G1261-21 [East 3 Asphalt 12in]	B078020	2.07	10.0	08/02/13
13G1261-22 [East 3 Asphalt 24in]	B078020	2.18	10.0	08/02/13
13G1261-25 [Southwest Corner Asphalt 24in]	B078020	2.06	10.0	08/02/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G1261-27 [Center Window Soil 44in (0-6)]	B078026	10.2	10.0	08/02/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077963 - SW-846 3540C										
Blank (B077963-BLK1)				Prepared: 08/01/13 Analyzed: 08/06/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							V-05
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*0.957*		mg/Kg	1.00		95.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.866*		mg/Kg	1.00		86.6	30-150			
Surrogate: Tetrachloro-m-xylene	*0.913*		mg/Kg	1.00		91.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.884*		mg/Kg	1.00		88.4	30-150			
LCS (B077963-BS1)				Prepared: 08/01/13 Analyzed: 08/06/13						
Aroclor-1016	0.25	0.10	mg/Kg	0.250		101	40-140			
Aroclor-1016 [2C]	0.26	0.10	mg/Kg	0.250		105	40-140			
Aroclor-1260	0.24	0.10	mg/Kg	0.250		94.7	40-140			
Aroclor-1260 [2C]	0.25	0.10	mg/Kg	0.250		101	40-140			V-05
Surrogate: Decachlorobiphenyl	*0.972*		mg/Kg	1.00		97.2	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.878*		mg/Kg	1.00		87.8	30-150			
Surrogate: Tetrachloro-m-xylene	*0.915*		mg/Kg	1.00		91.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.888*		mg/Kg	1.00		88.8	30-150			
LCS Dup (B077963-BSD1)				Prepared: 08/01/13 Analyzed: 08/06/13						
Aroclor-1016	0.24	0.10	mg/Kg	0.250		94.1	40-140	6.74	30	
Aroclor-1016 [2C]	0.22	0.10	mg/Kg	0.250		89.7	40-140	15.5	30	
Aroclor-1260	0.22	0.10	mg/Kg	0.250		86.9	40-140	8.63	30	
Aroclor-1260 [2C]	0.23	0.10	mg/Kg	0.250		93.5	40-140	7.62	30	V-05
Surrogate: Decachlorobiphenyl	*0.835*		mg/Kg	1.00		83.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.759*		mg/Kg	1.00		75.9	30-150			
Surrogate: Tetrachloro-m-xylene	*0.862*		mg/Kg	1.00		86.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.835*		mg/Kg	1.00		83.5	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B077963 - SW-846 3540C											
Matrix Spike (B077963-MS1)		**Source: 13G1261-01**		Prepared: 08/01/13 Analyzed: 08/07/13							
Aroclor-1016	0.23	1.0	mg/Kg	0.250	0.0	93.9		40-140			
Aroclor-1016 [2C]	0.28	1.0	mg/Kg	0.250	0.0	113		40-140			
Aroclor-1260	2.1	1.0	mg/Kg	0.250	2.5	**-134**	*	40-140			MS-19
Aroclor-1260 [2C]	2.5	1.0	mg/Kg	0.250	2.8	**-96.5**	*	40-140			MS-19
Surrogate: Decachlorobiphenyl	*0.856*		mg/Kg	1.00		85.6		30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.969*		mg/Kg	1.00		96.9		30-150			
Surrogate: Tetrachloro-m-xylene	*1.09*		mg/Kg	1.00		109		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.24*		mg/Kg	1.00		124		30-150			
Matrix Spike Dup (B077963-MSD1)		**Source: 13G1261-01**		Prepared: 08/01/13 Analyzed: 08/07/13							
Aroclor-1016	0.25	1.0	mg/Kg	0.250	0.0	98.2		40-140	4.46	50	
Aroclor-1016 [2C]	0.28	1.0	mg/Kg	0.250	0.0	111		40-140	1.57	50	
Aroclor-1260	1.4	1.0	mg/Kg	0.250	2.5	**-439**	*	40-140	43.7	50	MS-19
Aroclor-1260 [2C]	1.6	1.0	mg/Kg	0.250	2.8	**-467**	*	40-140	45.2	50	MS-19
Surrogate: Decachlorobiphenyl	*0.910*		mg/Kg	1.00		91.0		30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.03*		mg/Kg	1.00		103		30-150			
Surrogate: Tetrachloro-m-xylene	*1.14*		mg/Kg	1.00		114		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.31*		mg/Kg	1.00		131		30-150			
Batch B078020 - SW-846 3540C											
Blank (B078020-BLK1)				Prepared: 08/02/13 Analyzed: 08/05/13							
Aroclor-1016	ND	0.10	mg/Kg								
Aroclor-1016 [2C]	ND	0.10	mg/Kg								
Aroclor-1221	ND	0.10	mg/Kg								
Aroclor-1221 [2C]	ND	0.10	mg/Kg								
Aroclor-1232	ND	0.10	mg/Kg								
Aroclor-1232 [2C]	ND	0.10	mg/Kg								
Aroclor-1242	ND	0.10	mg/Kg								
Aroclor-1242 [2C]	ND	0.10	mg/Kg								
Aroclor-1248	ND	0.10	mg/Kg								
Aroclor-1248 [2C]	ND	0.10	mg/Kg								
Aroclor-1254	ND	0.10	mg/Kg								
Aroclor-1254 [2C]	ND	0.10	mg/Kg								
Aroclor-1260	ND	0.10	mg/Kg								
Aroclor-1260 [2C]	ND	0.10	mg/Kg								
Aroclor-1262	ND	0.10	mg/Kg								
Aroclor-1262 [2C]	ND	0.10	mg/Kg								
Aroclor-1268	ND	0.10	mg/Kg								
Aroclor-1268 [2C]	ND	0.10	mg/Kg								
Surrogate: Decachlorobiphenyl	*0.672*		mg/Kg	1.00		67.2		30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.775*		mg/Kg	1.00		77.5		30-150			
Surrogate: Tetrachloro-m-xylene	*0.593*		mg/Kg	1.00		59.3		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.652*		mg/Kg	1.00		65.2		30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078020 - SW-846 3540C										
LCS (B078020-BS1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	0.22	0.10	mg/Kg	0.250		87.6	40-140			
Aroclor-1016 [2C]	0.24	0.10	mg/Kg	0.250		95.7	40-140			
Aroclor-1260	0.22	0.10	mg/Kg	0.250		87.1	40-140			
Aroclor-1260 [2C]	0.27	0.10	mg/Kg	0.250		106	40-140			
Surrogate: Decachlorobiphenyl	*0.929*		mg/Kg	1.00		92.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.06*		mg/Kg	1.00		106	30-150			
Surrogate: Tetrachloro-m-xylene	*0.831*		mg/Kg	1.00		83.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.905*		mg/Kg	1.00		90.5	30-150			
LCS Dup (B078020-BSD1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	0.25	0.10	mg/Kg	0.250		101	40-140	13.9	30	
Aroclor-1016 [2C]	0.28	0.10	mg/Kg	0.250		111	40-140	15.3	30	
Aroclor-1260	0.25	0.10	mg/Kg	0.250		101	40-140	14.3	30	
Aroclor-1260 [2C]	0.31	0.10	mg/Kg	0.250		123	40-140	14.2	30	
Surrogate: Decachlorobiphenyl	*1.05*		mg/Kg	1.00		105	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.19*		mg/Kg	1.00		119	30-150			
Surrogate: Tetrachloro-m-xylene	*0.922*		mg/Kg	1.00		92.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.00*		mg/Kg	1.00		100	30-150			
Batch B078026 - SW-846 3540C										
Blank (B078026-BLK1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.203*		mg/Kg wet	0.200		102	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.195*		mg/Kg wet	0.200		97.6	30-150			
Surrogate: Tetrachloro-m-xylene	*0.193*		mg/Kg wet	0.200		96.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.196*		mg/Kg wet	0.200		97.8	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078026 - SW-846 3540C										
LCS (B078026-BS1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	0.20	0.10	mg/Kg wet	0.200		101	40-140			
Aroclor-1016 [2C]	0.19	0.10	mg/Kg wet	0.200		93.2	40-140			
Aroclor-1260	0.20	0.10	mg/Kg wet	0.200		101	40-140			
Aroclor-1260 [2C]	0.18	0.10	mg/Kg wet	0.200		91.6	40-140			
Surrogate: Decachlorobiphenyl	*0.194*		mg/Kg wet	0.200		96.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.178*		mg/Kg wet	0.200		89.2	30-150			
Surrogate: Tetrachloro-m-xylene	*0.184*		mg/Kg wet	0.200		92.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.178*		mg/Kg wet	0.200		89.2	30-150			
LCS Dup (B078026-BSD1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	0.22	0.10	mg/Kg wet	0.200		109	40-140	7.66	30	
Aroclor-1016 [2C]	0.21	0.10	mg/Kg wet	0.200		105	40-140	11.6	30	
Aroclor-1260	0.22	0.10	mg/Kg wet	0.200		108	40-140	6.23	30	
Aroclor-1260 [2C]	0.19	0.10	mg/Kg wet	0.200		96.9	40-140	5.64	30	
Surrogate: Decachlorobiphenyl	*0.210*		mg/Kg wet	0.200		105	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.194*		mg/Kg wet	0.200		97.0	30-150			
Surrogate: Tetrachloro-m-xylene	*0.210*		mg/Kg wet	0.200		105	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.204*		mg/Kg wet	0.200		102	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077898 - % Solids										
Duplicate (B077898-DUP2)		**Source: 13G1261-27**		Prepared: 08/01/13 Analyzed: 08/02/13						
% Solids	77.0		% Wt		77.0			0.00	20	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
MS-19	Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
P-04	Due to continuing calibration non-conformance on the confirmatory detector, the lower of two results was reported.
V-05	Continuing calibration did not meet method specifications and was biased on the low side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the low side.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Product/Solid	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

13G1261

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley & Jenna Almquist

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
						# of Containers		1	1
						** Preservation		I	I
						***Container Code		A	A
01	West Asphalt 6"	7/31/2013	8:25	X		○	U	✓	
02	West Asphalt 36"	7/31/2013	8:45	X		○	U		✓
03	West 2 Asphalt 12"	7/31/2013	9:00	X		○	U	✓	
04	West 2 Asphalt 24"	7/31/2013	9:25	X		○	U	✓	
05	West 3 Asphalt 6"	7/31/2013	9:50	X		○	U	✓	
06	West 3 Asphalt 36"	7/31/2013	10:10	X		○	U		✓
07	Southwest Corner Asphalt 12"	7/31/2013	10:00	X		○	U	✓	
08	Southwest Corner Asphalt 12"_DUP	7/31/2013	10:00	X		○	U	✓	
09	Southwest Asphalt 12"	7/31/2013	10:30	X		○	U	✓	
10	Southwest Asphalt 24"	7/31/2013	10:40	X		○	U	✓	

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
For asphalt samples, please grind + composite entire contact, at lab.

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 7/31/13 1630	
Received by: (signature) Paul Racuet	Date/Time: 7/31/13 1630	
Relinquished by: (signature) Paul Racuet	Date/Time: 7/31/13 19:00	
Received by: (signature)	Date/Time: 7/31/13 19:00	

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

13G12621

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley & Jenna Almquist

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD	# of Containers	** Preservation	***Container Code
										1	I	A
11	Southwest Asphalt 36"	7/31/2013	10:50	X		○	U		✓	1	I	A
12	Southeast Asphalt 12"	7/31/2013	11:20	X		○	U	✓		1	I	A
13	Center Asphalt 12"	7/31/2013	11:00	X		○	U	✓		1	I	A
14	Center Asphalt 24"	7/31/2013	11:15	X		○	U	✓		1	I	A
15	Center Asphalt 36"	7/31/2013	11:30	X		○	U		✓	1	I	A
16	Southeast Asphalt 36"	7/31/2013	11:35	X		○	U		✓	1	I	A
17	Southeast 2 Asphalt 24"	7/31/2013	12:15	X		○	U	✓		1	I	A
18	Southeast Corner Asphalt 24"	7/31/2013	12:45	X		○	U	✓		1	I	A
19	East Asphalt 12"	7/31/2013	12:50	X		○	U	✓		1	I	A
20	East Asphalt 24"	7/31/2013	13:00	X		○	U	✓		1	I	A

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time:
[signature] 7/31/13	1630
Received by: (signature) [signature] 7/31/13	Date/Time: 16:30
Relinquished by: (signature) [signature] 7/31/13	Date/Time: 19:00
Received by: (signature) [signature] 7/31/13	Date/Time: 19:00

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

13G1261

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley & Jenna Almquist

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
21	East 3 Asphalt 12"	7/31/2013	13:00	X		o	U	✓	
22	East 3 Asphalt 24"	7/31/2013	13:20	X		o	U	✓	
23	East 2 Asphalt 36"	7/31/2013	13:20	X		o	U		✓
24	East 2 Asphalt 36"_DUP	7/31/2013	13:20	X		o	U		✓
25	Southwest Corner Asphalt 24"	7/31/2013	10:15	X		o	U	✓	
26	Southeast 3 Asphalt 36"	7/31/2013	12:20	X		o	U		✓
27	Center Window Soil 44" (0-6)	7/31/2013	14:15	X		s	U	✓	

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Relinquished by: (signature)	Date/Time:
[signature]	7/31/13 1630
Received by: (signature) [signature]	7/31/13 1630
Relinquished by: (signature) [signature]	7/31/13 19:00
Received by: (signature) [signature]	7/31/13 19:00

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY

Sample Receipt Checklist

CLIENT NAME: Kleinfelder **RECEIVED BY:** JB **DATE:** 7/31/12

1) **Was the chain(s) of custody relinquished and signed?** **Yes** **No** **No CoC Included**
2) **Does the chain agree with the samples?** **Yes** **No**
   If not, explain:
3) **Are all the samples in good condition?** **Yes** **No**
   If not, explain:
4) **How were the samples received:**

On Ice ☑ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☑

Were the samples received in Temperature Compliance of (2-6°C)? **Yes** **No** **N/A**

Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.3

5) **Are there Dissolved samples for the lab to filter?** **Yes** **No**
   Who was notified _____ Date _____ Time _____
6) **Are there any RUSH or SHORT HOLDING TIME samples?** **Yes** **No**
   Who was notified _____ Date _____ Time _____
7) **Location where samples are stored:** 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: _____

8) **Do all samples have the proper Acid pH:** **Yes** **No** **N/A** _____
9) **Do all samples have the proper Base pH:** **Yes** **No** **N/A** _____
10) **Was the PC notified of any discrepancies with the CoC vs the samples:** **Yes** **No** **N/A**

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		8 oz amber/clear jar	27
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Air Cassette	
500 mL Plastic		Hg/Hopcalite Tube	
250 mL plastic		Plastic Bag / Ziploc	
40 mL Vial - type listed below		PM 2.5 / PM 10	
Colisure / bacteria bottle		PUF Cartridge	
Dissolved Oxygen bottle		SOC Kit	
Encore		TO-17 Tubes	
Flashpoint bottle		Non-ConTest Container	
Perchlorate Kit		Other glass jar	
Other		Other	

Laboratory Comments:

40 mL vials: # HCl _____ # Methanol _____
Bisulfate _____ # DI Water _____
Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

August 9, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension
Client Job Number:
Project Number: 20120096.001-A
Laboratory Work Order Number: 13H0094

Enclosed are results of analyses for samples received by the laboratory on August 2, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 8/9/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20120096.001-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13H0094

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Southeast 3 Asphalt 6in	13H0094-01	Product/Solid		SW-846 8082A	
Southeast 3 Asphalt 12in	13H0094-02	Product/Solid		SW-846 8082A	
Southeast 3 Asphalt 24in	13H0094-03	Product/Solid		SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8082A

Qualifications:

Due to continuing calibration non-conformance on the confirmatory detector, the lower of two results was reported.

Analyte & Samples(s) Qualified:

Aroclor-1260

13H0094-01[Southeast 3 Asphalt 6in], 13H0094-02[Southeast 3 Asphalt 12in], 13H0094-03[Southeast 3 Asphalt 24in]

Continuing calibration verification was outside of control limits on the confirmation column, but within control limits on the primary column.
All sample results are reported from the column within control criteria.

Analyte & Samples(s) Qualified:

Aroclor-1260

13H0094-01[Southeast 3 Asphalt 6in], 13H0094-02[Southeast 3 Asphalt 12in], 13H0094-03[Southeast 3 Asphalt 24in]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0094

Date Received: 8/2/2013

Field Sample #: Southeast 3 Asphalt 6in | Sampled: 8/1/2013 08:20

Sample ID: 13H0094-01

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1221 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1232 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1242 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1248 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1254 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1260 [1]	0.18	0.080	mg/Kg	1	P-04, V-24	SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1262 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1268 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	93.9	30-150		8/9/13 6:41
Decachlorobiphenyl [2]	83.6	30-150		8/9/13 6:41
Tetrachloro-m-xylene [1]	96.1	30-150		8/9/13 6:41
Tetrachloro-m-xylene [2]	81.2	30-150		8/9/13 6:41

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0094

Date Received: 8/2/2013

Field Sample #: Southeast 3 Asphalt 12in | Sampled: 8/1/2013 08:35

Sample ID: 13H0094-02

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1221 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1232 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1242 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1248 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1254 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1260 [1]	0.87	0.083	mg/Kg	1	P-04, V-24	SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1262 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1268 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	78.6	30-150		8/9/13 6:54
Decachlorobiphenyl [2]	71.7	30-150		8/9/13 6:54
Tetrachloro-m-xylene [1]	81.7	30-150		8/9/13 6:54
Tetrachloro-m-xylene [2]	67.9	30-150		8/9/13 6:54

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0094

Date Received: 8/2/2013

Field Sample #: Southeast 3 Asphalt 24in | Sampled: 8/1/2013 08:50

Sample ID: 13H0094-03

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1221 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1232 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1242 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1248 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1254 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1260 [1]	0.85	0.095	mg/Kg	1	P-04, V-24	SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1262 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1268 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	87.6	30-150		8/9/13 7:07
Decachlorobiphenyl [2]	78.0	30-150		8/9/13 7:07
Tetrachloro-m-xylene [1]	91.8	30-150		8/9/13 7:07
Tetrachloro-m-xylene [2]	75.0	30-150		8/9/13 7:07

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13H0094-01 [Southeast 3 Asphalt 6in]	B078238	2.50	10.0	08/06/13
13H0094-02 [Southeast 3 Asphalt 12in]	B078238	2.40	10.0	08/06/13
13H0094-03 [Southeast 3 Asphalt 24in]	B078238	2.10	10.0	08/06/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078238 - SW-846 3540C										
Blank (B078238-BLK1)				Prepared: 08/06/13 Analyzed: 08/07/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*2.40*		mg/Kg	2.00		120	30-150			
Surrogate: Decachlorobiphenyl [2C]	*2.26*		mg/Kg	2.00		113	30-150			
Surrogate: Tetrachloro-m-xylene	*2.02*		mg/Kg	2.00		101	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*2.02*		mg/Kg	2.00		101	30-150			
LCS (B078238-BS1)				Prepared: 08/06/13 Analyzed: 08/07/13						
Aroclor-1016	0.24	0.10	mg/Kg	0.250		97.8	40-140			
Aroclor-1016 [2C]	0.28	0.10	mg/Kg	0.250		111	40-140			
Aroclor-1260	0.24	0.10	mg/Kg	0.250		97.6	40-140			
Aroclor-1260 [2C]	0.24	0.10	mg/Kg	0.250		96.6	40-140			
Surrogate: Decachlorobiphenyl	*1.03*		mg/Kg	1.00		103	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.940*		mg/Kg	1.00		94.0	30-150			
Surrogate: Tetrachloro-m-xylene	*0.957*		mg/Kg	1.00		95.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.947*		mg/Kg	1.00		94.7	30-150			
LCS Dup (B078238-BSD1)				Prepared: 08/06/13 Analyzed: 08/07/13						
Aroclor-1016	0.20	0.10	mg/Kg	0.250		78.5	40-140	21.8	30	
Aroclor-1016 [2C]	0.22	0.10	mg/Kg	0.250		87.2	40-140	24.1	30	
Aroclor-1260	0.21	0.10	mg/Kg	0.250		83.8	40-140	15.2	30	
Aroclor-1260 [2C]	0.20	0.10	mg/Kg	0.250		80.6	40-140	18.1	30	
Surrogate: Decachlorobiphenyl	*0.838*		mg/Kg	1.00		83.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.763*		mg/Kg	1.00		76.3	30-150			
Surrogate: Tetrachloro-m-xylene	*0.749*		mg/Kg	1.00		74.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.741*		mg/Kg	1.00		74.1	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
P-04	Due to continuing calibration non-conformance on the confirmatory detector, the lower of two results was reported.
V-24	Continuing calibration verification was outside of control limits on the confirmation column, but within control limits on the primary column. All sample results are reported from the column within control criteria.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Product/Solid	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

1340094

Rev 04.05.12

39 Spruce Street
East longmeadow, MA 01028

Company Name: Kleinfelder
Telephone: 617-498-4705
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Project # 20120096.001A
Client PO#
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Jenna Almquist

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
01	Southeast 3 Asphalt 6"	8/1 (JKA) ~~7/31~~/2013	8:20	X		○	U	✓	
02	Southeast 3 Asphalt 12"	8/1 (JKA) ~~7/31~~/2013	8:35	X		○	U	✓	
03	Southeast 3 Asphalt 24"	8/1 (JKA) ~~7/31~~/2013	8:50	X		○	U	✓	

	1	1									
# of Containers	1	1									
** Preservation	I	I									
***Container Code	A	A									

ANALYSIS REQUESTED

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
GRIND ENTIRE SAMPLE

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 8/2/13 12:30	
Received by: (signature)	Date/Time: 8/2/13 12:30	
Relinquished by: (signature)	Date/Time: 8/2/13 18:30	
Received by: (signature)	Date/Time: 8-2-13 1830	

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

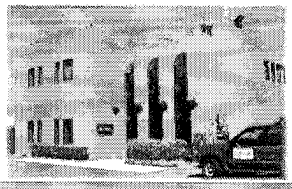
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY



Sample Receipt Checklist

CLIENT NAME: Kleinfelder **RECEIVED BY:** JMH **DATE:** 8/2/13

1) Was the chain(s) of custody relinquished and signed? Yes No No CoC Included

2) Does the chain agree with the samples? Yes No

If not, explain:

3) Are all the samples in good condition? Yes No

If not, explain:

4) How were the samples received:

On Ice ☒ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☒

Were the samples received in Temperature Compliance of (2-6°C)? Yes No N/A

Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.2°

5) Are there Dissolved samples for the lab to filter? Yes No

Who was notified _____ Date _____ Time _____

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes No

Who was notified _____ Date _____ Time _____

7) Location where samples are stored: 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: _____

8) Do all samples have the proper Acid pH: Yes No N/A _____

9) Do all samples have the proper Base pH: Yes No N/A _____

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes No N/A

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		8 oz amber/clear jar	3
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Air Cassette	
500 mL Plastic		Hg/Hopcalite Tube	
250 mL plastic		Plastic Bag / Ziploc	
40 mL Vial - type listed below		PM 2.5 / PM 10	
Colisure / bacteria bottle		PUF Cartridge	
Dissolved Oxygen bottle		SOC Kit	
Encore		TO-17 Tubes	
Flashpoint bottle		Non-ConTest Container	
Perchlorate Kit		Other glass jar	
Other		Other	

Laboratory Comments:

40 mL vials: # HCl _____ # Methanol _____
Bisulfate _____ # DI Water _____
Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

August 15, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension
Client Job Number:
Project Number: 2012096.01-A
Laboratory Work Order Number: 13H0291

Enclosed are results of analyses for samples received by the laboratory on August 8, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 8/15/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.01-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13H0291

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
West Asphalt 36in	13H0291-01	Product/Solid		SW-846 8082A	
West 3 Asphalt 36in	13H0291-02	Product/Solid		SW-846 8082A	
Center Asphalt 36in	13H0291-03	Product/Solid		SW-846 8082A	
Southeast Asphalt 36in	13H0291-04	Product/Solid		SW-846 8082A	
East 2 Asphalt 36in	13H0291-05	Product/Solid		SW-846 8082A	
East 2 Asphalt 36in DUP	13H0291-06	Product/Solid		SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Daren J. Damboragian
Laboratory Manager

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0291

Date Received: 8/8/2013

Field Sample #: West Asphalt 36in | Sampled: 7/31/2013 08:45

Sample ID: 13H0291-01

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:14	PJG
Aroclor-1221 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:14	PJG
Aroclor-1232 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:14	PJG
Aroclor-1242 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:14	PJG
Aroclor-1248 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:14	PJG
Aroclor-1254 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:14	PJG
Aroclor-1260 [1]	0.54	0.10	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:14	PJG
Aroclor-1262 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:14	PJG
Aroclor-1268 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:14	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	74.3	30-150		8/15/13 15:14
Decachlorobiphenyl [2]	76.6	30-150		8/15/13 15:14
Tetrachloro-m-xylene [1]	86.9	30-150		8/15/13 15:14
Tetrachloro-m-xylene [2]	83.3	30-150		8/15/13 15:14

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0291

Date Received: 8/8/2013

Field Sample #: West 3 Asphalt 36in | Sampled: 7/31/2013 10:10

Sample ID: 13H0291-02

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:28	PJG
Aroclor-1221 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:28	PJG
Aroclor-1232 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:28	PJG
Aroclor-1242 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:28	PJG
Aroclor-1248 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:28	PJG
Aroclor-1254 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:28	PJG
Aroclor-1260 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:28	PJG
Aroclor-1262 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:28	PJG
Aroclor-1268 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:28	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	68.2	30-150		8/15/13 15:28
Decachlorobiphenyl [2]	67.5	30-150		8/15/13 15:28
Tetrachloro-m-xylene [1]	91.8	30-150		8/15/13 15:28
Tetrachloro-m-xylene [2]	86.2	30-150		8/15/13 15:28

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0291

Date Received: 8/8/2013

Field Sample #: Center Asphalt 36in | Sampled: 7/31/2013 11:30

Sample ID: 13H0291-03

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 20:58	MJC
Aroclor-1221 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 20:58	MJC
Aroclor-1232 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 20:58	MJC
Aroclor-1242 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 20:58	MJC
Aroclor-1248 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 20:58	MJC
Aroclor-1254 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 20:58	MJC
Aroclor-1260 [1]	0.93	0.92	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 20:58	MJC
Aroclor-1262 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 20:58	MJC
Aroclor-1268 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 20:58	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	82.2	30-150		8/14/13 20:58
Decachlorobiphenyl [2]	78.5	30-150		8/14/13 20:58
Tetrachloro-m-xylene [1]	93.2	30-150		8/14/13 20:58
Tetrachloro-m-xylene [2]	85.8	30-150		8/14/13 20:58

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0291

Date Received: 8/8/2013

Field Sample #: Southeast Asphalt 36in | Sampled: 7/31/2013 11:35

Sample ID: 13H0291-04

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:42	PJG
Aroclor-1221 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:42	PJG
Aroclor-1232 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:42	PJG
Aroclor-1242 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:42	PJG
Aroclor-1248 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:42	PJG
Aroclor-1254 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:42	PJG
Aroclor-1260 [1]	0.39	0.095	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:42	PJG
Aroclor-1262 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:42	PJG
Aroclor-1268 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/9/13	8/15/13 15:42	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	72.9	30-150		8/15/13 15:42
Decachlorobiphenyl [2]	67.5	30-150		8/15/13 15:42
Tetrachloro-m-xylene [1]	87.8	30-150		8/15/13 15:42
Tetrachloro-m-xylene [2]	81.7	30-150		8/15/13 15:42

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0291

Date Received: 8/8/2013

Field Sample #: East 2 Asphalt 36in | Sampled: 7/31/2013 13:20

Sample ID: 13H0291-05

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:24	MJC
Aroclor-1221 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:24	MJC
Aroclor-1232 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:24	MJC
Aroclor-1242 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:24	MJC
Aroclor-1248 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:24	MJC
Aroclor-1254 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:24	MJC
Aroclor-1260 [2]	1.1	0.99	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:24	MJC
Aroclor-1262 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:24	MJC
Aroclor-1268 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:24	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	88.9	30-150		8/14/13 21:24
Decachlorobiphenyl [2]	83.8	30-150		8/14/13 21:24
Tetrachloro-m-xylene [1]	97.7	30-150		8/14/13 21:24
Tetrachloro-m-xylene [2]	89.8	30-150		8/14/13 21:24

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0291

Date Received: 8/8/2013

Field Sample #: East 2 Asphalt 36in DUP | Sampled: 7/31/2013 13:20

Sample ID: 13H0291-06

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.96	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:37	MJC
Aroclor-1221 [1]	ND	0.96	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:37	MJC
Aroclor-1232 [1]	ND	0.96	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:37	MJC
Aroclor-1242 [1]	ND	0.96	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:37	MJC
Aroclor-1248 [1]	ND	0.96	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:37	MJC
Aroclor-1254 [1]	ND	0.96	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:37	MJC
Aroclor-1260 [2]	1.0	0.96	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:37	MJC
Aroclor-1262 [1]	ND	0.96	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:37	MJC
Aroclor-1268 [1]	ND	0.96	mg/Kg	10		SW-846 8082A	8/9/13	8/14/13 21:37	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	85.6	30-150		8/14/13 21:37
Decachlorobiphenyl [2]	65.5	30-150		8/14/13 21:37
Tetrachloro-m-xylene [1]	95.2	30-150		8/14/13 21:37
Tetrachloro-m-xylene [2]	86.9	30-150		8/14/13 21:37

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13H0291-01 [West Asphalt 36in]	B078538	2.01	10.0	08/09/13
13H0291-02 [West 3 Asphalt 36in]	B078538	2.02	10.0	08/09/13
13H0291-03 [Center Asphalt 36in]	B078538	2.18	10.0	08/09/13
13H0291-04 [Southeast Asphalt 36in]	B078538	2.10	10.0	08/09/13
13H0291-05 [East 2 Asphalt 36in]	B078538	2.03	10.0	08/09/13
13H0291-06 [East 2 Asphalt 36in DUP]	B078538	2.09	10.0	08/09/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078538 - SW-846 3540C										
Blank (B078538-BLK1)				Prepared: 08/09/13 Analyzed: 08/12/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*1.06*		mg/Kg	1.00		106	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.00*		mg/Kg	1.00		100	30-150			
Surrogate: Tetrachloro-m-xylene	*0.944*		mg/Kg	1.00		94.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.928*		mg/Kg	1.00		92.8	30-150			
LCS (B078538-BS1)				Prepared: 08/09/13 Analyzed: 08/12/13						
Aroclor-1016	0.27	0.10	mg/Kg	0.250		110	40-140			
Aroclor-1016 [2C]	0.28	0.10	mg/Kg	0.250		110	40-140			
Aroclor-1260	0.27	0.10	mg/Kg	0.250		109	40-140			
Aroclor-1260 [2C]	0.26	0.10	mg/Kg	0.250		105	40-140			
Surrogate: Decachlorobiphenyl	*1.16*		mg/Kg	1.00		116	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.09*		mg/Kg	1.00		109	30-150			
Surrogate: Tetrachloro-m-xylene	*1.02*		mg/Kg	1.00		102	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.01*		mg/Kg	1.00		101	30-150			
LCS Dup (B078538-BSD1)				Prepared: 08/09/13 Analyzed: 08/12/13						
Aroclor-1016	0.28	0.10	mg/Kg	0.250		111	40-140	0.972	30	
Aroclor-1016 [2C]	0.27	0.10	mg/Kg	0.250		110	40-140	0.462	30	
Aroclor-1260	0.27	0.10	mg/Kg	0.250		108	40-140	1.20	30	
Aroclor-1260 [2C]	0.26	0.10	mg/Kg	0.250		104	40-140	0.882	30	
Surrogate: Decachlorobiphenyl	*1.11*		mg/Kg	1.00		111	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.04*		mg/Kg	1.00		104	30-150			
Surrogate: Tetrachloro-m-xylene	*0.980*		mg/Kg	1.00		98.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.963*		mg/Kg	1.00		96.3	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Product/Solid	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

13H0291 ~~13G1261~~

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley & Jenna Almquist

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
~~01~~	West Asphalt 6"	7/31/2013	8:25	X		○	U	✓	
~~02~~ -01	West Asphalt 36"	7/31/2013	8:45	X		○	U		✓
~~03~~	West 2 Asphalt 12"	7/31/2013	9:00	X		○	U	✓	
~~04~~	West 2 Asphalt 24"	7/31/2013	9:25	X		○	U	✓	
~~05~~	West 3 Asphalt 6"	7/31/2013	9:50	X		○	U	✓	
~~06~~ -02	West 3 Asphalt 36"	7/31/2013	10:10	X		○	U		✓
~~07~~	Southwest Corner Asphalt 12"	7/31/2013	10:00	X		○	U	✓	
~~08~~	Southwest Corner Asphalt 12"_DUP	7/31/2013	10:00	X		○	U	✓	
~~09~~	Southwest Asphalt 12"	7/31/2013	10:30	X		○	U	✓	
~~10~~	Southwest Asphalt 24"	7/31/2013	10:40	X		○	U	✓	

# of Containers	1	1
** Preservation	I	I
***Container Code	A	A

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
For asphalt samples, please grind + composite entire content, at lab.

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time:
[signature]	7/31/13 1630
Received by: (signature) Paul Racicot	Date/Time: 7/31/13 1630
Relinquished by: (signature) Paul Racicot	Date/Time: 7/31/13 19:00
Received by: (signature) [signature]	Date/Time: 7/31/13 19:00

Turnaround ††
☐ 7-Day
☐ 10-Day
☒ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

13G1261

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley & Jenna Almquist

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
11	Southwest Asphalt 36"	7/31/2013	10:50	X		○	U		✓
12	Southeast Asphalt 12"	7/31/2013	11:20	X		○	U	✓	
13	Center Asphalt 12"	7/31/2013	11:00	X		○	U	✓	
14	Center Asphalt 24"	7/31/2013	11:15	X		○	U	✓	
15 -3	Center Asphalt 36"	7/31/2013	11:30	X		○	U		✓
16 -4	Southeast Asphalt 36"	7/31/2013	11:35	X		○	U		✓
17	Southeast 2 Asphalt 24"	7/31/2013	12:15	X		○	U	✓	
18	Southeast Corner Asphalt 24"	7/31/2013	12:45	X		○	U	✓	
19	East Asphalt 12"	7/31/2013	12:50	X		○	U	✓	
20	East Asphalt 24"	7/31/2013	13:00	X		○	U	✓	

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Relinquished by: (signature)	7/31/13	Date/Time: 1630
Received by: (signature)	7/31/13	Date/Time: 16:30
Relinquished by: (signature)	7/31/13	Date/Time: 19:00
Received by: (signature)	7/31/13	Date/Time: 19:00

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

13G1261

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley & Jenna Almquist

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
~~21~~	East 3 Asphalt 12"	7/31/2013	13:00	X		o	U	✓	
~~22~~	East 3 Asphalt 24"	7/31/2013	13:20	X		o	U	✓	
~~23~~ .05	East 2 Asphalt 36"	7/31/2013	13:20	X		o	U		✓
~~24~~ .06	East 2 Asphalt 36"_DUP	7/31/2013	13:20	X		o	U		✓
~~25~~	Southwest Corner Asphalt 24"	7/31/2013	10:15	X		o	U	✓	
~~26~~	Southeast 3 Asphalt 36"	7/31/2013	12:20	X		o	U		✓
~~27~~	Center Window Soil 44" (0-6)	7/31/2013	14:15	X		s	U	✓	

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)		Date/Time: 7/31/13 1630
Received by: (signature)		Date/Time: 7/31/13 1630
Relinquished by: (signature)		Date/Time: 7/31/13 1900
Received by: (signature)		Date/Time: 7/31/13 19:00

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

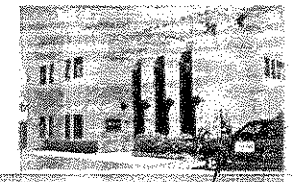
†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY

Sample Receipt Checklist



CLIENT NAME: Kleinfelder RECEIVED BY: JB DATE: 7/31/12

1) Was the chain(s) of custody relinquished and signed? Yes No No CoC Included
2) Does the chain agree with the samples? Yes No
   If not, explain:
3) Are all the samples in good condition? Yes No
   If not, explain:
4) How were the samples received:

On Ice ☑ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☑

Were the samples received in Temperature Compliance of (2-6°C)? Yes No N/A

Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.3

5) Are there Dissolved samples for the lab to filter? Yes No
   Who was notified _____ Date _____ Time _____
6) Are there any RUSH or SHORT HOLDING TIME samples? Yes No
   Who was notified _____ Date _____ Time _____
7) Location where samples are stored: 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature:

8) Do all samples have the proper Acid pH: Yes No N/A _____
9) Do all samples have the proper Base pH: Yes No N/A _____
10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes No N/A

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		8 oz amber/clear jar	27
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Air Cassette	
500 mL Plastic		Hg/Hopcalite Tube	
250 mL plastic		Plastic Bag / Ziploc	
40 mL Vial - type listed below		PM 2.5 / PM 10	
Colisure / bacteria bottle		PUF Cartridge	
Dissolved Oxygen bottle		SOC Kit	
Encore		TO-17 Tubes	
Flashpoint bottle		Non-ConTest Container	
Perchlorate Kit		Other glass jar	
Other		Other	

Laboratory Comments:

40 mL vials: # HCl _____ # Methanol _____
Bisulfate _____ # DI Water _____
Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

Doc# 277
Rev. 3 May 2012

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

September 12, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension - SOW
Client Job Number:
Project Number: 2012096.01-A
Laboratory Work Order Number: 13I0171

Enclosed are results of analyses for samples received by the laboratory on September 6, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Aaron L. Benoit
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 9/12/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.01-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13I0171

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension - SOW

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
West Asphalt 4 (1ft)	13I0171-01	Product/Solid		SW-846 8082A	
West Asphalt 4 (3ft)	13I0171-02	Product/Solid		SW-846 8082A	
West Asphalt 4 (4ft)	13I0171-03	Product/Solid		SW-846 8082A	
West Asphalt 2 (3ft)	13I0171-04	Product/Solid		SW-846 8082A	
Southwest Asphalt 2 (1ft)	13I0171-05	Product/Solid		SW-846 8082A	
Southwest Asphalt 2 (3ft)	13I0171-06	Product/Solid		SW-846 8082A	
Southwest Asphalt 2 (4ft)	13I0171-07	Product/Solid		SW-846 8082A	
Center Asphalt (4ft)	13I0171-08	Product/Solid		SW-846 8082A	
Center Asphalt (5ft)	13I0171-09	Product/Solid		SW-846 8082A	
Southeast Asphalt 4 (1ft)	13I0171-10	Product/Solid		SW-846 8082A	
Southeast Asphalt 4 (3ft)	13I0171-11	Product/Solid		SW-846 8082A	
Southeast Asphalt 4 (4ft)	13I0171-12	Product/Solid		SW-846 8082A	
Southeast Asphalt 2 (3ft)	13I0171-13	Product/Solid		SW-846 8082A	
Southeast Asphalt 2 (3ft)_DUP	13I0171-14	Product/Solid		SW-846 8082A	
Southeast Asphalt 2 (4ft)	13I0171-15	Product/Solid		SW-846 8082A	
East Asphalt 2 (4ft)	13I0171-16	Product/Solid		SW-846 8082A	
East Asphalt 2 (4ft)_DUP	13I0171-17	Product/Solid		SW-846 8082A	
East Asphalt 2 (5ft)	13I0171-18	Product/Solid		SW-846 8082A	
East Asphalt (4ft)	13I0171-19	Product/Solid		SW-846 8082A	
East Asphalt (5ft)	13I0171-20	Product/Solid		SW-846 8082A	
East Asphalt 4 (1ft)	13I0171-21	Product/Solid		SW-846 8082A	
East Asphalt 4 (3ft)	13I0171-22	Product/Solid		SW-846 8082A	
East Asphalt 4 (4ft)	13I0171-23	Product/Solid		SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8082A

Qualifications:

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

Analyte & Samples(s) Qualified:

Aroclor-1260, Aroclor-1260 [2C]

13I0171-01[West Asphalt 4 (1ft)], B080302-MS1, B080302-MSD1

Sample RPD between primary and confirmatory analysis exceeded 40%. Per EPA method 8000, the lower value was reported due to obvious chromatographic interference on the column with the higher result.

Analyte & Samples(s) Qualified:

Aroclor-1254

13I0171-01[West Asphalt 4 (1ft)], 13I0171-02[West Asphalt 4 (3ft)], 13I0171-03[West Asphalt 4 (4ft)], 13I0171-04[West Asphalt 2 (3ft)], 13I0171-06[Southwest Asphalt 2 (3ft)], 13I0171-07[Southwest Asphalt 2 (4ft)], 13I0171-08[Center Asphalt (4ft)], 13I0171-09[Center Asphalt (5ft)], 13I0171-10[Southeast Asphalt 4 (1ft)], 13I0171-11[Southeast Asphalt 4 (3ft)], 13I0171-12[Southeast Asphalt 4 (4ft)], 13I0171-16[East Asphalt 2 (4ft)], 13I0171-17[East Asphalt 2 (4ft)_DUP], 13I0171-18[East Asphalt 2 (5ft)], 13I0171-19[East Asphalt (4ft)]

Significant chromatographic interference was observed on only one of the two columns. Per EPA guidance, the lower value was reported due to obvious chromatographic interference on the column with the higher result.

Analyte & Samples(s) Qualified:

Aroclor-1254

13I0171-05[Southwest Asphalt 2 (1ft)], 13I0171-13[Southeast Asphalt 2 (3ft)], 13I0171-14[Southeast Asphalt 2 (3ft)_DUP], 13I0171-15[Southeast Asphalt 2 (4ft)], 13I0171-20[East Asphalt (5ft)]

Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.

Analyte & Samples(s) Qualified:

Aroclor-1260, Aroclor-1260 [2C]

13I0171-01[West Asphalt 4 (1ft)], B080302-MS1, B080302-MSD1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: West Asphalt 4 (1ft)
Sampled: 9/6/2013 07:00

Sample ID: 13I0171-01

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:42	MJC
Aroclor-1221 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:42	MJC
Aroclor-1232 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:42	MJC
Aroclor-1242 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:42	MJC
Aroclor-1248 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:42	MJC
Aroclor-1254 [1]	0.22	0.10	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/10/13 21:42	MJC
Aroclor-1260 [1]	1.2	0.10	mg/Kg	1	MS-19, R-06	SW-846 8082A	9/6/13	9/10/13 21:42	MJC
Aroclor-1262 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:42	MJC
Aroclor-1268 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:42	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	87.8	30-150		9/10/13 21:42
Decachlorobiphenyl [2]	95.4	30-150		9/10/13 21:42
Tetrachloro-m-xylene [1]	97.5	30-150		9/10/13 21:42
Tetrachloro-m-xylene [2]	99.8	30-150		9/10/13 21:42

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: West Asphalt 4 (3ft)
Sampled: 9/6/2013 07:15

Sample ID: 13I0171-02

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:55	MJC
Aroclor-1221 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:55	MJC
Aroclor-1232 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:55	MJC
Aroclor-1242 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:55	MJC
Aroclor-1248 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:55	MJC
Aroclor-1254 [1]	0.24	0.096	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/10/13 21:55	MJC
Aroclor-1260 [2]	0.66	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:55	MJC
Aroclor-1262 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:55	MJC
Aroclor-1268 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 21:55	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	75.9	30-150		9/10/13 21:55
Decachlorobiphenyl [2]	83.2	30-150		9/10/13 21:55
Tetrachloro-m-xylene [1]	87.8	30-150		9/10/13 21:55
Tetrachloro-m-xylene [2]	89.1	30-150		9/10/13 21:55

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: West Asphalt 4 (4ft) | Sampled: 9/6/2013 07:30

Sample ID: 13I0171-03

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:08	MJC
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:08	MJC
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:08	MJC
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:08	MJC
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:08	MJC
Aroclor-1254 [1]	0.26	0.097	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/10/13 22:08	MJC
Aroclor-1260 [2]	1.0	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:08	MJC
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:08	MJC
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:08	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	76.1	30-150		9/10/13 22:08
Decachlorobiphenyl [2]	85.3	30-150		9/10/13 22:08
Tetrachloro-m-xylene [1]	88.6	30-150		9/10/13 22:08
Tetrachloro-m-xylene [2]	90.4	30-150		9/10/13 22:08

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: West Asphalt 2 (3ft)
Sampled: 9/6/2013 07:45

Sample ID: 13I0171-04

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:21	MJC
Aroclor-1221 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:21	MJC
Aroclor-1232 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:21	MJC
Aroclor-1242 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:21	MJC
Aroclor-1248 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:21	MJC
Aroclor-1254 [1]	0.18	0.10	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/10/13 22:21	MJC
Aroclor-1260 [2]	0.41	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:21	MJC
Aroclor-1262 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:21	MJC
Aroclor-1268 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:21	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	76.6	30-150		9/10/13 22:21
Decachlorobiphenyl [2]	86.7	30-150		9/10/13 22:21
Tetrachloro-m-xylene [1]	94.1	30-150		9/10/13 22:21
Tetrachloro-m-xylene [2]	96.1	30-150		9/10/13 22:21

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Southwest Asphalt 2 (1ft) Sampled: 9/6/2013 08:00

Sample ID: 13I0171-05

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	mg/Kg	2		SW-846 8082A	9/6/13	9/11/13 13:38	MJC
Aroclor-1221 [1]	ND	0.20	mg/Kg	2		SW-846 8082A	9/6/13	9/11/13 13:38	MJC
Aroclor-1232 [1]	ND	0.20	mg/Kg	2		SW-846 8082A	9/6/13	9/11/13 13:38	MJC
Aroclor-1242 [1]	ND	0.20	mg/Kg	2		SW-846 8082A	9/6/13	9/11/13 13:38	MJC
Aroclor-1248 [1]	ND	0.20	mg/Kg	2		SW-846 8082A	9/6/13	9/11/13 13:38	MJC
Aroclor-1254 [1]	0.46	0.20	mg/Kg	2	P-07	SW-846 8082A	9/6/13	9/11/13 13:38	MJC
Aroclor-1260 [2]	1.6	0.20	mg/Kg	2		SW-846 8082A	9/6/13	9/11/13 13:38	MJC
Aroclor-1262 [1]	ND	0.20	mg/Kg	2		SW-846 8082A	9/6/13	9/11/13 13:38	MJC
Aroclor-1268 [1]	ND	0.20	mg/Kg	2		SW-846 8082A	9/6/13	9/11/13 13:38	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	80.9	30-150		9/11/13 13:38
Decachlorobiphenyl [2]	85.8	30-150		9/11/13 13:38
Tetrachloro-m-xylene [1]	91.8	30-150		9/11/13 13:38
Tetrachloro-m-xylene [2]	91.6	30-150		9/11/13 13:38

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Southwest Asphalt 2 (3ft) | Sampled: 9/6/2013 08:15

Sample ID: 13I0171-06

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:46	MJC
Aroclor-1221 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:46	MJC
Aroclor-1232 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:46	MJC
Aroclor-1242 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:46	MJC
Aroclor-1248 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:46	MJC
Aroclor-1254 [1]	0.29	0.095	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/10/13 22:46	MJC
Aroclor-1260 [2]	0.75	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:46	MJC
Aroclor-1262 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:46	MJC
Aroclor-1268 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:46	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	67.4	30-150		9/10/13 22:46
Decachlorobiphenyl [2]	76.4	30-150		9/10/13 22:46
Tetrachloro-m-xylene [1]	79.9	30-150		9/10/13 22:46
Tetrachloro-m-xylene [2]	81.7	30-150		9/10/13 22:46

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Southwest Asphalt 2 (4ft) Sampled: 9/6/2013 08:30

Sample ID: 13I0171-07

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:59	MJC
Aroclor-1221 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:59	MJC
Aroclor-1232 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:59	MJC
Aroclor-1242 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:59	MJC
Aroclor-1248 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:59	MJC
Aroclor-1254 [1]	0.33	0.098	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/10/13 22:59	MJC
Aroclor-1260 [2]	1.0	0.098	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:59	MJC
Aroclor-1262 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:59	MJC
Aroclor-1268 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 22:59	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	62.3	30-150		9/10/13 22:59
Decachlorobiphenyl [2]	70.4	30-150		9/10/13 22:59
Tetrachloro-m-xylene [1]	77.2	30-150		9/10/13 22:59
Tetrachloro-m-xylene [2]	78.5	30-150		9/10/13 22:59

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Center Asphalt (4ft)
Sampled: 9/6/2013 08:45

Sample ID: 13I0171-08

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:12	MJC
Aroclor-1221 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:12	MJC
Aroclor-1232 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:12	MJC
Aroclor-1242 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:12	MJC
Aroclor-1248 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:12	MJC
Aroclor-1254 [1]	0.20	0.10	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/10/13 23:12	MJC
Aroclor-1260 [2]	0.75	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:12	MJC
Aroclor-1262 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:12	MJC
Aroclor-1268 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:12	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	72.0	30-150		9/10/13 23:12
Decachlorobiphenyl [2]	81.6	30-150		9/10/13 23:12
Tetrachloro-m-xylene [1]	88.7	30-150		9/10/13 23:12
Tetrachloro-m-xylene [2]	90.9	30-150		9/10/13 23:12

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Center Asphalt (5ft) | Sampled: 9/6/2013 09:00

Sample ID: 13I0171-09

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:25	MJC
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:25	MJC
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:25	MJC
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:25	MJC
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:25	MJC
Aroclor-1254 [1]	0.25	0.097	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/10/13 23:25	MJC
Aroclor-1260 [2]	0.84	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:25	MJC
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:25	MJC
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 23:25	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	86.3	30-150		9/10/13 23:25
Decachlorobiphenyl [2]	98.7	30-150		9/10/13 23:25
Tetrachloro-m-xylene [1]	97.1	30-150		9/10/13 23:25
Tetrachloro-m-xylene [2]	99.9	30-150		9/10/13 23:25

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Southeast Asphalt 4 (1ft)
Sampled: 9/6/2013 09:15

Sample ID: 13I0171-10

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:16	MJC
Aroclor-1221 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:16	MJC
Aroclor-1232 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:16	MJC
Aroclor-1242 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:16	MJC
Aroclor-1248 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:16	MJC
Aroclor-1254 [1]	0.33	0.10	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/11/13 0:16	MJC
Aroclor-1260 [1]	0.91	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:16	MJC
Aroclor-1262 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:16	MJC
Aroclor-1268 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:16	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	66.0	30-150		9/11/13 0:16
Decachlorobiphenyl [2]	73.1	30-150		9/11/13 0:16
Tetrachloro-m-xylene [1]	79.3	30-150		9/11/13 0:16
Tetrachloro-m-xylene [2]	80.8	30-150		9/11/13 0:16

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Southeast Asphalt 4 (3ft) Sampled: 9/6/2013 09:30

Sample ID: 13I0171-11

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:29	MJC
Aroclor-1221 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:29	MJC
Aroclor-1232 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:29	MJC
Aroclor-1242 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:29	MJC
Aroclor-1248 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:29	MJC
Aroclor-1254 [1]	0.34	0.095	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/11/13 0:29	MJC
Aroclor-1260 [2]	0.98	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:29	MJC
Aroclor-1262 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:29	MJC
Aroclor-1268 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:29	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	69.9	30-150		9/11/13 0:29
Decachlorobiphenyl [2]	78.3	30-150		9/11/13 0:29
Tetrachloro-m-xylene [1]	86.1	30-150		9/11/13 0:29
Tetrachloro-m-xylene [2]	87.7	30-150		9/11/13 0:29

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Southeast Asphalt 4 (4ft) | Sampled: 9/6/2013 09:45

Sample ID: 13I0171-12

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:42	MJC
Aroclor-1221 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:42	MJC
Aroclor-1232 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:42	MJC
Aroclor-1242 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:42	MJC
Aroclor-1248 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:42	MJC
Aroclor-1254 [1]	0.22	0.10	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/11/13 0:42	MJC
Aroclor-1260 [2]	0.75	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:42	MJC
Aroclor-1262 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:42	MJC
Aroclor-1268 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:42	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	80.9	30-150		9/11/13 0:42
Decachlorobiphenyl [2]	90.6	30-150		9/11/13 0:42
Tetrachloro-m-xylene [1]	94.8	30-150		9/11/13 0:42
Tetrachloro-m-xylene [2]	96.6	30-150		9/11/13 0:42

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Southeast Asphalt 2 (3ft) Sampled: 9/6/2013 10:00

Sample ID: 13I0171-13

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:55	MJC
Aroclor-1221 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:55	MJC
Aroclor-1232 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:55	MJC
Aroclor-1242 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:55	MJC
Aroclor-1248 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:55	MJC
Aroclor-1254 [1]	0.50	0.093	mg/Kg	1	P-07	SW-846 8082A	9/6/13	9/11/13 0:55	MJC
Aroclor-1260 [2]	1.0	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:55	MJC
Aroclor-1262 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:55	MJC
Aroclor-1268 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 0:55	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	79.7	30-150		9/11/13 0:55
Decachlorobiphenyl [2]	89.3	30-150		9/11/13 0:55
Tetrachloro-m-xylene [1]	91.9	30-150		9/11/13 0:55
Tetrachloro-m-xylene [2]	93.6	30-150		9/11/13 0:55

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Southeast Asphalt 2 (3ft)_DUP Sampled: 9/6/2013 10:00

Sample ID: 13I0171-14

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:08	MJC
Aroclor-1221 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:08	MJC
Aroclor-1232 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:08	MJC
Aroclor-1242 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:08	MJC
Aroclor-1248 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:08	MJC
Aroclor-1254 [1]	0.48	0.093	mg/Kg	1	P-07	SW-846 8082A	9/6/13	9/11/13 1:08	MJC
Aroclor-1260 [2]	0.82	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:08	MJC
Aroclor-1262 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:08	MJC
Aroclor-1268 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:08	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	61.1	30-150		9/11/13 1:08
Decachlorobiphenyl [2]	68.4	30-150		9/11/13 1:08
Tetrachloro-m-xylene [1]	80.4	30-150		9/11/13 1:08
Tetrachloro-m-xylene [2]	81.9	30-150		9/11/13 1:08

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: Southeast Asphalt 2 (4ft) Sampled: 9/6/2013 10:15

Sample ID: 13I0171-15

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:21	MJC
Aroclor-1221 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:21	MJC
Aroclor-1232 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:21	MJC
Aroclor-1242 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:21	MJC
Aroclor-1248 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:21	MJC
Aroclor-1254 [1]	0.68	0.095	mg/Kg	1	P-07	SW-846 8082A	9/6/13	9/11/13 1:21	MJC
Aroclor-1260 [2]	0.73	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:21	MJC
Aroclor-1262 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:21	MJC
Aroclor-1268 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:21	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	63.3	30-150		9/11/13 1:21
Decachlorobiphenyl [2]	71.1	30-150		9/11/13 1:21
Tetrachloro-m-xylene [1]	79.1	30-150		9/11/13 1:21
Tetrachloro-m-xylene [2]	80.9	30-150		9/11/13 1:21

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: East Asphalt 2 (4ft) | Sampled: 9/6/2013 10:30

Sample ID: 13I0171-16

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:34	MJC
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:34	MJC
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:34	MJC
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:34	MJC
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:34	MJC
Aroclor-1254 [1]	0.15	0.097	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/11/13 1:34	MJC
Aroclor-1260 [2]	0.54	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:34	MJC
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:34	MJC
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:34	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	71.6	30-150		9/11/13 1:34
Decachlorobiphenyl [2]	80.9	30-150		9/11/13 1:34
Tetrachloro-m-xylene [1]	87.6	30-150		9/11/13 1:34
Tetrachloro-m-xylene [2]	89.8	30-150		9/11/13 1:34

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: East Asphalt 2 (4ft)_DUP Sampled: 9/6/2013 10:30

Sample ID: 13I0171-17

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:47	MJC
Aroclor-1221 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:47	MJC
Aroclor-1232 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:47	MJC
Aroclor-1242 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:47	MJC
Aroclor-1248 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:47	MJC
Aroclor-1254 [1]	0.14	0.096	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/11/13 1:47	MJC
Aroclor-1260 [2]	0.48	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:47	MJC
Aroclor-1262 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:47	MJC
Aroclor-1268 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:47	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	76.9	30-150		9/11/13 1:47
Decachlorobiphenyl [2]	86.6	30-150		9/11/13 1:47
Tetrachloro-m-xylene [1]	93.3	30-150		9/11/13 1:47
Tetrachloro-m-xylene [2]	95.0	30-150		9/11/13 1:47

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: East Asphalt 2 (5ft) | Sampled: 9/6/2013 10:45

Sample ID: 13I0171-18

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:59	MJC
Aroclor-1221 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:59	MJC
Aroclor-1232 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:59	MJC
Aroclor-1242 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:59	MJC
Aroclor-1248 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:59	MJC
Aroclor-1254 [1]	0.15	0.095	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/11/13 1:59	MJC
Aroclor-1260 [2]	0.49	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:59	MJC
Aroclor-1262 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:59	MJC
Aroclor-1268 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 1:59	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	68.3	30-150		9/11/13 1:59
Decachlorobiphenyl [2]	77.3	30-150		9/11/13 1:59
Tetrachloro-m-xylene [1]	84.6	30-150		9/11/13 1:59
Tetrachloro-m-xylene [2]	86.4	30-150		9/11/13 1:59

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: East Asphalt (4ft) Sampled: 9/6/2013 11:00

Sample ID: 13I0171-19

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:12	MJC
Aroclor-1221 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:12	MJC
Aroclor-1232 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:12	MJC
Aroclor-1242 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:12	MJC
Aroclor-1248 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:12	MJC
Aroclor-1254 [1]	0.28	0.10	mg/Kg	1	P-02	SW-846 8082A	9/6/13	9/11/13 2:12	MJC
Aroclor-1260 [2]	0.84	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:12	MJC
Aroclor-1262 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:12	MJC
Aroclor-1268 [1]	ND	0.10	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:12	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	53.1	30-150		9/11/13 2:12
Decachlorobiphenyl [2]	59.1	30-150		9/11/13 2:12
Tetrachloro-m-xylene [1]	67.5	30-150		9/11/13 2:12
Tetrachloro-m-xylene [2]	68.1	30-150		9/11/13 2:12

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: East Asphalt (5ft) Sampled: 9/6/2013 11:15

Sample ID: 13I0171-20

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:25	MJC
Aroclor-1221 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:25	MJC
Aroclor-1232 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:25	MJC
Aroclor-1242 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:25	MJC
Aroclor-1248 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:25	MJC
Aroclor-1254 [1]	0.40	0.093	mg/Kg	1	P-07	SW-846 8082A	9/6/13	9/11/13 2:25	MJC
Aroclor-1260 [2]	1.0	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:25	MJC
Aroclor-1262 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:25	MJC
Aroclor-1268 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/11/13 2:25	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	85.8	30-150		9/11/13 2:25
Decachlorobiphenyl [2]	96.4	30-150		9/11/13 2:25
Tetrachloro-m-xylene [1]	98.3	30-150		9/11/13 2:25
Tetrachloro-m-xylene [2]	100	30-150		9/11/13 2:25

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: East Asphalt 4 (1ft) Sampled: 9/6/2013 11:30

Sample ID: 13I0171-21

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:20	MJC
Aroclor-1221 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:20	MJC
Aroclor-1232 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:20	MJC
Aroclor-1242 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:20	MJC
Aroclor-1248 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:20	MJC
Aroclor-1254 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:20	MJC
Aroclor-1260 [1]	0.80	0.099	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:20	MJC
Aroclor-1262 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:20	MJC
Aroclor-1268 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:20	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	91.4	30-150		9/10/13 19:20
Decachlorobiphenyl [2]	101	30-150		9/10/13 19:20
Tetrachloro-m-xylene [1]	100	30-150		9/10/13 19:20
Tetrachloro-m-xylene [2]	102	30-150		9/10/13 19:20

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: East Asphalt 4 (3ft) | Sampled: 9/6/2013 11:45

Sample ID: 13I0171-22

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:33	MJC
Aroclor-1221 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:33	MJC
Aroclor-1232 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:33	MJC
Aroclor-1242 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:33	MJC
Aroclor-1248 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:33	MJC
Aroclor-1254 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:33	MJC
Aroclor-1260 [2]	0.14	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:33	MJC
Aroclor-1262 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:33	MJC
Aroclor-1268 [1]	ND	0.093	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:33	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	86.3	30-150		9/10/13 19:33
Decachlorobiphenyl [2]	93.8	30-150		9/10/13 19:33
Tetrachloro-m-xylene [1]	102	30-150		9/10/13 19:33
Tetrachloro-m-xylene [2]	104	30-150		9/10/13 19:33

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0171

Date Received: 9/6/2013

Field Sample #: East Asphalt 4 (4ft) | Sampled: 9/6/2013 12:00

Sample ID: 13I0171-23

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:46	MJC
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:46	MJC
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:46	MJC
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:46	MJC
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:46	MJC
Aroclor-1254 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:46	MJC
Aroclor-1260 [2]	0.13	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:46	MJC
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:46	MJC
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	9/6/13	9/10/13 19:46	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	80.9	30-150		9/10/13 19:46
Decachlorobiphenyl [2]	88.7	30-150		9/10/13 19:46
Tetrachloro-m-xylene [1]	94.8	30-150		9/10/13 19:46
Tetrachloro-m-xylene [2]	96.8	30-150		9/10/13 19:46

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13I0171-01 [West Asphalt 4 (1ft)]	B080302	2.01	10.0	09/06/13
13I0171-02 [West Asphalt 4 (3ft)]	B080302	2.08	10.0	09/06/13
13I0171-03 [West Asphalt 4 (4ft)]	B080302	2.07	10.0	09/06/13
13I0171-04 [West Asphalt 2 (3ft)]	B080302	2.01	10.0	09/06/13
13I0171-05 [Southwest Asphalt 2 (1ft)]	B080302	2.03	10.0	09/06/13
13I0171-06 [Southwest Asphalt 2 (3ft)]	B080302	2.11	10.0	09/06/13
13I0171-07 [Southwest Asphalt 2 (4ft)]	B080302	2.04	10.0	09/06/13
13I0171-08 [Center Asphalt (4ft)]	B080302	2.00	10.0	09/06/13
13I0171-09 [Center Asphalt (5ft)]	B080302	2.07	10.0	09/06/13
13I0171-10 [Southeast Asphalt 4 (1ft)]	B080302	2.00	10.0	09/06/13
13I0171-11 [Southeast Asphalt 4 (3ft)]	B080302	2.11	10.0	09/06/13
13I0171-12 [Southeast Asphalt 4 (4ft)]	B080302	2.00	10.0	09/06/13
13I0171-13 [Southeast Asphalt 2 (3ft)]	B080302	2.15	10.0	09/06/13
13I0171-14 [Southeast Asphalt 2 (3ft)_DUP]	B080302	2.15	10.0	09/06/13
13I0171-15 [Southeast Asphalt 2 (4ft)]	B080302	2.11	10.0	09/06/13
13I0171-16 [East Asphalt 2 (4ft)]	B080302	2.06	10.0	09/06/13
13I0171-17 [East Asphalt 2 (4ft)_DUP]	B080302	2.09	10.0	09/06/13
13I0171-18 [East Asphalt 2 (5ft)]	B080302	2.11	10.0	09/06/13
13I0171-19 [East Asphalt (4ft)]	B080302	2.01	10.0	09/06/13
13I0171-20 [East Asphalt (5ft)]	B080302	2.15	10.0	09/06/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13I0171-21 [East Asphalt 4 (1ft)]	B080303	2.03	10.0	09/06/13
13I0171-22 [East Asphalt 4 (3ft)]	B080303	2.15	10.0	09/06/13
13I0171-23 [East Asphalt 4 (4ft)]	B080303	2.07	10.0	09/06/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B080302 - SW-846 3540C										
Blank (B080302-BLK1)				Prepared: 09/06/13 Analyzed: 09/10/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*0.889*		mg/Kg	1.00		88.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.954*		mg/Kg	1.00		95.4	30-150			
Surrogate: Tetrachloro-m-xylene	*0.907*		mg/Kg	1.00		90.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.916*		mg/Kg	1.00		91.6	30-150			
LCS (B080302-BS1)				Prepared: 09/06/13 Analyzed: 09/10/13						
Aroclor-1016	0.32	0.10	mg/Kg	0.250		126	40-140			
Aroclor-1016 [2C]	0.30	0.10	mg/Kg	0.250		122	40-140			
Aroclor-1260	0.28	0.10	mg/Kg	0.250		111	40-140			
Aroclor-1260 [2C]	0.28	0.10	mg/Kg	0.250		110	40-140			
Surrogate: Decachlorobiphenyl	*1.04*		mg/Kg	1.00		104	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.11*		mg/Kg	1.00		111	30-150			
Surrogate: Tetrachloro-m-xylene	*1.02*		mg/Kg	1.00		102	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.03*		mg/Kg	1.00		103	30-150			
LCS Dup (B080302-BSD1)				Prepared: 09/06/13 Analyzed: 09/10/13						
Aroclor-1016	0.32	0.10	mg/Kg	0.250		127	40-140	0.777	30	
Aroclor-1016 [2C]	0.30	0.10	mg/Kg	0.250		122	40-140	0.185	30	
Aroclor-1260	0.28	0.10	mg/Kg	0.250		112	40-140	0.788	30	
Aroclor-1260 [2C]	0.28	0.10	mg/Kg	0.250		113	40-140	2.11	30	
Surrogate: Decachlorobiphenyl	*0.975*		mg/Kg	1.00		97.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.04*		mg/Kg	1.00		104	30-150			
Surrogate: Tetrachloro-m-xylene	*0.971*		mg/Kg	1.00		97.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.976*		mg/Kg	1.00		97.6	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD		RPD Limit	Notes
Batch B080302 - SW-846 3540C												
Matrix Spike (B080302-MS1)		**Source: 13I0171-01**		Prepared: 09/06/13 Analyzed: 09/11/13								
Aroclor-1016	0.31	0.10	mg/Kg	0.250	0.0	126		40-140				
Aroclor-1016 [2C]	0.35	0.10	mg/Kg	0.250	0.0	140		40-140				
Aroclor-1260	0.94	0.10	mg/Kg	0.250	1.2	**-86.6**	*	40-140				MS-19, R-06
Aroclor-1260 [2C]	0.93	0.10	mg/Kg	0.250	1.2	**-88.5**	*	40-140				MS-19, R-06
Surrogate: Decachlorobiphenyl	*0.831*		mg/Kg	1.00		83.1		30-150				
Surrogate: Decachlorobiphenyl [2C]	*0.935*		mg/Kg	1.00		93.5		30-150				
Surrogate: Tetrachloro-m-xylene	*0.999*		mg/Kg	1.00		99.9		30-150				
Surrogate: Tetrachloro-m-xylene [2C]	*1.02*		mg/Kg	1.00		102		30-150				
Matrix Spike Dup (B080302-MSD1)		**Source: 13I0171-01**		Prepared: 09/06/13 Analyzed: 09/11/13								
Aroclor-1016	0.28	0.10	mg/Kg	0.250	0.0	113		40-140	10.3		50	
Aroclor-1016 [2C]	0.28	0.10	mg/Kg	0.250	0.0	111		40-140	22.5		50	
Aroclor-1260	1.8	0.10	mg/Kg	0.250	1.2	**254**	*	40-140	**62.5**	*	50	MS-19, R-06
Aroclor-1260 [2C]	1.8	0.10	mg/Kg	0.250	1.2	**249**	*	40-140	**62.4**	*	50	MS-19, R-06
Surrogate: Decachlorobiphenyl	*0.732*		mg/Kg	1.00		73.2		30-150				
Surrogate: Decachlorobiphenyl [2C]	*0.823*		mg/Kg	1.00		82.3		30-150				
Surrogate: Tetrachloro-m-xylene	*0.906*		mg/Kg	1.00		90.6		30-150				
Surrogate: Tetrachloro-m-xylene [2C]	*0.928*		mg/Kg	1.00		92.8		30-150				
Batch B080303 - SW-846 3540C												
Blank (B080303-BLK1)				Prepared: 09/06/13 Analyzed: 09/10/13								
Aroclor-1016	ND	0.10	mg/Kg									
Aroclor-1016 [2C]	ND	0.10	mg/Kg									
Aroclor-1221	ND	0.10	mg/Kg									
Aroclor-1221 [2C]	ND	0.10	mg/Kg									
Aroclor-1232	ND	0.10	mg/Kg									
Aroclor-1232 [2C]	ND	0.10	mg/Kg									
Aroclor-1242	ND	0.10	mg/Kg									
Aroclor-1242 [2C]	ND	0.10	mg/Kg									
Aroclor-1248	ND	0.10	mg/Kg									
Aroclor-1248 [2C]	ND	0.10	mg/Kg									
Aroclor-1254	ND	0.10	mg/Kg									
Aroclor-1254 [2C]	ND	0.10	mg/Kg									
Aroclor-1260	ND	0.10	mg/Kg									
Aroclor-1260 [2C]	ND	0.10	mg/Kg									
Aroclor-1262	ND	0.10	mg/Kg									
Aroclor-1262 [2C]	ND	0.10	mg/Kg									
Aroclor-1268	ND	0.10	mg/Kg									
Aroclor-1268 [2C]	ND	0.10	mg/Kg									
Surrogate: Decachlorobiphenyl	*0.933*		mg/Kg	1.00		93.3		30-150				
Surrogate: Decachlorobiphenyl [2C]	*1.01*		mg/Kg	1.00		101		30-150				
Surrogate: Tetrachloro-m-xylene	*0.984*		mg/Kg	1.00		98.4		30-150				
Surrogate: Tetrachloro-m-xylene [2C]	*0.995*		mg/Kg	1.00		99.5		30-150				

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B080303 - SW-846 3540C										
LCS (B080303-BS1)				Prepared: 09/06/13 Analyzed: 09/10/13						
Aroclor-1016	0.29	0.10	mg/Kg	0.250		117	40-140			
Aroclor-1016 [2C]	0.29	0.10	mg/Kg	0.250		116	40-140			
Aroclor-1260	0.25	0.10	mg/Kg	0.250		102	40-140			
Aroclor-1260 [2C]	0.25	0.10	mg/Kg	0.250		98.1	40-140			
Surrogate: Decachlorobiphenyl	*0.898*		mg/Kg	1.00		89.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.965*		mg/Kg	1.00		96.5	30-150			
Surrogate: Tetrachloro-m-xylene	*0.981*		mg/Kg	1.00		98.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.994*		mg/Kg	1.00		99.4	30-150			
LCS Dup (B080303-BSD1)				Prepared: 09/06/13 Analyzed: 09/10/13						
Aroclor-1016	0.30	0.10	mg/Kg	0.250		119	40-140	2.32	30	
Aroclor-1016 [2C]	0.30	0.10	mg/Kg	0.250		120	40-140	3.24	30	
Aroclor-1260	0.26	0.10	mg/Kg	0.250		103	40-140	1.09	30	
Aroclor-1260 [2C]	0.25	0.10	mg/Kg	0.250		101	40-140	3.26	30	
Surrogate: Decachlorobiphenyl	*0.881*		mg/Kg	1.00		88.1	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.942*		mg/Kg	1.00		94.2	30-150			
Surrogate: Tetrachloro-m-xylene	*0.981*		mg/Kg	1.00		98.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.988*		mg/Kg	1.00		98.8	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
MS-19	Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
P-02	Sample RPD between primary and confirmatory analysis exceeded 40%. Per EPA method 8000, the lower value was reported due to obvious chromatographic interference on the column with the higher result.
P-07	Significant chromatographic interference was observed on only one of the two columns. Per EPA guidance, the lower value was reported due to obvious chromatographic interference on the column with the higher result.
R-06	Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Product/Solid	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

13I0171
Rev 04.05.12

39 Spruce Street
East longmeadow, MA 01028

Company Name: Kleinfelder
Telephone: 617-498-4705
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Project # 20120096.001A
Client PO#
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Jenna Almquist & Rachel Patenaude

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	# of Containers	** Preservation	***Container Code
									1	I	A
01	West Asphalt 4 (1')	9/6/2013	700	X		○	U	✓			
02	West Asphalt 4 (3')	9/6/2013	715	X		○	U	✓			
03	West Asphalt 4 (4')	9/6/2013	730	X		○	U	✓			
04	West Asphalt 2 (3')	9/6/2013	745	X		○	U	✓			
05	Southwest Asphalt 2 (1')	9/6/2013	800	X		○	U	✓			
06	Southwest Asphalt 2 (3')	9/6/2013	815	X		○	U	✓			
07	Southwest Asphalt 2 (4')	9/6/2013	830	X		○	U	✓			
08	Center Asphalt (4')	9/6/2013	845	X		○	U	✓			
09	Center Asphalt (5')	9/6/2013	900	X		○	U	✓			
10	Southeast Asphalt 4 (1')	9/6/2013	915	X		○	U	✓			

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
For each sample, please grind entire sample for analysis. **HOLD West Asphalt 4 (5')

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature) [signature] 9/6/13	Date/Time: 11:45	
Received by: (signature) [signature] 9/6/13	Date/Time: 11:45	
Relinquished by: (signature) [signature] 9/6/13	Date/Time: 13:55	
Received by: (signature) [signature] 9/6/13	Date/Time: 18:00	

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

††TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

[signature] 4.2°C 9/6/13 18:00

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

13I 0171
Rev 04.05.12

39 Spruce Street
East longmeadow, MA 01028

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Jenna Almquist & Rachel Patenaude

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet
11	Southeast Asphalt 4 (3')	9/6/2013	930	X		○	U	✓
12	Southeast Asphalt 4 (4')	9/6/2013	945	X		○	U	✓
13	Southeast Asphalt 2 (3')	9/6/2013	1000	X		○	U	✓
14	Southeast Asphalt 2 (3')_DUP	9/6/2013	1000	X		○	U	✓
15	Southeast Asphalt 2 (4')	9/6/2013	1015	X		○	U	✓
16	East Asphalt 2 (4')	9/6/2013	1030	X		○	U	✓
17	East Asphalt 2 (4')_DUP	9/6/2013	1030	X		○	U	✓
18	East Asphalt 2 (5')	9/6/2013	1045	X		○	U	✓
19	East Asphalt (4')	9/6/2013	1100	X		○	U	✓
20	East Asphalt (5')	9/6/2013	1115	X		○	U	✓

# of Containers
** Preservation
***Container Code

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
For each sample, please grind entire sample for analysis. **HOLD West Asphalt 4 (5')

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time:
[signature] 9/6/13	1145
Received by: (signature) [signature] 9/6/13	1355
Relinquished by: (signature) [signature] 9/6/13	1800
Received by: (signature) Rebecca Faust 9/6/13	1800

Turnaround ††
☐ 7-Day
☐ 10-Day
☒ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

13I0171
Rev 04.05.12

39 Spruce Street
East longmeadow, MA 01028

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Jenna Almquist & Rachel Patenaude

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet											# of Containers	** Preservation	***Container Code
																			1	I	A
21	East Asphalt 4 (1')	9/6/2013	1130	X		○	U	✓													
22	East Asphalt 4 (3')	9/6/2013	1145	X		○	U	✓													
23	East Asphalt 4 (4')	9/6/2013	1200	X		○	U	✓													
24	West Asphalt 4 (5')	9/6/2013	1215	X		○	U	✓													

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other ~~Asphalt~~ N/A

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
For each sample, please grind entire sample for analysis. **HOLD West Asphalt 4 (5').

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	9/6/13	Date/Time: 11:45
Received by: (signature)	9/6/13	Date/Time: 1355
Relinquished by: (signature)	9/6/13	Date/Time: 1800
Received by: (signature)	9/6/13	Date/Time: 1800

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

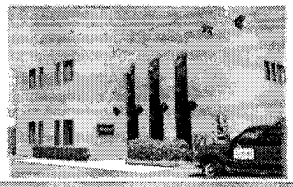
AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY



Sample Receipt Checklist

CLIENT NAME: Kleinfelder **RECEIVED BY:** RLF **DATE:** 9/6/13

1) Was the chain(s) of custody relinquished and signed? Yes No No CoC Included

2) Does the chain agree with the samples? Yes No

If not, explain:

3) Are all the samples in good condition? Yes No

If not, explain:

4) How were the samples received:

On Ice ☑ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☑

Were the samples received in Temperature Compliance of (2-6°C)? Yes No N/A

Temperature °C by Temp blank _____ Temperature °C by Temp gun 4.2°C

5) Are there Dissolved samples for the lab to filter? Yes No

Who was notified _____ Date _____ Time _____

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes No

Who was notified _____ Date _____ Time _____

7) Location where samples are stored: 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: _____

8) Do all samples have the proper Acid pH: Yes No N/A _____

9) Do all samples have the proper Base pH: Yes No N/A _____

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes No N/A

Containers received at Con-Test

	# of containers			# of containers
1 Liter Amber			8 oz amber/clear jar	24
500 mL Amber			4 oz amber/clear jar	
250 mL Amber (8oz amber)			2 oz amber/clear jar	
1 Liter Plastic			Plastic Bag / Ziploc	
500 mL Plastic			SOC Kit	
250 mL plastic			Non-ConTest Container	
40 mL Vial - type listed below			Perchlorate Kit	
Colisure / bacteria bottle			Flashpoint bottle	
Dissolved Oxygen bottle			Other glass jar	
Encore			Other	

Laboratory Comments:

40 mL vials: # HCl _____ # Methanol _____

Bisulfate _____ # DI Water _____

Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

Question	Answer (True/False) T/F/NA	Comment
1) The cooler's custody seal, if present, is intact.	T	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	NA	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	NA	
18) There is sufficient volume for all requsted analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	NA	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	NA	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements? **Date/Time:**

Doc #277 Rev. 4 August 2013 **Log-In Technician Initials:** **Date/Time:**

RLF 9/6/13 1800

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

October 3, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension - SOW
Client Job Number:
Project Number: 2012096.001-A
Laboratory Work Order Number: 13I0897

Enclosed are results of analyses for samples received by the laboratory on September 25, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Aaron L. Benoit
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 10/3/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.001-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13I0897

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension - SOW

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
West Asphalt 4 (12.5')	13I0897-01	Product/Solid		SW-846 8082A	
West Asphalt 2 (20')	13I0897-02	Product/Solid		SW-846 8082A	
Southwest Asphalt 3 (6")	13I0897-03	Product/Solid		SW-846 8082A	
Southwest Asphalt 3 (10')	13I0897-04	Product/Solid		SW-846 8082A	
Southwest Asphalt 3 (40')	13I0897-05	Product/Solid		SW-846 8082A	
Southwest Asphalt 2 (10')	13I0897-06	Product/Solid		SW-846 8082A	
Southwest Asphalt 2 (20')	13I0897-07	Product/Solid		SW-846 8082A	
Southwest Asphalt 2 (40')	13I0897-08	Product/Solid		SW-846 8082A	
Southwest Asphalt 2 (40')_DUP	13I0897-09	Product/Solid		SW-846 8082A	
Southwest Asphalt 2 (Fence)	13I0897-10	Product/Solid		SW-846 8082A	
Equip Blank 1	13I0897-11	Equipment Blank Water		SW-846 8082A	
Center Asphalt (10')	13I0897-12	Product/Solid		SW-846 8082A	
Center Asphalt (20')	13I0897-13	Product/Solid		SW-846 8082A	
Southeast Asphalt 4 (10')	13I0897-14	Product/Solid		SW-846 8082A	
Southeast Asphalt 4 (20')	13I0897-15	Product/Solid		SW-846 8082A	
Southeast Asphalt 2 (10')	13I0897-16	Product/Solid		SW-846 8082A	
Southeast Asphalt 2 (20')	13I0897-17	Product/Solid		SW-846 8082A	
Center Asphalt (Fence)	13I0897-18	Product/Solid		SW-846 8082A	
Southeast Asphalt 4 (Fence)	13I0897-19	Product/Solid		SW-846 8082A	
Southeast Asphalt 2 (Fence)	13I0897-20	Product/Solid		SW-846 8082A	
Southeast Corner Asphalt 2 (10')	13I0897-21	Product/Solid		SW-846 8082A	
East Asphalt 2 (10')	13I0897-22	Product/Solid		SW-846 8082A	
East Asphalt 2 (10')_DUP	13I0897-23	Product/Solid		SW-846 8082A	
East Asphalt 2 (19')	13I0897-24	Product/Solid		SW-846 8082A	
East Asphalt 2 (Fence)	13I0897-25	Product/Solid		SW-846 8082A	
East Asphalt (10')	13I0897-26	Product/Solid		SW-846 8082A	
East Asphalt (20')	13I0897-27	Product/Solid		SW-846 8082A	
East Asphalt 5 (10')	13I0897-28	Product/Solid		SW-846 8082A	
East Asphalt 5 (20')	13I0897-29	Product/Solid		SW-846 8082A	
East Asphalt 4 (20')	13I0897-30	Product/Solid		SW-846 8082A	
Equip Blank 2	13I0897-31	Equipment Blank Water		SW-846 8082A	
East Asphalt (Fence)	13I0897-32	Product/Solid		SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8082A

Qualifications:

Matrix spike and matrix spike duplicate recoveries are outside of control limits. Data validation is not affected since results for this compound in this sample are "not detected", and recovery bias is on the high side.

Analyte & Samples(s) Qualified:

Aroclor-1016 [2C]

B081732-MS1, B081732-MSD1

Sample and corresponding duplicate results reflect apparent non-homogeneity of sample.

Analyte & Samples(s) Qualified:

Aroclor-1260, Aroclor-1260 [2C]

13I0897-08[Southwest Asphalt 2 (40')], 13I0897-09[Southwest Asphalt 2 (40')_DUP], 13I0897-22[East Asphalt 2 (10')], 13I0897-23[East Asphalt 2 (10')_DUP]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: West Asphalt 4 (12.5') | Sampled: 9/25/2013 07:35

Sample ID: 13I0897-01

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:37	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:37	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:37	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:37	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:37	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:37	JMB
Aroclor-1260 [2]	0.30	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:37	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:37	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:37	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	112	30-150		10/1/13 20:37
Decachlorobiphenyl [2]	120	30-150		10/1/13 20:37
Tetrachloro-m-xylene [1]	108	30-150		10/1/13 20:37
Tetrachloro-m-xylene [2]	112	30-150		10/1/13 20:37

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: West Asphalt 2 (20') | Sampled: 9/25/2013 07:40

Sample ID: 13I0897-02

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:55	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:55	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:55	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:55	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:55	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:55	JMB
Aroclor-1260 [2]	0.34	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:55	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:55	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 20:55	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	103	30-150		10/1/13 20:55
Decachlorobiphenyl [2]	115	30-150		10/1/13 20:55
Tetrachloro-m-xylene [1]	106	30-150		10/1/13 20:55
Tetrachloro-m-xylene [2]	112	30-150		10/1/13 20:55

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southwest Asphalt 3 (6") | Sampled: 9/25/2013 07:45

Sample ID: 13I0897-03

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	9/27/13	10/1/13 21:13	JMB
Aroclor-1221 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	9/27/13	10/1/13 21:13	JMB
Aroclor-1232 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	9/27/13	10/1/13 21:13	JMB
Aroclor-1242 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	9/27/13	10/1/13 21:13	JMB
Aroclor-1248 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	9/27/13	10/1/13 21:13	JMB
Aroclor-1254 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	9/27/13	10/1/13 21:13	JMB
Aroclor-1260 [2]	5.8	0.97	mg/Kg	10		SW-846 8082A	9/27/13	10/1/13 21:13	JMB
Aroclor-1262 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	9/27/13	10/1/13 21:13	JMB
Aroclor-1268 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	9/27/13	10/1/13 21:13	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	107	30-150		10/1/13 21:13
Decachlorobiphenyl [2]	112	30-150		10/1/13 21:13
Tetrachloro-m-xylene [1]	118	30-150		10/1/13 21:13
Tetrachloro-m-xylene [2]	118	30-150		10/1/13 21:13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southwest Asphalt 3 (10') | Sampled: 9/25/2013 07:50

Sample ID: 13I0897-04

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:31	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:31	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:31	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:31	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:31	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:31	JMB
Aroclor-1260 [2]	0.49	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:31	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:31	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:31	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	101	30-150		10/1/13 21:31
Decachlorobiphenyl [2]	112	30-150		10/1/13 21:31
Tetrachloro-m-xylene [1]	105	30-150		10/1/13 21:31
Tetrachloro-m-xylene [2]	111	30-150		10/1/13 21:31

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southwest Asphalt 3 (40') Sampled: 9/25/2013 07:55

Sample ID: 13I0897-05

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:49	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:49	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:49	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:49	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:49	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:49	JMB
Aroclor-1260 [2]	0.55	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:49	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:49	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 21:49	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	107	30-150		10/1/13 21:49
Decachlorobiphenyl [2]	117	30-150		10/1/13 21:49
Tetrachloro-m-xylene [1]	107	30-150		10/1/13 21:49
Tetrachloro-m-xylene [2]	114	30-150		10/1/13 21:49

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southwest Asphalt 2 (10') | Sampled: 9/25/2013 08:00

Sample ID: 13I0897-06

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:06	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:06	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:06	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:06	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:06	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:06	JMB
Aroclor-1260 [2]	0.65	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:06	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:06	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:06	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	102	30-150		10/1/13 22:06
Decachlorobiphenyl [2]	110	30-150		10/1/13 22:06
Tetrachloro-m-xylene [1]	102	30-150		10/1/13 22:06
Tetrachloro-m-xylene [2]	108	30-150		10/1/13 22:06

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southwest Asphalt 2 (20') Sampled: 9/25/2013 08:05

Sample ID: 13I0897-07

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:24	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:24	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:24	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:24	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:24	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:24	JMB
Aroclor-1260 [2]	0.74	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:24	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:24	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:24	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	98.0	30-150		10/1/13 22:24
Decachlorobiphenyl [2]	108	30-150		10/1/13 22:24
Tetrachloro-m-xylene [1]	101	30-150		10/1/13 22:24
Tetrachloro-m-xylene [2]	107	30-150		10/1/13 22:24

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southwest Asphalt 2 (40') Sampled: 9/25/2013 08:10

Sample ID: 13I0897-08

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:42	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:42	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:42	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:42	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:42	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:42	JMB
Aroclor-1260 [2]	0.46	0.29	mg/Kg	3	R-07	SW-846 8082A	9/27/13	10/1/13 22:42	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:42	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 22:42	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	98.8	30-150		10/1/13 22:42
Decachlorobiphenyl [2]	107	30-150		10/1/13 22:42
Tetrachloro-m-xylene [1]	96.4	30-150		10/1/13 22:42
Tetrachloro-m-xylene [2]	102	30-150		10/1/13 22:42

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southwest Asphalt 2 (40')_DUP
Sampled: 9/25/2013 08:10

Sample ID: 13I0897-09

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:00	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:00	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:00	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:00	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:00	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:00	JMB
Aroclor-1260 [1]	ND	0.29	mg/Kg	3	R-07	SW-846 8082A	9/27/13	10/1/13 23:00	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:00	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:00	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	104	30-150		10/1/13 23:00
Decachlorobiphenyl [2]	114	30-150		10/1/13 23:00
Tetrachloro-m-xylene [1]	106	30-150		10/1/13 23:00
Tetrachloro-m-xylene [2]	111	30-150		10/1/13 23:00

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southwest Asphalt 2 (Fence) | Sampled: 9/25/2013 08:15

Sample ID: 13I0897-10

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:18	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:18	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:18	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:18	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:18	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:18	JMB
Aroclor-1260 [2]	0.29	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:18	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:18	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 23:18	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	108	30-150		10/1/13 23:18
Decachlorobiphenyl [2]	120	30-150		10/1/13 23:18
Tetrachloro-m-xylene [1]	112	30-150		10/1/13 23:18
Tetrachloro-m-xylene [2]	120	30-150		10/1/13 23:18

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Equip Blank 1
Sampled: 9/25/2013 08:20

Sample ID: 13I0897-11

Sample Matrix: Equipment Blank Water

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:08	JMB
Aroclor-1221 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:08	JMB
Aroclor-1232 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:08	JMB
Aroclor-1242 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:08	JMB
Aroclor-1248 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:08	JMB
Aroclor-1254 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:08	JMB
Aroclor-1260 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:08	JMB
Aroclor-1262 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:08	JMB
Aroclor-1268 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:08	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	38.1	30-150		10/1/13 20:08
Decachlorobiphenyl [2]	33.3	30-150		10/1/13 20:08
Tetrachloro-m-xylene [1]	91.8	30-150		10/1/13 20:08
Tetrachloro-m-xylene [2]	87.8	30-150		10/1/13 20:08

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Center Asphalt (10')
Sampled: 9/25/2013 08:25

Sample ID: 13I0897-12

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 0:59	JMB
Aroclor-1221 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 0:59	JMB
Aroclor-1232 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 0:59	JMB
Aroclor-1242 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 0:59	JMB
Aroclor-1248 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 0:59	JMB
Aroclor-1254 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 0:59	JMB
Aroclor-1260 [2]	1.0	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 0:59	JMB
Aroclor-1262 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 0:59	JMB
Aroclor-1268 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 0:59	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	109	30-150		10/2/13 0:59
Decachlorobiphenyl [2]	115	30-150		10/2/13 0:59
Tetrachloro-m-xylene [1]	112	30-150		10/2/13 0:59
Tetrachloro-m-xylene [2]	116	30-150		10/2/13 0:59

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Center Asphalt (20')
Sampled: 9/25/2013 08:30

Sample ID: 13I0897-13

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:17	JMB
Aroclor-1221 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:17	JMB
Aroclor-1232 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:17	JMB
Aroclor-1242 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:17	JMB
Aroclor-1248 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:17	JMB
Aroclor-1254 [2]	2.0	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:17	JMB
Aroclor-1260 [2]	0.91	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:17	JMB
Aroclor-1262 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:17	JMB
Aroclor-1268 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:17	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	117	30-150		10/2/13 1:17
Decachlorobiphenyl [2]	126	30-150		10/2/13 1:17
Tetrachloro-m-xylene [1]	118	30-150		10/2/13 1:17
Tetrachloro-m-xylene [2]	123	30-150		10/2/13 1:17

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southeast Asphalt 4 (10') | Sampled: 9/25/2013 08:35

Sample ID: 13I0897-14

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:35	JMB
Aroclor-1221 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:35	JMB
Aroclor-1232 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:35	JMB
Aroclor-1242 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:35	JMB
Aroclor-1248 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:35	JMB
Aroclor-1254 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:35	JMB
Aroclor-1260 [2]	0.95	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:35	JMB
Aroclor-1262 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:35	JMB
Aroclor-1268 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:35	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	112	30-150		10/2/13 1:35
Decachlorobiphenyl [2]	119	30-150		10/2/13 1:35
Tetrachloro-m-xylene [1]	116	30-150		10/2/13 1:35
Tetrachloro-m-xylene [2]	121	30-150		10/2/13 1:35

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southeast Asphalt 4 (20') Sampled: 9/25/2013 08:40

Sample ID: 13I0897-15

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:53	JMB
Aroclor-1221 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:53	JMB
Aroclor-1232 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:53	JMB
Aroclor-1242 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:53	JMB
Aroclor-1248 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:53	JMB
Aroclor-1254 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:53	JMB
Aroclor-1260 [2]	0.81	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:53	JMB
Aroclor-1262 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:53	JMB
Aroclor-1268 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 1:53	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	108	30-150		10/2/13 1:53
Decachlorobiphenyl [2]	116	30-150		10/2/13 1:53
Tetrachloro-m-xylene [1]	114	30-150		10/2/13 1:53
Tetrachloro-m-xylene [2]	120	30-150		10/2/13 1:53

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southeast Asphalt 2 (10') Sampled: 9/25/2013 08:45

Sample ID: 13I0897-16

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 2:11	JMB
Aroclor-1221 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 2:11	JMB
Aroclor-1232 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 2:11	JMB
Aroclor-1242 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 2:11	JMB
Aroclor-1248 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 2:11	JMB
Aroclor-1254 [2]	1.1	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 2:11	JMB
Aroclor-1260 [2]	0.72	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 2:11	JMB
Aroclor-1262 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 2:11	JMB
Aroclor-1268 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 2:11	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	106	30-150		10/2/13 2:11
Decachlorobiphenyl [2]	115	30-150		10/2/13 2:11
Tetrachloro-m-xylene [1]	113	30-150		10/2/13 2:11
Tetrachloro-m-xylene [2]	118	30-150		10/2/13 2:11

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southeast Asphalt 2 (20')
Sampled: 9/25/2013 08:50

Sample ID: 13I0897-17

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:28	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:28	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:28	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:28	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:28	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:28	JMB
Aroclor-1260 [2]	0.35	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:28	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:28	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:28	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	106	30-150		10/2/13 2:28
Decachlorobiphenyl [2]	117	30-150		10/2/13 2:28
Tetrachloro-m-xylene [1]	107	30-150		10/2/13 2:28
Tetrachloro-m-xylene [2]	115	30-150		10/2/13 2:28

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Center Asphalt (Fence)
Sampled: 9/25/2013 09:00

Sample ID: 13I0897-18

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:46	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:46	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:46	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:46	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:46	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:46	JMB
Aroclor-1260 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:46	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:46	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 2:46	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	96.1	30-150		10/2/13 2:46
Decachlorobiphenyl [2]	105	30-150		10/2/13 2:46
Tetrachloro-m-xylene [1]	99.2	30-150		10/2/13 2:46
Tetrachloro-m-xylene [2]	106	30-150		10/2/13 2:46

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southeast Asphalt 4 (Fence) | Sampled: 9/25/2013 09:05

Sample ID: 13I0897-19

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:04	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:04	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:04	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:04	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:04	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:04	JMB
Aroclor-1260 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:04	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:04	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:04	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	99.4	30-150		10/2/13 3:04
Decachlorobiphenyl [2]	112	30-150		10/2/13 3:04
Tetrachloro-m-xylene [1]	104	30-150		10/2/13 3:04
Tetrachloro-m-xylene [2]	111	30-150		10/2/13 3:04

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southeast Asphalt 2 (Fence) | Sampled: 9/25/2013 09:10

Sample ID: 13I0897-20

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:22	JMB
Aroclor-1221 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:22	JMB
Aroclor-1232 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:22	JMB
Aroclor-1242 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:22	JMB
Aroclor-1248 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:22	JMB
Aroclor-1254 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:22	JMB
Aroclor-1260 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:22	JMB
Aroclor-1262 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:22	JMB
Aroclor-1268 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:22	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	104	30-150		10/2/13 3:22
Decachlorobiphenyl [2]	118	30-150		10/2/13 3:22
Tetrachloro-m-xylene [1]	108	30-150		10/2/13 3:22
Tetrachloro-m-xylene [2]	116	30-150		10/2/13 3:22

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW Sample Description: Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Southeast Corner Asphalt 2 (10') Sampled: 9/25/2013 12:00

Sample ID: 13I0897-21

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:40	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:40	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:40	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:40	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:40	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:40	JMB
Aroclor-1260 [2]	0.38	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:40	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:40	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 3:40	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	104	30-150		10/2/13 3:40
Decachlorobiphenyl [2]	117	30-150		10/2/13 3:40
Tetrachloro-m-xylene [1]	108	30-150		10/2/13 3:40
Tetrachloro-m-xylene [2]	116	30-150		10/2/13 3:40

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt 2 (10') | Sampled: 9/25/2013 12:10

Sample ID: 13I0897-22

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 17:32	JMB
Aroclor-1221 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 17:32	JMB
Aroclor-1232 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 17:32	JMB
Aroclor-1242 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 17:32	JMB
Aroclor-1248 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 17:32	JMB
Aroclor-1254 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 17:32	JMB
Aroclor-1260 [2]	0.98	0.49	mg/Kg	5	R-07	SW-846 8082A	9/27/13	10/1/13 17:32	JMB
Aroclor-1262 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 17:32	JMB
Aroclor-1268 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 17:32	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	87.9	30-150		10/1/13 17:32
Decachlorobiphenyl [2]	89.6	30-150		10/1/13 17:32
Tetrachloro-m-xylene [1]	84.0	30-150		10/1/13 17:32
Tetrachloro-m-xylene [2]	83.5	30-150		10/1/13 17:32

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt 2 (10')_DUP | Sampled: 9/25/2013 12:10

Sample ID: 13I0897-23

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 17:50	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 17:50	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 17:50	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 17:50	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 17:50	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 17:50	JMB
Aroclor-1260 [2]	0.51	0.29	mg/Kg	3	R-07	SW-846 8082A	9/27/13	10/1/13 17:50	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 17:50	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 17:50	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	93.7	30-150		10/1/13 17:50
Decachlorobiphenyl [2]	98.3	30-150		10/1/13 17:50
Tetrachloro-m-xylene [1]	89.8	30-150		10/1/13 17:50
Tetrachloro-m-xylene [2]	91.9	30-150		10/1/13 17:50

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt 2 (19') | Sampled: 9/25/2013 12:20

Sample ID: 13I0897-24

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:08	JMB
Aroclor-1221 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:08	JMB
Aroclor-1232 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:08	JMB
Aroclor-1242 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:08	JMB
Aroclor-1248 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:08	JMB
Aroclor-1254 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:08	JMB
Aroclor-1260 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:08	JMB
Aroclor-1262 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:08	JMB
Aroclor-1268 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:08	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	77.9	30-150		10/1/13 18:08
Decachlorobiphenyl [2]	84.8	30-150		10/1/13 18:08
Tetrachloro-m-xylene [1]	81.6	30-150		10/1/13 18:08
Tetrachloro-m-xylene [2]	84.2	30-150		10/1/13 18:08

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt 2 (Fence) | Sampled: 9/25/2013 12:30

Sample ID: 13I0897-25

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:26	JMB
Aroclor-1221 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:26	JMB
Aroclor-1232 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:26	JMB
Aroclor-1242 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:26	JMB
Aroclor-1248 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:26	JMB
Aroclor-1254 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:26	JMB
Aroclor-1260 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:26	JMB
Aroclor-1262 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:26	JMB
Aroclor-1268 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/1/13 18:26	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	85.6	30-150		10/1/13 18:26
Decachlorobiphenyl [2]	92.1	30-150		10/1/13 18:26
Tetrachloro-m-xylene [1]	90.8	30-150		10/1/13 18:26
Tetrachloro-m-xylene [2]	92.8	30-150		10/1/13 18:26

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt (10') | Sampled: 9/25/2013 12:40

Sample ID: 13I0897-26

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	10/2/13	10/3/13 12:33	MJC
Aroclor-1016 [1]	ND	0.50	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 18:43	JMB
Aroclor-1221 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	10/2/13	10/3/13 12:33	MJC
Aroclor-1221 [1]	ND	0.50	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 18:43	JMB
Aroclor-1232 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	10/2/13	10/3/13 12:33	MJC
Aroclor-1232 [1]	ND	0.50	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 18:43	JMB
Aroclor-1242 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	10/2/13	10/3/13 12:33	MJC
Aroclor-1242 [1]	ND	0.50	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 18:43	JMB
Aroclor-1248 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	10/2/13	10/3/13 12:33	MJC
Aroclor-1248 [1]	ND	0.50	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 18:43	JMB
Aroclor-1254 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	10/2/13	10/3/13 12:33	MJC
Aroclor-1254 [1]	ND	0.50	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 18:43	JMB
Aroclor-1260 [2]	1.1	0.49	mg/Kg	5		SW-846 8082A	10/2/13	10/3/13 12:33	MJC
Aroclor-1260 [2]	0.84	0.50	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 18:43	JMB
Aroclor-1262 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	10/2/13	10/3/13 12:33	MJC
Aroclor-1262 [1]	ND	0.50	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 18:43	JMB
Aroclor-1268 [1]	ND	0.49	mg/Kg	5		SW-846 8082A	10/2/13	10/3/13 12:33	MJC
Aroclor-1268 [1]	ND	0.50	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 18:43	JMB

Surrogates	% Recovery		Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	92.1		30-150		10/3/13 12:33
Decachlorobiphenyl [1]	85.3		30-150		10/1/13 18:43
Decachlorobiphenyl [2]	96.7		30-150		10/3/13 12:33
Decachlorobiphenyl [2]	89.9		30-150		10/1/13 18:43
Tetrachloro-m-xylene [1]	94.2		30-150		10/3/13 12:33
Tetrachloro-m-xylene [1]	**23.8**	*	30-150		10/1/13 18:43
Tetrachloro-m-xylene [2]	**23.2**	*	30-150		10/1/13 18:43
Tetrachloro-m-xylene [2]	95.9		30-150		10/3/13 12:33

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt (20')
Sampled: 9/25/2013 12:50

Sample ID: 13I0897-27

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.43	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 19:01	JMB
Aroclor-1221 [1]	ND	0.43	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 19:01	JMB
Aroclor-1232 [1]	ND	0.43	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 19:01	JMB
Aroclor-1242 [1]	ND	0.43	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 19:01	JMB
Aroclor-1248 [1]	ND	0.43	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 19:01	JMB
Aroclor-1254 [1]	ND	0.43	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 19:01	JMB
Aroclor-1260 [2]	0.83	0.43	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 19:01	JMB
Aroclor-1262 [1]	ND	0.43	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 19:01	JMB
Aroclor-1268 [1]	ND	0.43	mg/Kg	5		SW-846 8082A	9/27/13	10/1/13 19:01	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	87.7	30-150		10/1/13 19:01
Decachlorobiphenyl [2]	92.7	30-150		10/1/13 19:01
Tetrachloro-m-xylene [1]	91.1	30-150		10/1/13 19:01
Tetrachloro-m-xylene [2]	92.3	30-150		10/1/13 19:01

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt 5 (10') | Sampled: 9/25/2013 13:00

Sample ID: 13I0897-28

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 3:58	JMB
Aroclor-1221 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 3:58	JMB
Aroclor-1232 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 3:58	JMB
Aroclor-1242 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 3:58	JMB
Aroclor-1248 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 3:58	JMB
Aroclor-1254 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 3:58	JMB
Aroclor-1260 [2]	0.93	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 3:58	JMB
Aroclor-1262 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 3:58	JMB
Aroclor-1268 [1]	ND	0.48	mg/Kg	5		SW-846 8082A	9/27/13	10/2/13 3:58	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	90.2	30-150		10/2/13 3:58
Decachlorobiphenyl [2]	98.1	30-150		10/2/13 3:58
Tetrachloro-m-xylene [1]	91.9	30-150		10/2/13 3:58
Tetrachloro-m-xylene [2]	97.1	30-150		10/2/13 3:58

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt 5 (20') | Sampled: 9/25/2013 13:10

Sample ID: 13I0897-29

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:15	JMB
Aroclor-1221 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:15	JMB
Aroclor-1232 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:15	JMB
Aroclor-1242 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:15	JMB
Aroclor-1248 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:15	JMB
Aroclor-1254 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:15	JMB
Aroclor-1260 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:15	JMB
Aroclor-1262 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:15	JMB
Aroclor-1268 [1]	ND	0.29	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:15	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	92.1	30-150		10/2/13 4:15
Decachlorobiphenyl [2]	103	30-150		10/2/13 4:15
Tetrachloro-m-xylene [1]	94.4	30-150		10/2/13 4:15
Tetrachloro-m-xylene [2]	101	30-150		10/2/13 4:15

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW | Sample Description: | Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt 4 (20') | Sampled: 9/25/2013 13:20

Sample ID: 13I0897-30

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:33	JMB
Aroclor-1221 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:33	JMB
Aroclor-1232 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:33	JMB
Aroclor-1242 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:33	JMB
Aroclor-1248 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:33	JMB
Aroclor-1254 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:33	JMB
Aroclor-1260 [2]	0.53	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:33	JMB
Aroclor-1262 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:33	JMB
Aroclor-1268 [1]	ND	0.30	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:33	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	93.3	30-150		10/2/13 4:33
Decachlorobiphenyl [2]	103	30-150		10/2/13 4:33
Tetrachloro-m-xylene [1]	95.8	30-150		10/2/13 4:33
Tetrachloro-m-xylene [2]	102	30-150		10/2/13 4:33

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: Equip Blank 2
Sampled: 9/25/2013 13:30

Sample ID: 13I0897-31

Sample Matrix: Equipment Blank Water

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:21	JMB
Aroclor-1221 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:21	JMB
Aroclor-1232 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:21	JMB
Aroclor-1242 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:21	JMB
Aroclor-1248 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:21	JMB
Aroclor-1254 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:21	JMB
Aroclor-1260 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:21	JMB
Aroclor-1262 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:21	JMB
Aroclor-1268 [1]	ND	0.20	µg/L	1		SW-846 8082A	10/1/13	10/1/13 20:21	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	54.0	30-150		10/1/13 20:21
Decachlorobiphenyl [2]	50.4	30-150		10/1/13 20:21
Tetrachloro-m-xylene [1]	97.4	30-150		10/1/13 20:21
Tetrachloro-m-xylene [2]	92.7	30-150		10/1/13 20:21

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension - SOW
Sample Description:
Work Order: 13I0897

Date Received: 9/25/2013

Field Sample #: East Asphalt (Fence)
Sampled: 9/25/2013 13:40

Sample ID: 13I0897-32

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:51	JMB
Aroclor-1221 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:51	JMB
Aroclor-1232 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:51	JMB
Aroclor-1242 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:51	JMB
Aroclor-1248 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:51	JMB
Aroclor-1254 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:51	JMB
Aroclor-1260 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:51	JMB
Aroclor-1262 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:51	JMB
Aroclor-1268 [1]	ND	0.27	mg/Kg	3		SW-846 8082A	9/27/13	10/2/13 4:51	JMB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	97.5	30-150		10/2/13 4:51
Decachlorobiphenyl [2]	106	30-150		10/2/13 4:51
Tetrachloro-m-xylene [1]	101	30-150		10/2/13 4:51
Tetrachloro-m-xylene [2]	107	30-150		10/2/13 4:51

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13I0897-01 [West Asphalt 4 (12.5')]	B081732	2.06	10.0	09/27/13
13I0897-02 [West Asphalt 2 (20')]	B081732	2.08	10.0	09/27/13
13I0897-03 [Southwest Asphalt 3 (6")]	B081732	2.07	10.0	09/27/13
13I0897-04 [Southwest Asphalt 3 (10')]	B081732	2.07	10.0	09/27/13
13I0897-05 [Southwest Asphalt 3 (40')]	B081732	2.04	10.0	09/27/13
13I0897-06 [Southwest Asphalt 2 (10')]	B081732	2.07	10.0	09/27/13
13I0897-07 [Southwest Asphalt 2 (20')]	B081732	2.08	10.0	09/27/13
13I0897-08 [Southwest Asphalt 2 (40')]	B081732	2.09	10.0	09/27/13
13I0897-09 [Southwest Asphalt 2 (40')_DUP]	B081732	2.08	10.0	09/27/13
13I0897-10 [Southwest Asphalt 2 (Fence)]	B081732	2.07	10.0	09/27/13
13I0897-12 [Center Asphalt (10')]	B081732	2.04	10.0	09/27/13
13I0897-13 [Center Asphalt (20')]	B081732	2.05	10.0	09/27/13
13I0897-14 [Southeast Asphalt 4 (10')]	B081732	2.09	10.0	09/27/13
13I0897-15 [Southeast Asphalt 4 (20')]	B081732	2.06	10.0	09/27/13
13I0897-16 [Southeast Asphalt 2 (10')]	B081732	2.03	10.0	09/27/13
13I0897-17 [Southeast Asphalt 2 (20')]	B081732	2.06	10.0	09/27/13
13I0897-18 [Center Asphalt (Fence)]	B081732	2.09	10.0	09/27/13
13I0897-19 [Southeast Asphalt 4 (Fence)]	B081732	2.05	10.0	09/27/13
13I0897-20 [Southeast Asphalt 2 (Fence)]	B081732	2.01	10.0	09/27/13
13I0897-21 [Southeast Corner Asphalt 2 (10')]	B081732	2.09	10.0	09/27/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13I0897-22 [East Asphalt 2 (10')]	B081796	2.05	10.0	09/27/13
13I0897-23 [East Asphalt 2 (10')_DUP]	B081796	2.10	10.0	09/27/13
13I0897-24 [East Asphalt 2 (19')]	B081796	2.20	10.0	09/27/13
13I0897-25 [East Asphalt 2 (Fence)]	B081796	2.23	10.0	09/27/13
13I0897-26 [East Asphalt (10')]	B081796	2.02	10.0	09/27/13
13I0897-27 [East Asphalt (20')]	B081796	2.31	10.0	09/27/13
13I0897-28 [East Asphalt 5 (10')]	B081796	2.07	10.0	09/27/13
13I0897-29 [East Asphalt 5 (20')]	B081796	2.08	10.0	09/27/13
13I0897-30 [East Asphalt 4 (20')]	B081796	2.02	10.0	09/27/13
13I0897-32 [East Asphalt (Fence)]	B081796	2.26	10.0	09/27/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13I0897-26RE1 [East Asphalt (10')]	B082126	2.06	10.0	10/02/13

Prep Method: SW-846 3510C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
13I0897-11 [Equip Blank 1]	B081986	1000	10.0	10/01/13
13I0897-31 [Equip Blank 2]	B081986	1000	10.0	10/01/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B081986 - SW-846 3510C										
Blank (B081986-BLK1)				Prepared & Analyzed: 10/01/13						
Aroclor-1016	ND	0.20	µg/L							
Aroclor-1016 [2C]	ND	0.20	µg/L							
Aroclor-1221	ND	0.20	µg/L							
Aroclor-1221 [2C]	ND	0.20	µg/L							
Aroclor-1232	ND	0.20	µg/L							
Aroclor-1232 [2C]	ND	0.20	µg/L							
Aroclor-1242	ND	0.20	µg/L							
Aroclor-1242 [2C]	ND	0.20	µg/L							
Aroclor-1248	ND	0.20	µg/L							
Aroclor-1248 [2C]	ND	0.20	µg/L							
Aroclor-1254	ND	0.20	µg/L							
Aroclor-1254 [2C]	ND	0.20	µg/L							
Aroclor-1260	ND	0.20	µg/L							
Aroclor-1260 [2C]	ND	0.20	µg/L							
Aroclor-1262	ND	0.20	µg/L							
Aroclor-1262 [2C]	ND	0.20	µg/L							
Aroclor-1268	ND	0.20	µg/L							
Aroclor-1268 [2C]	ND	0.20	µg/L							
Surrogate: Decachlorobiphenyl	*0.743*		µg/L	2.00		37.2	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.648*		µg/L	2.00		32.4	30-150			
Surrogate: Tetrachloro-m-xylene	*1.68*		µg/L	2.00		84.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.60*		µg/L	2.00		80.2	30-150			
LCS (B081986-BS1)				Prepared & Analyzed: 10/01/13						
Aroclor-1016	0.55	0.20	µg/L	0.500		110	40-140			
Aroclor-1016 [2C]	0.53	0.20	µg/L	0.500		107	40-140			
Aroclor-1260	0.57	0.20	µg/L	0.500		114	40-140			
Aroclor-1260 [2C]	0.53	0.20	µg/L	0.500		106	40-140			
Surrogate: Decachlorobiphenyl	*1.23*		µg/L	2.00		61.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.08*		µg/L	2.00		54.2	30-150			
Surrogate: Tetrachloro-m-xylene	*1.98*		µg/L	2.00		99.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.89*		µg/L	2.00		94.7	30-150			
LCS Dup (B081986-BSD1)				Prepared & Analyzed: 10/01/13						
Aroclor-1016	0.55	0.20	µg/L	0.500		111	40-140	0.705	20	
Aroclor-1016 [2C]	0.56	0.20	µg/L	0.500		112	40-140	4.52	20	
Aroclor-1260	0.57	0.20	µg/L	0.500		113	40-140	0.646	20	
Aroclor-1260 [2C]	0.53	0.20	µg/L	0.500		106	40-140	0.435	20	
Surrogate: Decachlorobiphenyl	*1.29*		µg/L	2.00		64.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.14*		µg/L	2.00		56.9	30-150			
Surrogate: Tetrachloro-m-xylene	*1.90*		µg/L	2.00		94.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.81*		µg/L	2.00		90.7	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B081732 - SW-846 3540C										
Blank (B081732-BLK1)				Prepared: 09/27/13 Analyzed: 10/01/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*0.969*		mg/Kg	1.00		96.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.02*		mg/Kg	1.00		102	30-150			
Surrogate: Tetrachloro-m-xylene	*0.823*		mg/Kg	1.00		82.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.874*		mg/Kg	1.00		87.4	30-150			
LCS (B081732-BS1)				Prepared: 09/27/13 Analyzed: 10/01/13						
Aroclor-1016	0.23	0.10	mg/Kg	0.250		93.0	40-140			
Aroclor-1016 [2C]	0.25	0.10	mg/Kg	0.250		98.2	40-140			
Aroclor-1260	0.23	0.10	mg/Kg	0.250		92.6	40-140			
Aroclor-1260 [2C]	0.23	0.10	mg/Kg	0.250		93.3	40-140			
Surrogate: Decachlorobiphenyl	*0.874*		mg/Kg	1.00		87.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.884*		mg/Kg	1.00		88.4	30-150			
Surrogate: Tetrachloro-m-xylene	*0.777*		mg/Kg	1.00		77.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.829*		mg/Kg	1.00		82.9	30-150			
LCS Dup (B081732-BSD1)				Prepared: 09/27/13 Analyzed: 10/01/13						
Aroclor-1016	0.25	0.10	mg/Kg	0.250		98.4	40-140	5.62	30	
Aroclor-1016 [2C]	0.26	0.10	mg/Kg	0.250		104	40-140	5.64	30	
Aroclor-1260	0.25	0.10	mg/Kg	0.250		101	40-140	8.69	30	
Aroclor-1260 [2C]	0.25	0.10	mg/Kg	0.250		102	40-140	8.71	30	
Surrogate: Decachlorobiphenyl	*0.940*		mg/Kg	1.00		94.0	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.996*		mg/Kg	1.00		99.6	30-150			
Surrogate: Tetrachloro-m-xylene	*0.830*		mg/Kg	1.00		83.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.897*		mg/Kg	1.00		89.7	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B081732 - SW-846 3540C											
Matrix Spike (B081732-MS1)		**Source: 13I0897-01**		Prepared: 09/27/13 Analyzed: 10/01/13							
Aroclor-1016	0.32	0.29	mg/Kg	0.242	0.0	132		40-140			
Aroclor-1016 [2C]	0.36	0.29	mg/Kg	0.242	0.0	**150**	*	40-140			MS-15
Aroclor-1260	0.52	0.29	mg/Kg	0.242	0.27	106		40-140			
Aroclor-1260 [2C]	0.57	0.29	mg/Kg	0.242	0.30	109		40-140			
Surrogate: Decachlorobiphenyl	*0.996*		mg/Kg	0.966		103		30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.11*		mg/Kg	0.966		114		30-150			
Surrogate: Tetrachloro-m-xylene	*1.05*		mg/Kg	0.966		108		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.11*		mg/Kg	0.966		115		30-150			
Matrix Spike Dup (B081732-MSD1)		**Source: 13I0897-01**		Prepared: 09/27/13 Analyzed: 10/01/13							
Aroclor-1016	0.32	0.29	mg/Kg	0.244	0.0	133		40-140	1.54	50	
Aroclor-1016 [2C]	0.37	0.29	mg/Kg	0.244	0.0	**153**	*	40-140	2.93	50	MS-15
Aroclor-1260	0.55	0.29	mg/Kg	0.244	0.27	118		40-140	6.01	50	
Aroclor-1260 [2C]	0.61	0.29	mg/Kg	0.244	0.30	125		40-140	7.03	50	
Surrogate: Decachlorobiphenyl	*1.04*		mg/Kg	0.976		107		30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.15*		mg/Kg	0.976		118		30-150			
Surrogate: Tetrachloro-m-xylene	*1.03*		mg/Kg	0.976		106		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.10*		mg/Kg	0.976		113		30-150			
Batch B081796 - SW-846 3540C											
Blank (B081796-BLK1)				Prepared: 09/27/13 Analyzed: 09/30/13							
Aroclor-1016	ND	0.10	mg/Kg								
Aroclor-1016 [2C]	ND	0.10	mg/Kg								
Aroclor-1221	ND	0.10	mg/Kg								
Aroclor-1221 [2C]	ND	0.10	mg/Kg								
Aroclor-1232	ND	0.10	mg/Kg								
Aroclor-1232 [2C]	ND	0.10	mg/Kg								
Aroclor-1242	ND	0.10	mg/Kg								
Aroclor-1242 [2C]	ND	0.10	mg/Kg								
Aroclor-1248	ND	0.10	mg/Kg								
Aroclor-1248 [2C]	ND	0.10	mg/Kg								
Aroclor-1254	ND	0.10	mg/Kg								
Aroclor-1254 [2C]	ND	0.10	mg/Kg								
Aroclor-1260	ND	0.10	mg/Kg								
Aroclor-1260 [2C]	ND	0.10	mg/Kg								
Aroclor-1262	ND	0.10	mg/Kg								
Aroclor-1262 [2C]	ND	0.10	mg/Kg								
Aroclor-1268	ND	0.10	mg/Kg								
Aroclor-1268 [2C]	ND	0.10	mg/Kg								
Surrogate: Decachlorobiphenyl	*1.04*		mg/Kg	1.00		104		30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.17*		mg/Kg	1.00		117		30-150			
Surrogate: Tetrachloro-m-xylene	*1.10*		mg/Kg	1.00		110		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.20*		mg/Kg	1.00		120		30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B081796 - SW-846 3540C										
LCS (B081796-BS1)				Prepared: 09/27/13 Analyzed: 09/30/13						
Aroclor-1016	0.32	0.10	mg/Kg	0.250		129	40-140			
Aroclor-1016 [2C]	0.33	0.10	mg/Kg	0.250		131	40-140			
Aroclor-1260	0.32	0.10	mg/Kg	0.250		127	40-140			
Aroclor-1260 [2C]	0.32	0.10	mg/Kg	0.250		129	40-140			
Surrogate: Decachlorobiphenyl	*1.11*		mg/Kg	1.00		111	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.28*		mg/Kg	1.00		128	30-150			
Surrogate: Tetrachloro-m-xylene	*1.15*		mg/Kg	1.00		115	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.25*		mg/Kg	1.00		125	30-150			
LCS Dup (B081796-BSD1)				Prepared: 09/27/13 Analyzed: 09/30/13						
Aroclor-1016	0.31	0.10	mg/Kg	0.250		125	40-140	3.02	30	
Aroclor-1016 [2C]	0.33	0.10	mg/Kg	0.250		134	40-140	1.73	30	
Aroclor-1260	0.30	0.10	mg/Kg	0.250		119	40-140	6.78	30	
Aroclor-1260 [2C]	0.30	0.10	mg/Kg	0.250		120	40-140	7.47	30	
Surrogate: Decachlorobiphenyl	*1.08*		mg/Kg	1.00		108	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.17*		mg/Kg	1.00		117	30-150			
Surrogate: Tetrachloro-m-xylene	*1.08*		mg/Kg	1.00		108	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.17*		mg/Kg	1.00		117	30-150			
Batch B082126 - SW-846 3540C										
Blank (B082126-BLK1)				Prepared: 10/02/13 Analyzed: 10/03/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*0.997*		mg/Kg	1.00		99.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.01*		mg/Kg	1.00		101	30-150			
Surrogate: Tetrachloro-m-xylene	*0.890*		mg/Kg	1.00		89.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.924*		mg/Kg	1.00		92.4	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B082126 - SW-846 3540C										
LCS (B082126-BS1)				Prepared: 10/02/13 Analyzed: 10/03/13						
Aroclor-1016	0.28	0.10	mg/Kg	0.250		111	40-140			
Aroclor-1016 [2C]	0.28	0.10	mg/Kg	0.250		112	40-140			
Aroclor-1260	0.28	0.10	mg/Kg	0.250		111	40-140			
Aroclor-1260 [2C]	0.29	0.10	mg/Kg	0.250		115	40-140			
Surrogate: Decachlorobiphenyl	*1.15*		mg/Kg	1.00		115	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.18*		mg/Kg	1.00		118	30-150			
Surrogate: Tetrachloro-m-xylene	*1.00*		mg/Kg	1.00		100	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.04*		mg/Kg	1.00		104	30-150			
LCS Dup (B082126-BSD1)				Prepared: 10/02/13 Analyzed: 10/03/13						
Aroclor-1016	0.28	0.10	mg/Kg	0.250		114	40-140	2.57	30	
Aroclor-1016 [2C]	0.29	0.10	mg/Kg	0.250		114	40-140	1.82	30	
Aroclor-1260	0.28	0.10	mg/Kg	0.250		112	40-140	0.206	30	
Aroclor-1260 [2C]	0.29	0.10	mg/Kg	0.250		117	40-140	1.69	30	
Surrogate: Decachlorobiphenyl	*1.10*		mg/Kg	1.00		110	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.12*		mg/Kg	1.00		112	30-150			
Surrogate: Tetrachloro-m-xylene	*0.975*		mg/Kg	1.00		97.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.01*		mg/Kg	1.00		101	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
MS-15	Matrix spike and matrix spike duplicate recoveries are outside of control limits. Data validation is not affected since results for this compound in this sample are "not detected", and recovery bias is on the high side.
R-07	Sample and corresponding duplicate results reflect apparent non-homogeneity of sample.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Product/Solid	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
SW-846 8082A in Water	
Aroclor-1016	CT,NH,NY,NC,ME,VA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1221	CT,NH,NY,NC,ME,VA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1232	CT,NH,NY,NC,ME,VA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1242	CT,NH,NY,NC,ME,VA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1248	CT,NH,NY,NC,ME,VA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1254	CT,NH,NY,NC,ME,VA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1260	CT,NH,NY,NC,ME,VA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1262	NC
Aroclor-1262 [2C]	NC
Aroclor-1268	NC
Aroclor-1268 [2C]	NC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2015
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2014

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

13I0897
Rev 04.05.12

39 Spruce Street
East longmeadow, MA 01028

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Jenna Almquist & Rachel Patenaude

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	# of Containers	** Preservation	***Container Code
01	West Asphalt 4 (12.5')	9/25/2013	7:35	X		o	U	✓	1	I	A
02	West Asphalt 2 (20')	9/25/2013	7:40	X		o	U	✓			
03	Southwest Asphalt 3 (6")	9/25/2013	7:45	X		o	U	✓			
04	Southwest Asphalt 3 (10')	9/25/2013	7:50	X		o	U	✓			
05	Southwest Asphalt 3 (40')	9/25/2013	7:55	X		o	U	✓			
06	Southwest Asphalt 2 (10')	9/25/2013	8:00	X		o	U	✓			
07	Southwest Asphalt 2 (20')	9/25/2013	8:05	X		o	U	✓			
08	Southwest Asphalt 2 (40')	9/25/2013	8:10	X		o	U	✓			
09	Southwest Asphalt 2 (40')_DUP	9/25/2013	8:10	X		o	U	✓			
10	Southwest Asphalt 2 (Fence)	9/25/2013	8:15	X		o	U	✓			

Dissolved Meta
○ Field Filtered
○ Lab to Filter

***Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulf
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
Please grind entire sample for analysis

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time:
[signature] 9/25/13	
Received by: (signature) [signature] 9/25/13	Date/Time: 15:30
Relinquished by: (signature) [signature] 9/25/13	Date/Time: 16:10
Received by: (signature) [signature] 9/25/13	Date/Time: 16:10

Turnaround ††
☐ 7-Day
☐ 10-Day
☒ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Relinquished by: [signature] 9/25/13 1825

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

13I0897
Rev 04.05.12

39 Spruce Street
East longmeadow, MA 01028

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Jenna Almquist & Rachel Patenaude

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet
11	Equip Blank 1	9/25/2013	8:20		X	W W	U	✓
12	Center Asphalt (10')	9/25/2013	8:25	X		○	U	✓
13	Center Asphalt (20')	9/25/2013	8:30	X		○	U	✓
14	Southeast Asphalt 4 (10')	9/25/2013	8:35	X		○	U	✓
15	Southeast Asphalt 4 (20')	9/25/2013	8:40	X		○	U	✓
16	Southeast Asphalt 2 (10')	9/25/2013	8:45	X		○	U	✓
17	Southeast Asphalt 2 (20')	9/25/2013	8:50	X		○	U	✓
18	Center Asphalt (Fence')	9/25/2013	9:00	X		○	U	✓
19	Southeast Asphalt 4 (Fence)	9/25/2013	9:05	X		○	U	✓
20	Southeast Asphalt 2 (Fence)	9/25/2013	9:10	X		○	U	✓

# of Containers	1																						
** Preservation	I																						
***Container Cod	A																						

Comments:
Please grind entire sample for analysis, Equip Blank 1 is rinsate sample from chisel used
4.6° 9/25/13 1825

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	9/25/13	Date/Time:
Received by: (signature)	9/25/13	Date/Time: 15:30
Relinquished by: (signature)	9/25/13	Date/Time: 1610
Received by: (signature)	9/25/13	Date/Time: 1610

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

Dissolved Metal
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulf
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Page 46 of 51 1310897_1 Contest_Final 10 03 13 1633 10/03/13 16:33:47

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Relinq Paul Racuit 9/25/13 18:25

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

13I0897
Rev 04.05.12

39 Spruce Street
East longmeadow, MA 01028

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Jenna Almquist & Rachel Patenaude

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet										
								1										
								I										
								A										
21	Southeast Corner Asphalt (10')	9/25/2013	12:00	X		○	U	✓										
22	East Asphalt 2 (10')	9/25/2013	12:10	X		○	U	✓										
23	East Asphalt 2 (10')_DUP	9/25/2013	12:10	X		○	U	✓										
24	East Asphalt 2 (19')	9/25/2013	12:20	X		○	U	✓										
25	East Asphalt 2 (Fence)	9/25/2013	12:30	X		○	U	✓										
26	East Asphalt (10')	9/25/2013	12:40	X		○	U	✓										
27	East Asphalt (20')	9/25/2013	12:50	X		○	U	✓										
28	East Asphalt 5 (10')	9/25/2013	13:00	X		○	U	✓										
29	East Asphalt 5 (20')	9/25/2013	13:10	X		○	U	✓										
30	East Asphalt 4 (20')	9/25/2013	13:20	X		○	U	✓										

ANALYSIS REQUESTED

# of Containers
** Preservation
***Container Cod

Dissolved Meta
○ Field Filtered
○ Lab to Filter

***Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulf
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
Please grind entire sample for analysis
4.6 c 9/25/13 1825

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time:
9/25/13	
Received by: (signature) 9/25/13	Date/Time: 15:30
Relinquished by: (signature) 9/25/13	Date/Time: 16:10
Received by: (signature) 9/25/13	Date/Time: 16:10

Turnaround ††
☐ 7-Day
☐ 10-Day
☒ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Paul Rancourt 9/25/13 18:25

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

13I0897
Rev 04.05.12

39 Spruce Street
East longmeadow, MA 01028

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Jenna Almquist & Rachel Patenaude

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet										
31	Equip Blank 2	9/25/2013	13:30		X	W W	U	✓										
32	East Asphalt (Fence)	9/25/2013	13:40	X		O	U	✓										

ANALYSIS REQUESTED

1																		# of Containers
I																		** Preservation
A																		***Container Cod

Dissolved Metal
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfa
X = Na hydroxide
T = Na thiosulfate
O = Other

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
Please grind entire sample for analysis, Equip Blank 2 is rinsate sample from chisel used
[signature] 4.6° 9/25/13 18:25

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature) [signature]	9/25/13	Date/Time:
Received by: (signature) [signature]	9/25/13	Date/Time: 15:30
Relinquished by: (signature) [signature]	9/25/13	Date/Time: 16:10
Received by: (signature) [signature]	9/25/13	Date/Time: 16:10

Turnaround ††
☐ 7-Day
☐ 10-Day
☒ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

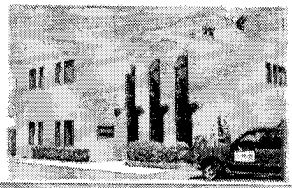
PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

† Relinq [signature] 9/25/13 18:25

Page 48 of 51 13I0897_1 Contest_Final 10 03 13 1633 10/03/13 16:33:47

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY



Sample Receipt Checklist

CLIENT NAME: Kleinfelder **RECEIVED BY:** JMH **DATE:** 9/25/13

1) **Was the chain(s) of custody relinquished and signed?** Yes No **No CoC Included**
2) **Does the chain agree with the samples?** Yes No
   If not, explain:
3) **Are all the samples in good condition?** Yes No
   If not, explain:
4) **How were the samples received:**
   On Ice ☒ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☒
   Were the samples received in Temperature Compliance of (2-6°C)? Yes No N/A
   Temperature °C by Temp blank _____ Temperature °C by Temp gun 4.6°
5) **Are there Dissolved samples for the lab to filter?** Yes No
   Who was notified _____ Date _____ Time _____
6) **Are there any RUSH or SHORT HOLDING TIME samples?** Yes No
   Who was notified _____ Date _____ Time _____
7) **Location where samples are stored:** 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: _____

8) **Do all samples have the proper Acid pH:** Yes No N/A _____
9) **Do all samples have the proper Base pH:** Yes No N/A _____
10) **Was the PC notified of any discrepancies with the CoC vs the samples:** Yes No N/A

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber	4	8 oz amber/clear jar	30
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Plastic Bag / Ziploc	
500 mL Plastic		SOC Kit	
250 mL plastic		Non-ConTest Container	
40 mL Vial - type listed below		Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

Laboratory Comments:

40 mL vials: # HCl _____ # Methanol _____
Bisulfate _____ # DI Water _____
Thiosulfate _____ Unpreserved

Time and Date Frozen:

Login Sample Receipt Checklist

(Rejection Criteria Listing - Using Sample Acceptance Policy)

Any False statement will be brought to the attention of Client

Question	Answer (True/False) T/F/NA	Comment
1) The cooler's custody seal, if present, is intact.	NA	
2) The cooler or samples do not appear to have been compromised or tampered with.	T	
3) Samples were received on ice.	T	
4) Cooler Temperature is acceptable.	T	
5) Cooler Temperature is recorded.	T	
6) COC is filled out in ink and legible.	T	
7) COC is filled out with all pertinent information.	T	
8) Field Sampler's name present on COC.	T	
9) There are no discrepancies between the sample IDs on the container and the COC.	T	
10) Samples are received within Holding Time.	T	
11) Sample containers have legible labels.	T	
12) Containers are not broken or leaking.	T	
13) Air Cassettes are not broken/open.	NA	
14) Sample collection date/times are provided.	T	
15) Appropriate sample containers are used.	T	
16) Proper collection media used.	T	
17) No headspace sample bottles are completely filled.	T	
18) There is sufficient volume for all requsted analyses, including any requested MS/MSDs.	T	
19) Trip blanks provided if applicable.	NA	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	NA	
21) Samples do not require splitting or compositing.	T	

Who notified of False statements? **Date/Time:**

Doc #277 Rev. 4 August 2013 **Log-In Technician Initials:** JMM **Date/Time:** 9/25/13 1825

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test Analytical Laboratory	Project #: 13I0897
Project Location: Green Line Extension - SOW	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

13I0897-01 thru 13I0897-32

Matrices: Product/Solid Water

CAM Protocol (check all that below)

8260 VOC CAM II A ( )	7470/7471 Hg CAM IIIB ( )	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 A ( )	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )	

Affirmative response to Questions A throughF is 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	☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specificed in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
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	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

***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 perfomance standards specified in the CAM protocol(s) achieved?	☐ Yes	☑ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case 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: M Erickson Position: Laboratory Director

Printed Name: Michael A. Erickson Date: 10/03/13

APPENDIX E

SOIL SAMPLING PROGRAM ANALYTICAL RESULTS

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

July 5, 2013

Richard Quateman
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: GLX - 21 Water Street
Client Job Number:
Project Number: 2012096.001A
Laboratory Work Order Number: 13F0919

Enclosed are results of analyses for samples received by the laboratory on June 26, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Richard Quateman

REPORT DATE: 7/5/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.001A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13F0919

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: GLX - 21 Water Street

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
NW Window 6in	13F0919-01	Soil		SM 2540G	
				SW-846 8082A	
NW Window 12in	13F0919-02	Soil		SM 2540G	
				SW-846 8082A	
NW Expansion Joint 6in	13F0919-03	Soil		SM 2540G	
				SW-846 8082A	
NW Expansion Joint 12in	13F0919-04	Soil		SM 2540G	
				SW-846 8082A	
NE Window 6in	13F0919-05	Soil		SM 2540G	
				SW-846 8082A	
NE Window 12in	13F0919-06	Soil		SM 2540G	
				SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8082A

Qualifications:

The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.

Analyte & Samples(s) Qualified:

Decachlorobiphenyl, Decachlorobiphenyl [2C], Tetrachloro-m-xylene, Tetrachloro-m-xylene [2C]

13F0919-01[NW Window 6in], 13F0919-03[NW Expansion Joint 6in], 13F0919-06[NE Window 12in]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street | Sample Description: | Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NW Window 6in | Sampled: 6/25/2013 14:00

Sample ID: 13F0919-01

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.3	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:18	JMB
Aroclor-1221 [1]	ND	1.3	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:18	JMB
Aroclor-1232 [1]	ND	1.3	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:18	JMB
Aroclor-1242 [1]	ND	1.3	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:18	JMB
Aroclor-1248 [1]	ND	1.3	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:18	JMB
Aroclor-1254 [1]	ND	1.3	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:18	JMB
Aroclor-1260 [2]	6.3	1.3	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:18	JMB
Aroclor-1262 [1]	ND	1.3	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:18	JMB
Aroclor-1268 [1]	ND	1.3	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:18	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	*	30-150	S-01	6/29/13 10:18
Decachlorobiphenyl [2]	*	30-150	S-01	6/29/13 10:18
Tetrachloro-m-xylene [1]	*	30-150	S-01	6/29/13 10:18
Tetrachloro-m-xylene [2]	*	30-150	S-01	6/29/13 10:18

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street
Sample Description:
Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NW Window 6in
Sampled: 6/25/2013 14:00

Sample ID: 13F0919-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	74.2		% Wt	1		SM 2540G	7/2/13	7/3/13 7:51	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street | Sample Description: | Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NW Window 12in | Sampled: 6/25/2013 14:15

Sample ID: 13F0919-02

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.49	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:30	JMB
Aroclor-1221 [1]	ND	0.49	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:30	JMB
Aroclor-1232 [1]	ND	0.49	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:30	JMB
Aroclor-1242 [1]	ND	0.49	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:30	JMB
Aroclor-1248 [1]	ND	0.49	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:30	JMB
Aroclor-1254 [1]	ND	0.49	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:30	JMB
Aroclor-1260 [2]	3.8	0.49	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:30	JMB
Aroclor-1262 [1]	ND	0.49	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:30	JMB
Aroclor-1268 [1]	ND	0.49	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:30	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	100	30-150		6/29/13 10:30
Decachlorobiphenyl [2]	86.6	30-150		6/29/13 10:30
Tetrachloro-m-xylene [1]	95.4	30-150		6/29/13 10:30
Tetrachloro-m-xylene [2]	91.0	30-150		6/29/13 10:30

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street
Sample Description:
Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NW Window 12in
Sampled: 6/25/2013 14:15

Sample ID: 13F0919-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	79.8		% Wt	1		SM 2540G	7/2/13	7/3/13 7:51	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street | Sample Description: | Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NW Expansion Joint 6in | Sampled: 6/25/2013 14:25

Sample ID: 13F0919-03

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:43	JMB
Aroclor-1221 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:43	JMB
Aroclor-1232 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:43	JMB
Aroclor-1242 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:43	JMB
Aroclor-1248 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:43	JMB
Aroclor-1254 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:43	JMB
Aroclor-1260 [2]	6.0	1.2	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:43	JMB
Aroclor-1262 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:43	JMB
Aroclor-1268 [1]	ND	1.2	mg/Kg dry	50		SW-846 8082A	6/26/13	6/29/13 10:43	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	*	30-150	S-01	6/29/13 10:43
Decachlorobiphenyl [2]	*	30-150	S-01	6/29/13 10:43
Tetrachloro-m-xylene [1]	*	30-150	S-01	6/29/13 10:43
Tetrachloro-m-xylene [2]	*	30-150	S-01	6/29/13 10:43

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street
Sample Description:
Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NW Expansion Joint 6in
Sampled: 6/25/2013 14:25

Sample ID: 13F0919-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	81.0		% Wt	1		SM 2540G	7/2/13	7/3/13 7:51	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street | Sample Description: | Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NW Expansion Joint 12in | Sampled: 6/25/2013 14:35

Sample ID: 13F0919-04

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.47	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:55	JMB
Aroclor-1221 [1]	ND	0.47	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:55	JMB
Aroclor-1232 [1]	ND	0.47	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:55	JMB
Aroclor-1242 [1]	ND	0.47	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:55	JMB
Aroclor-1248 [1]	ND	0.47	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:55	JMB
Aroclor-1254 [1]	ND	0.47	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:55	JMB
Aroclor-1260 [2]	3.3	0.47	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:55	JMB
Aroclor-1262 [1]	ND	0.47	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:55	JMB
Aroclor-1268 [1]	ND	0.47	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 10:55	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	106	30-150		6/29/13 10:55
Decachlorobiphenyl [2]	91.0	30-150		6/29/13 10:55
Tetrachloro-m-xylene [1]	95.5	30-150		6/29/13 10:55
Tetrachloro-m-xylene [2]	92.1	30-150		6/29/13 10:55

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street
Sample Description:
Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NW Expansion Joint 12in
Sampled: 6/25/2013 14:35

Sample ID: 13F0919-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	82.6		% Wt	1		SM 2540G	7/2/13	7/3/13 7:51	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street | Sample Description: | Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NE Window 6in | Sampled: 6/25/2013 14:45

Sample ID: 13F0919-05

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.48	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 11:07	JMB
Aroclor-1221 [1]	ND	0.48	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 11:07	JMB
Aroclor-1232 [1]	ND	0.48	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 11:07	JMB
Aroclor-1242 [1]	ND	0.48	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 11:07	JMB
Aroclor-1248 [1]	ND	0.48	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 11:07	JMB
Aroclor-1254 [1]	ND	0.48	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 11:07	JMB
Aroclor-1260 [2]	5.1	0.48	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 11:07	JMB
Aroclor-1262 [1]	ND	0.48	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 11:07	JMB
Aroclor-1268 [1]	ND	0.48	mg/Kg dry	20		SW-846 8082A	6/26/13	6/29/13 11:07	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	105	30-150		6/29/13 11:07
Decachlorobiphenyl [2]	91.1	30-150		6/29/13 11:07
Tetrachloro-m-xylene [1]	98.9	30-150		6/29/13 11:07
Tetrachloro-m-xylene [2]	94.7	30-150		6/29/13 11:07

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street
Sample Description:
Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NE Window 6in
Sampled: 6/25/2013 14:45

Sample ID: 13F0919-05

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	82.2		% Wt	1		SM 2540G	7/2/13	7/3/13 7:51	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street | Sample Description: | Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NE Window 12in | Sampled: 6/25/2013 14:55

Sample ID: 13F0919-06

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	2.4	mg/Kg dry	100		SW-846 8082A	6/26/13	6/29/13 11:20	JMB
Aroclor-1221 [1]	ND	2.4	mg/Kg dry	100		SW-846 8082A	6/26/13	6/29/13 11:20	JMB
Aroclor-1232 [1]	ND	2.4	mg/Kg dry	100		SW-846 8082A	6/26/13	6/29/13 11:20	JMB
Aroclor-1242 [1]	ND	2.4	mg/Kg dry	100		SW-846 8082A	6/26/13	6/29/13 11:20	JMB
Aroclor-1248 [1]	ND	2.4	mg/Kg dry	100		SW-846 8082A	6/26/13	6/29/13 11:20	JMB
Aroclor-1254 [1]	ND	2.4	mg/Kg dry	100		SW-846 8082A	6/26/13	6/29/13 11:20	JMB
Aroclor-1260 [1]	19	2.4	mg/Kg dry	100		SW-846 8082A	6/26/13	6/29/13 11:20	JMB
Aroclor-1262 [1]	ND	2.4	mg/Kg dry	100		SW-846 8082A	6/26/13	6/29/13 11:20	JMB
Aroclor-1268 [1]	ND	2.4	mg/Kg dry	100		SW-846 8082A	6/26/13	6/29/13 11:20	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	*	30-150	S-01	6/29/13 11:20
Decachlorobiphenyl [2]	*	30-150	S-01	6/29/13 11:20
Tetrachloro-m-xylene [1]	*	30-150	S-01	6/29/13 11:20
Tetrachloro-m-xylene [2]	*	30-150	S-01	6/29/13 11:20

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: GLX - 21 Water Street
Sample Description:
Work Order: 13F0919

Date Received: 6/26/2013

Field Sample #: NE Window 12in
Sampled: 6/25/2013 14:55

Sample ID: 13F0919-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	79.3		% Wt	1		SM 2540G	7/2/13	7/3/13 7:51	MLA

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
13F0919-01 [NW Window 6in]	B076053	07/02/13
13F0919-02 [NW Window 12in]	B076053	07/02/13
13F0919-03 [NW Expansion Joint 6in]	B076053	07/02/13
13F0919-04 [NW Expansion Joint 12in]	B076053	07/02/13
13F0919-05 [NE Window 6in]	B076053	07/02/13
13F0919-06 [NE Window 12in]	B076053	07/02/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13F0919-01 [NW Window 6in]	B075703	10.2	10.0	06/26/13
13F0919-02 [NW Window 12in]	B075703	10.2	10.0	06/26/13
13F0919-03 [NW Expansion Joint 6in]	B075703	10.1	10.0	06/26/13
13F0919-04 [NW Expansion Joint 12in]	B075703	10.2	10.0	06/26/13
13F0919-05 [NE Window 6in]	B075703	10.1	10.0	06/26/13
13F0919-06 [NE Window 12in]	B075703	10.3	10.0	06/26/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B075703 - SW-846 3540C										
Blank (B075703-BLK1)				Prepared: 06/26/13 Analyzed: 06/28/13						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.195*		mg/Kg wet	0.200		97.3	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.190*		mg/Kg wet	0.200		94.8	30-150			
Surrogate: Tetrachloro-m-xylene	*0.191*		mg/Kg wet	0.200		95.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.199*		mg/Kg wet	0.200		99.5	30-150			
LCS (B075703-BS1)				Prepared: 06/26/13 Analyzed: 06/28/13						
Aroclor-1016	0.18	0.10	mg/Kg wet	0.200		92.2	40-140			
Aroclor-1016 [2C]	0.18	0.10	mg/Kg wet	0.200		88.4	40-140			
Aroclor-1260	0.18	0.10	mg/Kg wet	0.200		91.5	40-140			
Aroclor-1260 [2C]	0.17	0.10	mg/Kg wet	0.200		87.5	40-140			
Surrogate: Decachlorobiphenyl	*0.201*		mg/Kg wet	0.200		101	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.179*		mg/Kg wet	0.200		89.5	30-150			
Surrogate: Tetrachloro-m-xylene	*0.194*		mg/Kg wet	0.200		96.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.193*		mg/Kg wet	0.200		96.6	30-150			
LCS Dup (B075703-BSD1)				Prepared: 06/26/13 Analyzed: 06/29/13						
Aroclor-1016	0.20	0.10	mg/Kg wet	0.200		97.7	40-140	5.73	30	
Aroclor-1016 [2C]	0.19	0.10	mg/Kg wet	0.200		93.9	40-140	6.06	30	
Aroclor-1260	0.19	0.10	mg/Kg wet	0.200		95.7	40-140	4.51	30	
Aroclor-1260 [2C]	0.18	0.10	mg/Kg wet	0.200		91.3	40-140	4.25	30	
Surrogate: Decachlorobiphenyl	*0.208*		mg/Kg wet	0.200		104	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.187*		mg/Kg wet	0.200		93.3	30-150			
Surrogate: Tetrachloro-m-xylene	*0.203*		mg/Kg wet	0.200		101	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.202*		mg/Kg wet	0.200		101	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B076053 - % Solids										
Duplicate (B076053-DUP4)		**Source: 13F0919-01**		Prepared: 07/02/13 Analyzed: 07/03/13						
% Solids	70.9		% Wt		74.2			4.55	20	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
S-01	The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2013
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Page 1 of 1

Rev 04.05.12

13F6919

Company Name: Kleinfelder
Address: 215 First Street
Suite 320, Cambridge MA
Attention: Beck Straley / Richard Quateman
Project Location: GLX - 21 Water Street
Sampled By: Beck Straley

Telephone: 617-498-4705
Project #: 20120096.001A
Client PO#:

DATA DELIVERY (check all that apply)
○ FAX ✓ EMAIL ✓ WEBSITE
Fax #: bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ✓ PDF ✓ EXCEL ○ GIS
✓ OTHER Equis EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet (# of Containers / ** Preservation / ***Container Code)
01	NW Window 6"	6/25/13	1400	X		S	U	X
02	NW Window 12"	↓	1415	X		↓	↓	X
03	NW Expansion Joint 6"		1425	X				X
04	NW Expansion Joint 12"		1435	X				X
05	NE Window 6"		1445	X				X
06	NE Window 12"	✓	1455	X		↓	↓	X
~~07~~								

Comments: Detection limit must be 0.125 or better

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V=vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other _____

*Matrix Code:
GW = groundwater
WW = wastewater
DW = drinking water
A = air
S = soil/solid
SL = sludge
O = other _____

Relinquished by: (signature)	Date/Time:
[signature]	6/26/13 1040
Received by: (signature) Paul Racicot	Date/Time: 6/26/13 1040
Relinquished by: (signature) Paul Racicot	Date/Time: 6/26/13 16:45
Received by: (signature) Rebecca Daust 4.1°C 6/26/13	Date/Time: 1645

Turnaround ††
☑ 7-Day
☐ 10-Day
☐ Other ____
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: - 0.125 mg/kg minimum
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED TO ACCORDANCE WITH nelac

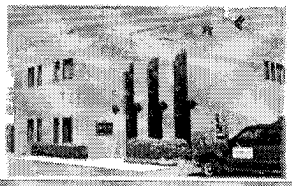
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY



Sample Receipt Checklist

CLIENT NAME: Kleinfelder **RECEIVED BY:** RLF **DATE:** 6/26/13

1) **Was the chain(s) of custody relinquished and signed?** (Yes) No **No CoC Included**
2) **Does the chain agree with the samples?** (Yes) No
   If not, explain:
3) **Are all the samples in good condition?** (Yes) No
   If not, explain:
4) **How were the samples received:**
   On Ice ☑ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☑
   Were the samples received in Temperature Compliance of (2-6°C)? (Yes) No N/A
   Temperature °C by Temp blank _____ Temperature °C by Temp gun 4.1°C
5) **Are there Dissolved samples for the lab to filter?** Yes (No)
   Who was notified _____ Date _____ Time _____
6) **Are there any RUSH or SHORT HOLDING TIME samples?** Yes (No)
   Who was notified _____ Date _____ Time _____
7) **Location where samples are stored:** 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: _____

8) **Do all samples have the proper Acid pH:** Yes No (N/A) _____
9) **Do all samples have the proper Base pH:** Yes No (N/A) _____
10) **Was the PC notified of any discrepancies with the CoC vs the samples:** Yes No (N/A)

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		8 oz amber/clear jar	6
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Air Cassette	
500 mL Plastic		Hg/Hopcalite Tube	
250 mL plastic		Plastic Bag / Ziploc	
40 mL Vial - type listed below		PM 2.5 / PM 10	
Colisure / bacteria bottle		PUF Cartridge	
Dissolved Oxygen bottle		SOC Kit	
Encore		TO-17 Tubes	
Flashpoint bottle		Non-ConTest Container	
Perchlorate Kit		Other glass jar	
Other		Other	

Laboratory Comments:

40 mL vials: # HCl _____ # Methanol _____
Bisulfate _____ # DI Water _____
Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

July 25, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension
Client Job Number:
Project Number: 2012096.01-A
Laboratory Work Order Number: 13G0742

Enclosed are results of analyses for samples received by the laboratory on July 18, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 7/25/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.01-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13G0742

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SW Asphalt 6in	13G0742-01	Product/Solid		SW-846 8082A	
SW Asphalt 6in Dup	13G0742-02	Product/Solid		SW-846 8082A	
Center Asphalt 6in	13G0742-03	Product/Solid		SW-846 8082A	
SE Asphalt 6in	13G0742-04	Product/Solid		SW-846 8082A	
E Asphalt 6in	13G0742-05	Product/Solid		SW-846 8082A	
NW Window Soil 12in (6-12in)	13G0742-06	Soil		SM 2540G	
				SW-846 8082A	
Center Window Soil 6in (0-6in)	13G0742-07	Soil		SM 2540G	
				SW-846 8082A	
NW Window Soil 24in (0-6in)	13G0742-08	Soil		SM 2540G	
				SW-846 8082A	
NW Window Soil 36in (0-6in)	13G0742-09	Soil		SM 2540G	
				SW-846 8082A	
Center Window Soil 24in (0-6in)	13G0742-10	Soil		SM 2540G	
				SW-846 8082A	
Center Window Soil 36in (0-6in)	13G0742-11	Soil		SM 2540G	
				SW-846 8082A	
Equip Blank	13G0742-12	Equipment Blank Water		SW-846 8082A	
NW Window Soil 48in (0-6in)	13G0742-13	Soil		SM 2540G	
				SW-846 8082A	
NE Window Soil 12in (6-12in)	13G0742-14	Soil		SM 2540G	
				SW-846 8082A	
NE Window Soil 24in (0-6in)	13G0742-15	Soil		SM 2540G	
				SW-846 8082A	
NE Window Soil 36in (0-6in)	13G0742-16	Soil		SM 2540G	
				SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8082A

Qualifications:

Matrix spike and spike duplicate recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery.
Possiblity of matrix effects that lead to low bias or non-homogeneous sample aliquot cannot be eliminated.

Analyte & Samples(s) Qualified:

Aroclor-1260, Aroclor-1260 [2C]

B077113-MS1, B077113-MSD1

Sample contains two incompletely resolved aroclors. Aroclor with the closest matching pattern is reported.

Analyte & Samples(s) Qualified:

Aroclor-1260, Aroclor-1260 [2C]

13G0742-06[NW Window Soil 12in (6-12in)], 13G0742-07[Center Window Soil 6in (0-6in)], 13G0742-08[NW Window Soil 24in (0-6in)], 13G0742-09[NW Window Soil 36in (0-6in)]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: SW Asphalt 6in | Sampled: 7/17/2013 08:35

Sample ID: 13G0742-01

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1221 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1232 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1242 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1248 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1254 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1260 [2]	0.26	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1262 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG
Aroclor-1268 [1]	ND	0.19	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:11	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	76.6	30-150		7/23/13 12:11
Decachlorobiphenyl [2]	75.4	30-150		7/23/13 12:11
Tetrachloro-m-xylene [1]	103	30-150		7/23/13 12:11
Tetrachloro-m-xylene [2]	101	30-150		7/23/13 12:11

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: SW Asphalt 6in Dup | Sampled: 7/17/2013 08:35

Sample ID: 13G0742-02

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1221 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1232 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1242 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1248 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1254 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1260 [2]	0.29	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1262 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG
Aroclor-1268 [1]	ND	0.17	mg/Kg	2		SW-846 8082A	7/19/13	7/23/13 12:24	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	63.5	30-150		7/23/13 12:24
Decachlorobiphenyl [2]	63.6	30-150		7/23/13 12:24
Tetrachloro-m-xylene [1]	78.5	30-150		7/23/13 12:24
Tetrachloro-m-xylene [2]	84.3	30-150		7/23/13 12:24

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Asphalt 6in | Sampled: 7/17/2013 08:50

Sample ID: 13G0742-03

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1221 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1232 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1242 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1248 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1254 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1260 [1]	1.9	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1262 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC
Aroclor-1268 [1]	ND	0.88	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:20	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	73.4	30-150		7/22/13 18:20
Decachlorobiphenyl [2]	75.1	30-150		7/22/13 18:20
Tetrachloro-m-xylene [1]	102	30-150		7/22/13 18:20
Tetrachloro-m-xylene [2]	96.0	30-150		7/22/13 18:20

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: SE Asphalt 6in | Sampled: 7/17/2013 09:00

Sample ID: 13G0742-04

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1221 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1232 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1242 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1248 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1254 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1260 [1]	2.5	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1262 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC
Aroclor-1268 [1]	ND	0.77	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:32	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	73.4	30-150		7/22/13 18:32
Decachlorobiphenyl [2]	75.9	30-150		7/22/13 18:32
Tetrachloro-m-xylene [1]	103	30-150		7/22/13 18:32
Tetrachloro-m-xylene [2]	95.4	30-150		7/22/13 18:32

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: E Asphalt 6in | Sampled: 7/17/2013 09:15

Sample ID: 13G0742-05

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1221 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1232 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1242 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1248 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1254 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1260 [1]	1.1	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1262 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC
Aroclor-1268 [1]	ND	0.92	mg/Kg	10		SW-846 8082A	7/19/13	7/22/13 18:45	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	77.2	30-150		7/22/13 18:45
Decachlorobiphenyl [2]	80.5	30-150		7/22/13 18:45
Tetrachloro-m-xylene [1]	104	30-150		7/22/13 18:45
Tetrachloro-m-xylene [2]	98.3	30-150		7/22/13 18:45

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 12in (6-12in) | Sampled: 7/17/2013 09:40

Sample ID: 13G0742-06

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1260 [2]	0.83	0.11	mg/Kg dry	5	O-03	SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:11	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	89.7	30-150		7/23/13 11:11
Decachlorobiphenyl [2]	84.9	30-150		7/23/13 11:11
Tetrachloro-m-xylene [1]	98.9	30-150		7/23/13 11:11
Tetrachloro-m-xylene [2]	97.9	30-150		7/23/13 11:11

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 12in (6-12in)
Sampled: 7/17/2013 09:40

Sample ID: 13G0742-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.1		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 6in (0-6in) | Sampled: 7/17/2013 10:15

Sample ID: 13G0742-07

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1221 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1232 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1242 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1248 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1254 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1260 [2]	2.8	0.44	mg/Kg dry	20	O-03	SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1262 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC
Aroclor-1268 [1]	ND	0.44	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 11:24	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	91.5	30-150		7/23/13 11:24
Decachlorobiphenyl [2]	89.6	30-150		7/23/13 11:24
Tetrachloro-m-xylene [1]	95.2	30-150		7/23/13 11:24
Tetrachloro-m-xylene [2]	95.2	30-150		7/23/13 11:24

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: **Center Window Soil 6in (0-6in)**
Sampled: 7/17/2013 10:15

Sample ID: 13G0742-07

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.6		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 24in (0-6in) | Sampled: 7/17/2013 10:25

Sample ID: 13G0742-08

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1221 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1232 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1242 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1248 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1254 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1260 [2]	1.5	0.21	mg/Kg dry	10	O-03	SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1262 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC
Aroclor-1268 [1]	ND	0.21	mg/Kg dry	10		SW-846 8082A	7/19/13	7/23/13 11:37	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	78.2	30-150		7/23/13 11:37
Decachlorobiphenyl [2]	75.1	30-150		7/23/13 11:37
Tetrachloro-m-xylene [1]	86.5	30-150		7/23/13 11:37
Tetrachloro-m-xylene [2]	83.8	30-150		7/23/13 11:37

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 24in (0-6in)
Sampled: 7/17/2013 10:25

Sample ID: 13G0742-08

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.9		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 36in (0-6in) | Sampled: 7/17/2013 10:45

Sample ID: 13G0742-09

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1260 [2]	0.68	0.11	mg/Kg dry	5	O-03	SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 11:50	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	81.1	30-150		7/23/13 11:50
Decachlorobiphenyl [2]	77.5	30-150		7/23/13 11:50
Tetrachloro-m-xylene [1]	90.8	30-150		7/23/13 11:50
Tetrachloro-m-xylene [2]	90.3	30-150		7/23/13 11:50

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 36in (0-6in)
Sampled: 7/17/2013 10:45

Sample ID: 13G0742-09

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.2		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 24in (0-6in) | Sampled: 7/17/2013 10:50

Sample ID: 13G0742-10

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1260 [2]	0.99	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/22/13 22:38	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	72.1	30-150		7/22/13 22:38
Decachlorobiphenyl [2]	79.9	30-150		7/22/13 22:38
Tetrachloro-m-xylene [1]	82.7	30-150		7/22/13 22:38
Tetrachloro-m-xylene [2]	77.5	30-150		7/22/13 22:38

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 24in (0-6in)
Sampled: 7/17/2013 10:50

Sample ID: 13G0742-10

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.6		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 36in (0-6in) | Sampled: 7/17/2013 11:00

Sample ID: 13G0742-11

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1260 [2]	0.88	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:03	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	74.1	30-150		7/23/13 12:03
Decachlorobiphenyl [2]	70.8	30-150		7/23/13 12:03
Tetrachloro-m-xylene [1]	87.3	30-150		7/23/13 12:03
Tetrachloro-m-xylene [2]	85.0	30-150		7/23/13 12:03

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Center Window Soil 36in (0-6in)
Sampled: 7/17/2013 11:00

Sample ID: 13G0742-11

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.2		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: Equip Blank | Sampled: 7/17/2013 11:10

Sample ID: 13G0742-12

Sample Matrix: Equipment Blank Water

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1221 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1232 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1242 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1248 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1254 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1260 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1262 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC
Aroclor-1268 [1]	ND	0.20	µg/L	1		SW-846 8082A	7/19/13	7/22/13 12:28	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	82.1	30-150		7/22/13 12:28
Decachlorobiphenyl [2]	80.7	30-150		7/22/13 12:28
Tetrachloro-m-xylene [1]	64.8	30-150		7/22/13 12:28
Tetrachloro-m-xylene [2]	65.5	30-150		7/22/13 12:28

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 48in (0-6in) | Sampled: 7/17/2013 11:20

Sample ID: 13G0742-13

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1254 [1]	0.12	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1260 [2]	0.38	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	7/19/13	7/23/13 12:16	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	78.6	30-150		7/23/13 12:16
Decachlorobiphenyl [2]	73.4	30-150		7/23/13 12:16
Tetrachloro-m-xylene [1]	79.9	30-150		7/23/13 12:16
Tetrachloro-m-xylene [2]	80.6	30-150		7/23/13 12:16

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NW Window Soil 48in (0-6in)
Sampled: 7/17/2013 11:20

Sample ID: 13G0742-13

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.0		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 12in (6-12in) | Sampled: 7/17/2013 11:40

Sample ID: 13G0742-14

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1221 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1232 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1242 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1248 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1254 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1260 [2]	2.3	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1262 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC
Aroclor-1268 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:29	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	87.7	30-150		7/23/13 12:29
Decachlorobiphenyl [2]	84.3	30-150		7/23/13 12:29
Tetrachloro-m-xylene [1]	95.0	30-150		7/23/13 12:29
Tetrachloro-m-xylene [2]	98.0	30-150		7/23/13 12:29

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 12in (6-12in)
Sampled: 7/17/2013 11:40

Sample ID: 13G0742-14

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.8		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 24in (0-6in) | Sampled: 7/17/2013 11:45

Sample ID: 13G0742-15

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1221 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1232 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1242 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1248 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1254 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1260 [2]	3.2	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1262 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC
Aroclor-1268 [1]	ND	0.43	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:42	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	103	30-150		7/23/13 12:42
Decachlorobiphenyl [2]	101	30-150		7/23/13 12:42
Tetrachloro-m-xylene [1]	110	30-150		7/23/13 12:42
Tetrachloro-m-xylene [2]	108	30-150		7/23/13 12:42

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 24in (0-6in)
Sampled: 7/17/2013 11:45

Sample ID: 13G0742-15

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.6		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 36in (0-6in) | Sampled: 7/17/2013 11:50

Sample ID: 13G0742-16

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1221 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1232 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1242 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1248 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1254 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1260 [2]	2.0	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1262 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC
Aroclor-1268 [1]	ND	0.42	mg/Kg dry	20		SW-846 8082A	7/19/13	7/23/13 12:55	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	92.5	30-150		7/23/13 12:55
Decachlorobiphenyl [2]	92.3	30-150		7/23/13 12:55
Tetrachloro-m-xylene [1]	97.6	30-150		7/23/13 12:55
Tetrachloro-m-xylene [2]	96.4	30-150		7/23/13 12:55

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G0742

Date Received: 7/18/2013

Field Sample #: NE Window Soil 36in (0-6in)
Sampled: 7/17/2013 11:50

Sample ID: 13G0742-16

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.0		% Wt	1		SM 2540G	7/23/13	7/24/13 8:12	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
13G0742-06 [NW Window Soil 12in (6-12in)]	B077296	07/23/13
13G0742-07 [Center Window Soil 6in (0-6in)]	B077296	07/23/13
13G0742-08 [NW Window Soil 24in (0-6in)]	B077296	07/23/13
13G0742-09 [NW Window Soil 36in (0-6in)]	B077296	07/23/13
13G0742-10 [Center Window Soil 24in (0-6in)]	B077296	07/23/13
13G0742-11 [Center Window Soil 36in (0-6in)]	B077296	07/23/13
13G0742-13 [NW Window Soil 48in (0-6in)]	B077296	07/23/13
13G0742-14 [NE Window Soil 12in (6-12in)]	B077296	07/23/13
13G0742-15 [NE Window Soil 24in (0-6in)]	B077296	07/23/13
13G0742-16 [NE Window Soil 36in (0-6in)]	B077296	07/23/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G0742-01 [SW Asphalt 6in]	B077097	2.16	10.0	07/19/13
13G0742-02 [SW Asphalt 6in Dup]	B077097	2.41	10.0	07/19/13
13G0742-03 [Center Asphalt 6in]	B077097	2.26	10.0	07/19/13
13G0742-04 [SE Asphalt 6in]	B077097	2.61	10.0	07/19/13
13G0742-05 [E Asphalt 6in]	B077097	2.18	10.0	07/19/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G0742-06 [NW Window Soil 12in (6-12in)]	B077113	10.0	10.0	07/19/13
13G0742-07 [Center Window Soil 6in (0-6in)]	B077113	10.2	10.0	07/19/13
13G0742-08 [NW Window Soil 24in (0-6in)]	B077113	10.5	10.0	07/19/13
13G0742-09 [NW Window Soil 36in (0-6in)]	B077113	10.1	10.0	07/19/13
13G0742-10 [Center Window Soil 24in (0-6in)]	B077113	10.4	10.0	07/19/13
13G0742-11 [Center Window Soil 36in (0-6in)]	B077113	10.2	10.0	07/19/13
13G0742-13 [NW Window Soil 48in (0-6in)]	B077113	10.2	10.0	07/19/13
13G0742-14 [NE Window Soil 12in (6-12in)]	B077113	10.1	10.0	07/19/13
13G0742-15 [NE Window Soil 24in (0-6in)]	B077113	10.2	10.0	07/19/13
13G0742-16 [NE Window Soil 36in (0-6in)]	B077113	10.3	10.0	07/19/13

Prep Method: SW-846 3510C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
13G0742-12 [Equip Blank]	B077096	1000	10.0	07/19/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077096 - SW-846 3510C										
Blank (B077096-BLK1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	ND	0.20	µg/L							
Aroclor-1016 [2C]	ND	0.20	µg/L							
Aroclor-1221	ND	0.20	µg/L							
Aroclor-1221 [2C]	ND	0.20	µg/L							
Aroclor-1232	ND	0.20	µg/L							
Aroclor-1232 [2C]	ND	0.20	µg/L							
Aroclor-1242	ND	0.20	µg/L							
Aroclor-1242 [2C]	ND	0.20	µg/L							
Aroclor-1248	ND	0.20	µg/L							
Aroclor-1248 [2C]	ND	0.20	µg/L							
Aroclor-1254	ND	0.20	µg/L							
Aroclor-1254 [2C]	ND	0.20	µg/L							
Aroclor-1260	ND	0.20	µg/L							
Aroclor-1260 [2C]	ND	0.20	µg/L							
Aroclor-1262	ND	0.20	µg/L							
Aroclor-1262 [2C]	ND	0.20	µg/L							
Aroclor-1268	ND	0.20	µg/L							
Aroclor-1268 [2C]	ND	0.20	µg/L							
Surrogate: Decachlorobiphenyl	*1.88*		µg/L	2.00		93.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.85*		µg/L	2.00		92.4	30-150			
Surrogate: Tetrachloro-m-xylene	*1.57*		µg/L	2.00		78.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.59*		µg/L	2.00		79.4	30-150			
LCS (B077096-BS1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.45	0.20	µg/L	0.500		89.5	40-140			
Aroclor-1016 [2C]	0.45	0.20	µg/L	0.500		89.7	40-140			
Aroclor-1260	0.49	0.20	µg/L	0.500		97.0	40-140			
Aroclor-1260 [2C]	0.48	0.20	µg/L	0.500		95.1	40-140			
Surrogate: Decachlorobiphenyl	*2.01*		µg/L	2.00		100	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.98*		µg/L	2.00		98.8	30-150			
Surrogate: Tetrachloro-m-xylene	*1.53*		µg/L	2.00		76.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.55*		µg/L	2.00		77.3	30-150			
LCS Dup (B077096-BSD1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.45	0.20	µg/L	0.500		90.6	40-140	1.22	20	
Aroclor-1016 [2C]	0.45	0.20	µg/L	0.500		90.9	40-140	1.28	20	
Aroclor-1260	0.47	0.20	µg/L	0.500		94.4	40-140	2.74	20	
Aroclor-1260 [2C]	0.46	0.20	µg/L	0.500		91.9	40-140	3.43	20	
Surrogate: Decachlorobiphenyl	*1.85*		µg/L	2.00		92.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.83*		µg/L	2.00		91.4	30-150			
Surrogate: Tetrachloro-m-xylene	*1.55*		µg/L	2.00		77.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.57*		µg/L	2.00		78.6	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077097 - SW-846 3540C										
Blank (B077097-BLK1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*1.04*		mg/Kg	1.00		104	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.935*		mg/Kg	1.00		93.5	30-150			
Surrogate: Tetrachloro-m-xylene	*0.908*		mg/Kg	1.00		90.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.940*		mg/Kg	1.00		94.0	30-150			
LCS (B077097-BS1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.28	0.10	mg/Kg	0.250		110	40-140			
Aroclor-1016 [2C]	0.29	0.10	mg/Kg	0.250		116	40-140			
Aroclor-1260	0.28	0.10	mg/Kg	0.250		113	40-140			
Aroclor-1260 [2C]	0.27	0.10	mg/Kg	0.250		107	40-140			
Surrogate: Decachlorobiphenyl	*1.04*		mg/Kg	1.00		104	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.933*		mg/Kg	1.00		93.3	30-150			
Surrogate: Tetrachloro-m-xylene	*0.907*		mg/Kg	1.00		90.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.927*		mg/Kg	1.00		92.7	30-150			
LCS Dup (B077097-BSD1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.28	0.10	mg/Kg	0.250		112	40-140	1.70	30	
Aroclor-1016 [2C]	0.27	0.10	mg/Kg	0.250		107	40-140	8.66	30	
Aroclor-1260	0.28	0.10	mg/Kg	0.250		111	40-140	2.06	30	
Aroclor-1260 [2C]	0.25	0.10	mg/Kg	0.250		102	40-140	5.03	30	
Surrogate: Decachlorobiphenyl	*1.01*		mg/Kg	1.00		101	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.900*		mg/Kg	1.00		90.0	30-150			
Surrogate: Tetrachloro-m-xylene	*0.897*		mg/Kg	1.00		89.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.926*		mg/Kg	1.00		92.6	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077113 - SW-846 3540C										
Blank (B077113-BLK1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.154*		mg/Kg wet	0.200		77.0	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.153*		mg/Kg wet	0.200		76.7	30-150			
Surrogate: Tetrachloro-m-xylene	*0.148*		mg/Kg wet	0.200		74.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.150*		mg/Kg wet	0.200		75.0	30-150			
LCS (B077113-BS1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.17	0.10	mg/Kg wet	0.200		83.7	40-140			
Aroclor-1016 [2C]	0.19	0.10	mg/Kg wet	0.200		95.3	40-140			
Aroclor-1260	0.17	0.10	mg/Kg wet	0.200		84.7	40-140			
Aroclor-1260 [2C]	0.21	0.10	mg/Kg wet	0.200		103	40-140			
Surrogate: Decachlorobiphenyl	*0.177*		mg/Kg wet	0.200		88.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.177*		mg/Kg wet	0.200		88.7	30-150			
Surrogate: Tetrachloro-m-xylene	*0.161*		mg/Kg wet	0.200		80.6	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.158*		mg/Kg wet	0.200		78.8	30-150			
LCS Dup (B077113-BSD1)				Prepared: 07/19/13 Analyzed: 07/22/13						
Aroclor-1016	0.17	0.10	mg/Kg wet	0.200		83.5	40-140	0.227	30	
Aroclor-1016 [2C]	0.19	0.10	mg/Kg wet	0.200		93.4	40-140	2.00	30	
Aroclor-1260	0.16	0.10	mg/Kg wet	0.200		82.1	40-140	3.13	30	
Aroclor-1260 [2C]	0.20	0.10	mg/Kg wet	0.200		98.5	40-140	4.47	30	
Surrogate: Decachlorobiphenyl	*0.157*		mg/Kg wet	0.200		78.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.160*		mg/Kg wet	0.200		79.8	30-150			
Surrogate: Tetrachloro-m-xylene	*0.159*		mg/Kg wet	0.200		79.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.156*		mg/Kg wet	0.200		78.0	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B077113 - SW-846 3540C											
Matrix Spike (B077113-MS1)		**Source: 13G0742-06**		Prepared: 07/19/13 Analyzed: 07/23/13							
Aroclor-1016	0.19	0.11	mg/Kg dry	0.217	0.0	86.2		40-140			
Aroclor-1016 [2C]	0.23	0.11	mg/Kg dry	0.217	0.0	105		40-140			
Aroclor-1260	0.68	0.11	mg/Kg dry	0.217	0.78	**-48.0**	*	40-140			MS-07A
Aroclor-1260 [2C]	0.75	0.11	mg/Kg dry	0.217	0.83	**-35.6**	*	40-140			MS-07A
Surrogate: Decachlorobiphenyl	*0.133*		mg/Kg dry	0.217		61.1		30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.136*		mg/Kg dry	0.217		62.8		30-150			
Surrogate: Tetrachloro-m-xylene	*0.161*		mg/Kg dry	0.217		74.0		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.172*		mg/Kg dry	0.217		79.3		30-150			
Matrix Spike Dup (B077113-MSD1)		**Source: 13G0742-06**		Prepared: 07/19/13 Analyzed: 07/23/13							
Aroclor-1016	0.25	0.11	mg/Kg dry	0.217	0.0	114		40-140	27.4	50	
Aroclor-1016 [2C]	0.26	0.11	mg/Kg dry	0.217	0.0	120		40-140	13.1	50	
Aroclor-1260	0.75	0.11	mg/Kg dry	0.217	0.78	**-13.9**	*	40-140	10.3	50	MS-07A
Aroclor-1260 [2C]	0.84	0.11	mg/Kg dry	0.217	0.83	**5.55**	*	40-140	11.2	50	MS-07A
Surrogate: Decachlorobiphenyl	*0.157*		mg/Kg dry	0.217		72.2		30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.162*		mg/Kg dry	0.217		74.4		30-150			
Surrogate: Tetrachloro-m-xylene	*0.199*		mg/Kg dry	0.217		91.5		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.199*		mg/Kg dry	0.217		91.8		30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077296 - % Solids										
Duplicate (B077296-DUP1)		**Source: 13G0742-08**		Prepared: 07/23/13 Analyzed: 07/24/13						
% Solids	87.6		% Wt		88.9			1.47	20	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
MS-07A	Matrix spike and spike duplicate recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possiblity of matrix effects that lead to low bias or non-homogeneous sample aliquot cannot be eliminated.
O-03	Sample contains two incompletely resolved aroclors. Aroclor with the closest matching pattern is reported.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Product/Solid	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
SW-846 8082A in Water	
Aroclor-1016	CT,NH,NY,NC,ME,VA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1221	CT,NH,NY,NC,ME,VA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1232	CT,NH,NY,NC,ME,VA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1242	CT,NH,NY,NC,ME,VA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1248	CT,NH,NY,NC,ME,VA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1254	CT,NH,NY,NC,ME,VA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1260	CT,NH,NY,NC,ME,VA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA
Aroclor-1262	NC
Aroclor-1262 [2C]	NC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Water	
Aroclor-1268	NC
Aroclor-1268 [2C]	NC

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0742

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
01	SW Asphalt 6"	7/17/13	8:35	X		o	U	✓	
02	SW Asphalt 6"_Dup	7/17/13	8:35	X		o	U	✓	
03	Center Asphalt 6"	7/17/13	8:50	X		o	U	✓	
04	SE Asphalt 6"	7/17/13	9:00	X		o	U	✓	
05	E Asphalt 6"	7/17/13	9:15	X		o	U	✓	
06	NW Window Soil 12" (6-12")	7/17/13	9:40	X		s	U	✓	
—	NW Window Soil 12" (12-18")	7/17/13	10:00	X		s	U		✓
07	Center Window Soil 6" (0-6")	7/17/13	10:15	X		s	U	✓	
08	NW Window Soil 24" (0-6")	7/17/13	10:25	X		s	U	✓	
09	NW Window Soil 36" (0-6")	7/17/13	10:45	X		s	U	✓	

ANALYSIS REQUESTED

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments: 1) For asphalt samples - please grind + composite full contents of each jar
2) HOLD samples in second column pending further instruction from Kleinfelder.
3) All soil samples are fill soil + may contain glass.

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time:
[signature] 7/18/13	750
Received by: (signature) [signature] 7-18-13	Date/Time:
Relinquished by: (signature) [signature] 7-18-13	Date/Time: 1900
Received by: (signature) [signature] 7/18/13	Date/Time: 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
☒ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G07402

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705 (540)
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
10	Center Window Soil 24" (0-6")	7/17/13	10:50	X		S	U	✓	
11	Center Window Soil 36" (0-6")	7/17/13	11:00	X		S	U	✓	
12	Equip Blank	7/17/13	11:10	X		W	U	✓	
13	NW Window Soil 48" (0-6")	7/17/13	11:20	X		S	U	✓	
14	NE Window Soil 12" (6-12")	7/17/13	11:40	X		S	U	✓	
15	NE Window Soil 24" (0-6")	7/17/13	11:45	X		S	U	✓	
16	NE Window Soil 36" (0-6")	7/17/13	11:50	X		S	U	✓	
—	Center Window Soil 6" (6-12)	7/17/13	13:00	X		S	U		✓
—	Center Window Soil 24" (6 - 12")	7/17/13	13:05	X		S	U		✓
—	Center Window Soil 36" (6 - 12")	7/17/13	13:15	X		S	U		✓

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments: Equip blank → collected from open side hand auger

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 7/18/13 750	
Received by: (signature)	Date/Time: 7-18-13	
Relinquished by: (signature)	Date/Time: 7-18-13 1710	
Received by: (signature)	Date/Time: 7/18/13 1910	

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0742

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD									
																		# of Containers
																		** Preservation
																		***Container Code
								A	A									
	Center Window Soil 36" (12 - 18")	7/17/13	13:20	X		S	U		✓									
	NE Window Soil 12" (12 - 18")	7/17/13	13:55	X		S	U		✓									
	NE Window Soil 24" (6-12")	7/17/13	13:50	X		S	U		✓									
	NE Window Soil 24" (12 - 18")	7/17/13	14:15	X		S	U		✓									
	NE Window Soil 36" (6-12")	7/17/13	14:20	X		S	U		✓									
	NE Window Soil 36" (12-18")	7/17/13	14:35	X		S	U		✓									
	NW Window Soil 24" (6-12")	7/17/13	14:55	X		S	U		✓									
	NW Window Soil 24" (6-12")_DUP	7/17/13	14:55	X		S	U		✓									
	Equip Blank 2	7/17/13	14:55	X		W	U		✓									
	NW-Window-Soil 24" (12-18")	7/17/13	15:15	X		S	U		✓									

Comments: Equip Blank 2 - collected from closed side hand auger

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Relinquished by: (signature)	Date/Time: 7/18/13 7:50
Received by: (signature)	Date/Time: 7-18-13 7:50
Relinquished by: (signature)	Date/Time: 7-18-13 1100
Received by: (signature)	Date/Time: 7/18/13 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0742

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
	NW Window Soil 36" (6-12")	7/17/13	15:30	X		S	U		✓
	NW Window Soil 36" (12-14")	7/17/13	16:00	X		S	U		✓
	NW Window Soil 48" (6-10")	7/17/13	16:10	X		S	U		✓
	NW Window Soil 36" (0-6") Dup								

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Relinquished by: (signature)	Date/Time:
[signature] 7/18/13	250
Received by: (signature) [signature] 7/18/13	Date/Time:
Relinquished by: (signature) [signature] 7/18/13	Date/Time:
Received by: (signature) [signature] 7/18/13	Date/Time: 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

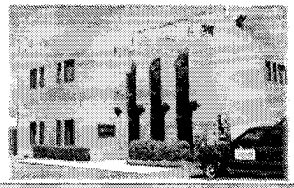
†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

Page 42 of 44 CRWPDF87 07/25/13 11:04:23

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY



Sample Receipt Checklist

CLIENT NAME: Kleinfelder **RECEIVED BY:** JMM **DATE:** 7/18/13

1) Was the chain(s) of custody relinquished and signed? (Yes) No **No CoC Included**

2) Does the chain agree with the samples? (Yes) No

If not, explain:

3) Are all the samples in good condition? (Yes) No

If not, explain:

4) How were the samples received:

On Ice ☒ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☒

Were the samples received in Temperature Compliance of (2-6°C)? (Yes) No N/A

Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.9

5) Are there Dissolved samples for the lab to filter? Yes (No)

Who was notified _____ Date _____ Time _____

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes (No)

Who was notified _____ Date _____ Time _____

7) Location where samples are stored: 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: _____

8) Do all samples have the proper Acid pH: Yes No (N/A) _____

9) Do all samples have the proper Base pH: Yes No (N/A) _____

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes No (N/A)

Containers received at Con-Test

	# of containers			# of containers
1 Liter Amber	2		8 oz amber/clear jar	3
500 mL Amber			4 oz amber/clear jar	
250 mL Amber (8oz amber)			2 oz amber/clear jar	
1 Liter Plastic			Air Cassette	
500 mL Plastic			Hg/Hopcalite Tube	
250 mL plastic			Plastic Bag / Ziploc	
40 mL Vial - type listed below			PM 2.5 / PM 10	
Colisure / bacteria bottle			PUF Cartridge	
Dissolved Oxygen bottle			SOC Kit	
Encore			TO-17 Tubes	
Flashpoint bottle			Non-ConTest Container	
Perchlorate Kit			Other glass jar	
Other			Other	

Laboratory Comments: * received NW window sill 36" (0.6") - Dup not on CoC

40 mL vials: # HCl _____ # Methanol _____

Bisulfate _____ # DI Water _____

Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test Analytical Laboratory	Project #: 13G0742
Project Location: Green Line Extension	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

13G0742-01 thru 13G0742-16

Matrices: Product/Solid Soil Water

CAM Protocol (check all that below)

8260 VOC CAM II A ( )	7470/7471 Hg CAM IIIB ( )	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 A ( )	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )	

Affirmative response to Questions A throughF is 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	☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specificed in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
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	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

***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 perfomance standards specified in the CAM protocol(s) achieved?	☐ Yes	☑ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case 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: M Erickson Position: Laboratory Director

Printed Name: Michael A. Erickson Date: 07/25/13

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

August 7, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension
Client Job Number:
Project Number: 2012096.01-A
Laboratory Work Order Number: 13G1261

Enclosed are results of analyses for samples received by the laboratory on July 31, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 8/7/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.01-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13G1261

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
West Asphalt 6in	13G1261-01	Product/Solid		SW-846 8082A	
West 2 Asphalt 12in	13G1261-03	Product/Solid		SW-846 8082A	
West 2 Asphalt 24in	13G1261-04	Product/Solid		SW-846 8082A	
West 3 Asphalt 6in	13G1261-05	Product/Solid		SW-846 8082A	
Southwest Corner Asphalt 12in	13G1261-07	Product/Solid		SW-846 8082A	
Southwest Corner Asphalt 12 in DUP	13G1261-08	Product/Solid		SW-846 8082A	
Southwest Asphalt 12in	13G1261-09	Product/Solid		SW-846 8082A	
Southwest Asphalt 24in	13G1261-10	Product/Solid		SW-846 8082A	
Southeast Asphalt 12in	13G1261-12	Product/Solid		SW-846 8082A	
Center Asphalt 12in	13G1261-13	Product/Solid		SW-846 8082A	
Center Asphalt 24in	13G1261-14	Product/Solid		SW-846 8082A	
Southeast 2 Asphalt 24in	13G1261-17	Product/Solid		SW-846 8082A	
Southeast Corner Asphalt 24in	13G1261-18	Product/Solid		SW-846 8082A	
East Asphalt 12in	13G1261-19	Product/Solid		SW-846 8082A	
East Asphalt 24in	13G1261-20	Product/Solid		SW-846 8082A	
East 3 Asphalt 12in	13G1261-21	Product/Solid		SW-846 8082A	
East 3 Asphalt 24in	13G1261-22	Product/Solid		SW-846 8082A	
Southwest Corner Asphalt 24in	13G1261-25	Product/Solid		SW-846 8082A	
Center Window Soil 44in (0-6)	13G1261-27	Soil		SM 2540G	
				SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8082A

Qualifications:

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

Analyte & Samples(s) Qualified:

Aroclor-1260, Aroclor-1260 [2C]

B077963-MS1, B077963-MSD1

Due to continuing calibration non-conformance on the confirmatory detector, the lower of two results was reported.

Analyte & Samples(s) Qualified:

Aroclor-1260

13G1261-22[East 3 Asphalt 24in]

Continuing calibration did not meet method specifications and was biased on the low side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

Aroclor-1260 [2C]

B077963-BLK1, B077963-BS1, B077963-BSD1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: West Asphalt 6in | Sampled: 7/31/2013 08:25

Sample ID: 13G1261-01

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1221 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1232 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1242 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1248 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1254 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1260 [2]	2.8	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1262 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB
Aroclor-1268 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:14	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	90.7	30-150		8/7/13 2:14
Decachlorobiphenyl [2]	93.2	30-150		8/7/13 2:14
Tetrachloro-m-xylene [1]	107	30-150		8/7/13 2:14
Tetrachloro-m-xylene [2]	112	30-150		8/7/13 2:14

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: West 2 Asphalt 12in | Sampled: 7/31/2013 09:00

Sample ID: 13G1261-03

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1221 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1232 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1242 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1248 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1254 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1260 [2]	1.8	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1262 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB
Aroclor-1268 [1]	ND	0.99	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 2:28	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	88.0	30-150		8/7/13 2:28
Decachlorobiphenyl [2]	93.1	30-150		8/7/13 2:28
Tetrachloro-m-xylene [1]	101	30-150		8/7/13 2:28
Tetrachloro-m-xylene [2]	108	30-150		8/7/13 2:28

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: West 2 Asphalt 24in | Sampled: 7/31/2013 09:25

Sample ID: 13G1261-04

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1254 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1260 [2]	0.89	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:00	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	88.6	30-150		8/7/13 13:00
Decachlorobiphenyl [2]	108	30-150		8/7/13 13:00
Tetrachloro-m-xylene [1]	100	30-150		8/7/13 13:00
Tetrachloro-m-xylene [2]	108	30-150		8/7/13 13:00

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: West 3 Asphalt 6in | Sampled: 7/31/2013 09:50

Sample ID: 13G1261-05

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1221 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1232 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1242 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1248 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1254 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1260 [2]	0.21	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1262 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB
Aroclor-1268 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:14	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	82.7	30-150		8/7/13 13:14
Decachlorobiphenyl [2]	100	30-150		8/7/13 13:14
Tetrachloro-m-xylene [1]	101	30-150		8/7/13 13:14
Tetrachloro-m-xylene [2]	105	30-150		8/7/13 13:14

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Corner Asphalt 12in | Sampled: 7/31/2013 10:00

Sample ID: 13G1261-07

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1254 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1260 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:28	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	80.3	30-150		8/7/13 13:28
Decachlorobiphenyl [2]	96.8	30-150		8/7/13 13:28
Tetrachloro-m-xylene [1]	104	30-150		8/7/13 13:28
Tetrachloro-m-xylene [2]	111	30-150		8/7/13 13:28

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Corner Asphalt 12 in DUP | Sampled: 7/31/2013 10:00

Sample ID: 13G1261-08

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1221 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1232 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1242 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1248 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1254 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1260 [2]	0.099	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1262 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB
Aroclor-1268 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:42	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	77.7	30-150		8/7/13 13:42
Decachlorobiphenyl [2]	94.7	30-150		8/7/13 13:42
Tetrachloro-m-xylene [1]	109	30-150		8/7/13 13:42
Tetrachloro-m-xylene [2]	117	30-150		8/7/13 13:42

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Asphalt 12in | Sampled: 7/31/2013 10:30

Sample ID: 13G1261-09

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1221 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1232 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1242 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1248 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1254 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1260 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1262 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB
Aroclor-1268 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 13:56	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	72.3	30-150		8/7/13 13:56
Decachlorobiphenyl [2]	88.1	30-150		8/7/13 13:56
Tetrachloro-m-xylene [1]	103	30-150		8/7/13 13:56
Tetrachloro-m-xylene [2]	112	30-150		8/7/13 13:56

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Asphalt 24in | Sampled: 7/31/2013 10:40

Sample ID: 13G1261-10

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1221 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1232 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1242 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1248 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1254 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1260 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1262 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB
Aroclor-1268 [1]	ND	0.099	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:10	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	85.8	30-150		8/7/13 14:10
Decachlorobiphenyl [2]	103	30-150		8/7/13 14:10
Tetrachloro-m-xylene [1]	111	30-150		8/7/13 14:10
Tetrachloro-m-xylene [2]	119	30-150		8/7/13 14:10

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southeast Asphalt 12in | Sampled: 7/31/2013 11:20

Sample ID: 13G1261-12

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1221 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1232 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1242 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1248 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1254 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1260 [2]	0.56	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1262 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB
Aroclor-1268 [1]	ND	0.096	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:24	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	82.8	30-150		8/7/13 14:24
Decachlorobiphenyl [2]	96.6	30-150		8/7/13 14:24
Tetrachloro-m-xylene [1]	105	30-150		8/7/13 14:24
Tetrachloro-m-xylene [2]	113	30-150		8/7/13 14:24

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Center Asphalt 12in | Sampled: 7/31/2013 11:00

Sample ID: 13G1261-13

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1221 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1232 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1242 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1248 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1254 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1260 [2]	1.4	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1262 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB
Aroclor-1268 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:14	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	79.1	30-150		8/7/13 5:14
Decachlorobiphenyl [2]	88.6	30-150		8/7/13 5:14
Tetrachloro-m-xylene [1]	97.8	30-150		8/7/13 5:14
Tetrachloro-m-xylene [2]	108	30-150		8/7/13 5:14

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Center Asphalt 24in | Sampled: 7/31/2013 11:15

Sample ID: 13G1261-14

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1221 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1232 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1242 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1248 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1254 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1260 [2]	1.1	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1262 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB
Aroclor-1268 [1]	ND	1.0	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:28	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	94.9	30-150		8/7/13 5:28
Decachlorobiphenyl [2]	106	30-150		8/7/13 5:28
Tetrachloro-m-xylene [1]	116	30-150		8/7/13 5:28
Tetrachloro-m-xylene [2]	131	30-150		8/7/13 5:28

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southeast 2 Asphalt 24in | Sampled: 7/31/2013 12:15

Sample ID: 13G1261-17

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1221 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1232 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1242 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1248 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1254 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1260 [2]	1.9	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1262 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB
Aroclor-1268 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/1/13	8/7/13 5:42	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	87.1	30-150		8/7/13 5:42
Decachlorobiphenyl [2]	99.6	30-150		8/7/13 5:42
Tetrachloro-m-xylene [1]	106	30-150		8/7/13 5:42
Tetrachloro-m-xylene [2]	119	30-150		8/7/13 5:42

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southeast Corner Asphalt 24in | Sampled: 7/31/2013 12:45

Sample ID: 13G1261-18

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1221 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1232 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1242 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1248 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1254 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1260 [2]	0.26	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1262 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB
Aroclor-1268 [1]	ND	0.098	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:38	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	72.4	30-150		8/7/13 14:38
Decachlorobiphenyl [2]	84.9	30-150		8/7/13 14:38
Tetrachloro-m-xylene [1]	91.3	30-150		8/7/13 14:38
Tetrachloro-m-xylene [2]	96.9	30-150		8/7/13 14:38

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: East Asphalt 12in | Sampled: 7/31/2013 12:50

Sample ID: 13G1261-19

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1254 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1260 [2]	0.63	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/1/13	8/7/13 14:52	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	87.7	30-150		8/7/13 14:52
Decachlorobiphenyl [2]	102	30-150		8/7/13 14:52
Tetrachloro-m-xylene [1]	101	30-150		8/7/13 14:52
Tetrachloro-m-xylene [2]	111	30-150		8/7/13 14:52

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: East Asphalt 24in | Sampled: 7/31/2013 13:00

Sample ID: 13G1261-20

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1221 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1232 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1242 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1248 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1254 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1260 [2]	1.1	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1262 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC
Aroclor-1268 [1]	ND	0.93	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 21:55	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	105	30-150		8/5/13 21:55
Decachlorobiphenyl [2]	112	30-150		8/5/13 21:55
Tetrachloro-m-xylene [1]	114	30-150		8/5/13 21:55
Tetrachloro-m-xylene [2]	115	30-150		8/5/13 21:55

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: East 3 Asphalt 12in | Sampled: 7/31/2013 13:00

Sample ID: 13G1261-21

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1221 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1232 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1242 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1248 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1254 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1260 [2]	2.0	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1262 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC
Aroclor-1268 [1]	ND	0.97	mg/Kg	10		SW-846 8082A	8/2/13	8/5/13 22:07	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	86.9	30-150		8/5/13 22:07
Decachlorobiphenyl [2]	91.9	30-150		8/5/13 22:07
Tetrachloro-m-xylene [1]	96.2	30-150		8/5/13 22:07
Tetrachloro-m-xylene [2]	97.9	30-150		8/5/13 22:07

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: East 3 Asphalt 24in | Sampled: 7/31/2013 13:20

Sample ID: 13G1261-22

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1221 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1232 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1242 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1248 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1254 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1260 [1]	0.51	0.092	mg/Kg	1	P-04	SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1262 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB
Aroclor-1268 [1]	ND	0.092	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:15	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	102	30-150		8/6/13 14:15
Decachlorobiphenyl [2]	86.1	30-150		8/6/13 14:15
Tetrachloro-m-xylene [1]	97.1	30-150		8/6/13 14:15
Tetrachloro-m-xylene [2]	89.5	30-150		8/6/13 14:15

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Southwest Corner Asphalt 24in | Sampled: 7/31/2013 10:15

Sample ID: 13G1261-25

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1221 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1232 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1242 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1248 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1254 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1260 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1262 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB
Aroclor-1268 [1]	ND	0.097	mg/Kg	1		SW-846 8082A	8/2/13	8/6/13 14:27	JMB

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	88.2	30-150		8/6/13 14:27
Decachlorobiphenyl [2]	73.0	30-150		8/6/13 14:27
Tetrachloro-m-xylene [1]	94.0	30-150		8/6/13 14:27
Tetrachloro-m-xylene [2]	84.8	30-150		8/6/13 14:27

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Center Window Soil 44in (0-6) | Sampled: 7/31/2013 14:15

Sample ID: 13G1261-27

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1221 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1232 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1242 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1248 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1254 [1]	0.33	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1260 [1]	0.50	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1262 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC
Aroclor-1268 [1]	ND	0.13	mg/Kg dry	5		SW-846 8082A	8/2/13	8/5/13 16:46	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	70.1	30-150		8/5/13 16:46
Decachlorobiphenyl [2]	65.0	30-150		8/5/13 16:46
Tetrachloro-m-xylene [1]	72.3	30-150		8/5/13 16:46
Tetrachloro-m-xylene [2]	70.3	30-150		8/5/13 16:46

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13G1261

Date Received: 7/31/2013

Field Sample #: Center Window Soil 44in (0-6)
Sampled: 7/31/2013 14:15

Sample ID: 13G1261-27

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	77.0		% Wt	1		SM 2540G	8/1/13	8/2/13 7:51	MLA

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
13G1261-27 [Center Window Soil 44in (0-6)]	B077898	08/01/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G1261-01 [West Asphalt 6in]	B077963	2.06	10.0	08/01/13
13G1261-03 [West 2 Asphalt 12in]	B077963	2.02	10.0	08/01/13
13G1261-04 [West 2 Asphalt 24in]	B077963	2.06	10.0	08/01/13
13G1261-05 [West 3 Asphalt 6in]	B077963	2.04	10.0	08/01/13
13G1261-07 [Southwest Corner Asphalt 12in]	B077963	2.07	10.0	08/01/13
13G1261-08 [Southwest Corner Asphalt 12 in DUP]	B077963	2.09	10.0	08/01/13
13G1261-09 [Southwest Asphalt 12in]	B077963	2.02	10.0	08/01/13
13G1261-10 [Southwest Asphalt 24in]	B077963	2.03	10.0	08/01/13
13G1261-12 [Southeast Asphalt 12in]	B077963	2.08	10.0	08/01/13
13G1261-13 [Center Asphalt 12in]	B077963	2.07	10.0	08/01/13
13G1261-14 [Center Asphalt 24in]	B077963	2.01	10.0	08/01/13
13G1261-17 [Southeast 2 Asphalt 24in]	B077963	2.06	10.0	08/01/13
13G1261-18 [Southeast Corner Asphalt 24in]	B077963	2.04	10.0	08/01/13
13G1261-19 [East Asphalt 12in]	B077963	2.06	10.0	08/01/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G1261-20 [East Asphalt 24in]	B078020	2.16	10.0	08/02/13
13G1261-21 [East 3 Asphalt 12in]	B078020	2.07	10.0	08/02/13
13G1261-22 [East 3 Asphalt 24in]	B078020	2.18	10.0	08/02/13
13G1261-25 [Southwest Corner Asphalt 24in]	B078020	2.06	10.0	08/02/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13G1261-27 [Center Window Soil 44in (0-6)]	B078026	10.2	10.0	08/02/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077963 - SW-846 3540C										
Blank (B077963-BLK1)				Prepared: 08/01/13 Analyzed: 08/06/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							V-05
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*0.957*		mg/Kg	1.00		95.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.866*		mg/Kg	1.00		86.6	30-150			
Surrogate: Tetrachloro-m-xylene	*0.913*		mg/Kg	1.00		91.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.884*		mg/Kg	1.00		88.4	30-150			
LCS (B077963-BS1)				Prepared: 08/01/13 Analyzed: 08/06/13						
Aroclor-1016	0.25	0.10	mg/Kg	0.250		101	40-140			
Aroclor-1016 [2C]	0.26	0.10	mg/Kg	0.250		105	40-140			
Aroclor-1260	0.24	0.10	mg/Kg	0.250		94.7	40-140			
Aroclor-1260 [2C]	0.25	0.10	mg/Kg	0.250		101	40-140			V-05
Surrogate: Decachlorobiphenyl	*0.972*		mg/Kg	1.00		97.2	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.878*		mg/Kg	1.00		87.8	30-150			
Surrogate: Tetrachloro-m-xylene	*0.915*		mg/Kg	1.00		91.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.888*		mg/Kg	1.00		88.8	30-150			
LCS Dup (B077963-BSD1)				Prepared: 08/01/13 Analyzed: 08/06/13						
Aroclor-1016	0.24	0.10	mg/Kg	0.250		94.1	40-140	6.74	30	
Aroclor-1016 [2C]	0.22	0.10	mg/Kg	0.250		89.7	40-140	15.5	30	
Aroclor-1260	0.22	0.10	mg/Kg	0.250		86.9	40-140	8.63	30	
Aroclor-1260 [2C]	0.23	0.10	mg/Kg	0.250		93.5	40-140	7.62	30	V-05
Surrogate: Decachlorobiphenyl	*0.835*		mg/Kg	1.00		83.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.759*		mg/Kg	1.00		75.9	30-150			
Surrogate: Tetrachloro-m-xylene	*0.862*		mg/Kg	1.00		86.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.835*		mg/Kg	1.00		83.5	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B077963 - SW-846 3540C											
Matrix Spike (B077963-MS1)		**Source: 13G1261-01**		Prepared: 08/01/13 Analyzed: 08/07/13							
Aroclor-1016	0.23	1.0	mg/Kg	0.250	0.0	93.9		40-140			
Aroclor-1016 [2C]	0.28	1.0	mg/Kg	0.250	0.0	113		40-140			
Aroclor-1260	2.1	1.0	mg/Kg	0.250	2.5	**-134**	*	40-140			MS-19
Aroclor-1260 [2C]	2.5	1.0	mg/Kg	0.250	2.8	**-96.5**	*	40-140			MS-19
Surrogate: Decachlorobiphenyl	*0.856*		mg/Kg	1.00		85.6		30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.969*		mg/Kg	1.00		96.9		30-150			
Surrogate: Tetrachloro-m-xylene	*1.09*		mg/Kg	1.00		109		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.24*		mg/Kg	1.00		124		30-150			
Matrix Spike Dup (B077963-MSD1)		**Source: 13G1261-01**		Prepared: 08/01/13 Analyzed: 08/07/13							
Aroclor-1016	0.25	1.0	mg/Kg	0.250	0.0	98.2		40-140	4.46	50	
Aroclor-1016 [2C]	0.28	1.0	mg/Kg	0.250	0.0	111		40-140	1.57	50	
Aroclor-1260	1.4	1.0	mg/Kg	0.250	2.5	**-439**	*	40-140	43.7	50	MS-19
Aroclor-1260 [2C]	1.6	1.0	mg/Kg	0.250	2.8	**-467**	*	40-140	45.2	50	MS-19
Surrogate: Decachlorobiphenyl	*0.910*		mg/Kg	1.00		91.0		30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.03*		mg/Kg	1.00		103		30-150			
Surrogate: Tetrachloro-m-xylene	*1.14*		mg/Kg	1.00		114		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.31*		mg/Kg	1.00		131		30-150			
Batch B078020 - SW-846 3540C											
Blank (B078020-BLK1)				Prepared: 08/02/13 Analyzed: 08/05/13							
Aroclor-1016	ND	0.10	mg/Kg								
Aroclor-1016 [2C]	ND	0.10	mg/Kg								
Aroclor-1221	ND	0.10	mg/Kg								
Aroclor-1221 [2C]	ND	0.10	mg/Kg								
Aroclor-1232	ND	0.10	mg/Kg								
Aroclor-1232 [2C]	ND	0.10	mg/Kg								
Aroclor-1242	ND	0.10	mg/Kg								
Aroclor-1242 [2C]	ND	0.10	mg/Kg								
Aroclor-1248	ND	0.10	mg/Kg								
Aroclor-1248 [2C]	ND	0.10	mg/Kg								
Aroclor-1254	ND	0.10	mg/Kg								
Aroclor-1254 [2C]	ND	0.10	mg/Kg								
Aroclor-1260	ND	0.10	mg/Kg								
Aroclor-1260 [2C]	ND	0.10	mg/Kg								
Aroclor-1262	ND	0.10	mg/Kg								
Aroclor-1262 [2C]	ND	0.10	mg/Kg								
Aroclor-1268	ND	0.10	mg/Kg								
Aroclor-1268 [2C]	ND	0.10	mg/Kg								
Surrogate: Decachlorobiphenyl	*0.672*		mg/Kg	1.00		67.2		30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.775*		mg/Kg	1.00		77.5		30-150			
Surrogate: Tetrachloro-m-xylene	*0.593*		mg/Kg	1.00		59.3		30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.652*		mg/Kg	1.00		65.2		30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078020 - SW-846 3540C										
LCS (B078020-BS1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	0.22	0.10	mg/Kg	0.250		87.6	40-140			
Aroclor-1016 [2C]	0.24	0.10	mg/Kg	0.250		95.7	40-140			
Aroclor-1260	0.22	0.10	mg/Kg	0.250		87.1	40-140			
Aroclor-1260 [2C]	0.27	0.10	mg/Kg	0.250		106	40-140			
Surrogate: Decachlorobiphenyl	*0.929*		mg/Kg	1.00		92.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.06*		mg/Kg	1.00		106	30-150			
Surrogate: Tetrachloro-m-xylene	*0.831*		mg/Kg	1.00		83.1	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.905*		mg/Kg	1.00		90.5	30-150			
LCS Dup (B078020-BSD1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	0.25	0.10	mg/Kg	0.250		101	40-140	13.9	30	
Aroclor-1016 [2C]	0.28	0.10	mg/Kg	0.250		111	40-140	15.3	30	
Aroclor-1260	0.25	0.10	mg/Kg	0.250		101	40-140	14.3	30	
Aroclor-1260 [2C]	0.31	0.10	mg/Kg	0.250		123	40-140	14.2	30	
Surrogate: Decachlorobiphenyl	*1.05*		mg/Kg	1.00		105	30-150			
Surrogate: Decachlorobiphenyl [2C]	*1.19*		mg/Kg	1.00		119	30-150			
Surrogate: Tetrachloro-m-xylene	*0.922*		mg/Kg	1.00		92.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*1.00*		mg/Kg	1.00		100	30-150			
Batch B078026 - SW-846 3540C										
Blank (B078026-BLK1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.203*		mg/Kg wet	0.200		102	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.195*		mg/Kg wet	0.200		97.6	30-150			
Surrogate: Tetrachloro-m-xylene	*0.193*		mg/Kg wet	0.200		96.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.196*		mg/Kg wet	0.200		97.8	30-150			

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078026 - SW-846 3540C										
LCS (B078026-BS1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	0.20	0.10	mg/Kg wet	0.200		101	40-140			
Aroclor-1016 [2C]	0.19	0.10	mg/Kg wet	0.200		93.2	40-140			
Aroclor-1260	0.20	0.10	mg/Kg wet	0.200		101	40-140			
Aroclor-1260 [2C]	0.18	0.10	mg/Kg wet	0.200		91.6	40-140			
Surrogate: Decachlorobiphenyl	*0.194*		mg/Kg wet	0.200		96.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.178*		mg/Kg wet	0.200		89.2	30-150			
Surrogate: Tetrachloro-m-xylene	*0.184*		mg/Kg wet	0.200		92.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.178*		mg/Kg wet	0.200		89.2	30-150			
LCS Dup (B078026-BSD1)				Prepared: 08/02/13 Analyzed: 08/05/13						
Aroclor-1016	0.22	0.10	mg/Kg wet	0.200		109	40-140	7.66	30	
Aroclor-1016 [2C]	0.21	0.10	mg/Kg wet	0.200		105	40-140	11.6	30	
Aroclor-1260	0.22	0.10	mg/Kg wet	0.200		108	40-140	6.23	30	
Aroclor-1260 [2C]	0.19	0.10	mg/Kg wet	0.200		96.9	40-140	5.64	30	
Surrogate: Decachlorobiphenyl	*0.210*		mg/Kg wet	0.200		105	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.194*		mg/Kg wet	0.200		97.0	30-150			
Surrogate: Tetrachloro-m-xylene	*0.210*		mg/Kg wet	0.200		105	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.204*		mg/Kg wet	0.200		102	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B077898 - % Solids										
Duplicate (B077898-DUP2)		**Source: 13G1261-27**		Prepared: 08/01/13 Analyzed: 08/02/13						
% Solids	77.0		% Wt		77.0			0.00	20	

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
MS-19	Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
P-04	Due to continuing calibration non-conformance on the confirmatory detector, the lower of two results was reported.
V-05	Continuing calibration did not meet method specifications and was biased on the low side for this compound. Increased uncertainty is associated with the reported value which is likely to be biased on the low side.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Product/Solid	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

13G1261

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley & Jenna Almquist

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
						# of Containers		1	1
						** Preservation		I	I
						***Container Code		A	A
01	West Asphalt 6"	7/31/2013	8:25	X		○	U	✓	
02	West Asphalt 36"	7/31/2013	8:45	X		○	U		✓
03	West 2 Asphalt 12"	7/31/2013	9:00	X		○	U	✓	
04	West 2 Asphalt 24"	7/31/2013	9:25	X		○	U	✓	
05	West 3 Asphalt 6"	7/31/2013	9:50	X		○	U	✓	
06	West 3 Asphalt 36"	7/31/2013	10:10	X		○	U		✓
07	Southwest Corner Asphalt 12"	7/31/2013	10:00	X		○	U	✓	
08	Southwest Corner Asphalt 12"_DUP	7/31/2013	10:00	X		○	U	✓	
09	Southwest Asphalt 12"	7/31/2013	10:30	X		○	U	✓	
10	Southwest Asphalt 24"	7/31/2013	10:40	X		○	U	✓	

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
For asphalt samples, please grind + composite entire contact, at lab.

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 7/31/13 1630	
Received by: (signature) Paul Racuet	Date/Time: 7/31/13 1630	
Relinquished by: (signature) Paul Racuet	Date/Time: 7/31/13 19:00	
Received by: (signature)	Date/Time: 7/31/13 19:00	

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

13G12621

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley & Jenna Almquist

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD	# of Containers	** Preservation	***Container Code
										1	I	A
11	Southwest Asphalt 36"	7/31/2013	10:50	X		○	U		✓	1	I	A
12	Southeast Asphalt 12"	7/31/2013	11:20	X		○	U	✓		1	I	A
13	Center Asphalt 12"	7/31/2013	11:00	X		○	U	✓		1	I	A
14	Center Asphalt 24"	7/31/2013	11:15	X		○	U	✓		1	I	A
15	Center Asphalt 36"	7/31/2013	11:30	X		○	U		✓	1	I	A
16	Southeast Asphalt 36"	7/31/2013	11:35	X		○	U		✓	1	I	A
17	Southeast 2 Asphalt 24"	7/31/2013	12:15	X		○	U	✓		1	I	A
18	Southeast Corner Asphalt 24"	7/31/2013	12:45	X		○	U	✓		1	I	A
19	East Asphalt 12"	7/31/2013	12:50	X		○	U	✓		1	I	A
20	East Asphalt 24"	7/31/2013	13:00	X		○	U	✓		1	I	A

Dissolved Metals
○ Field Filtered
○ Lab to Filter

*****Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

****Preservation**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

***Matrix Code:**
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time:
[signature] 7/31/13	1630
Received by: (signature) [signature] 7/31/13	Date/Time: 16:30
Relinquished by: (signature) [signature] 7/31/13	Date/Time: 19:00
Received by: (signature) [signature] 7/31/13	Date/Time: 19:00

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

13G1261

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley & Jenna Almquist

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
21	East 3 Asphalt 12"	7/31/2013	13:00	X		o	U	✓	
22	East 3 Asphalt 24"	7/31/2013	13:20	X		o	U	✓	
23	East 2 Asphalt 36"	7/31/2013	13:20	X		o	U		✓
24	East 2 Asphalt 36"_DUP	7/31/2013	13:20	X		o	U		✓
25	Southwest Corner Asphalt 24"	7/31/2013	10:15	X		o	U	✓	
26	Southeast 3 Asphalt 36"	7/31/2013	12:20	X		o	U		✓
27	Center Window Soil 44" (0-6)	7/31/2013	14:15	X		s	U	✓	

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Relinquished by: (signature)	Date/Time:
[signature]	7/31/13 1630
Received by: (signature) [signature]	7/31/13 1630
Relinquished by: (signature) [signature]	7/31/13 19:00
Received by: (signature) [signature]	7/31/13 19:00

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY

Sample Receipt Checklist

CLIENT NAME: Kleinfelder **RECEIVED BY:** JB **DATE:** 7/31/12

1) **Was the chain(s) of custody relinquished and signed?** **Yes** **No** **No CoC Included**
2) **Does the chain agree with the samples?** **Yes** **No**
   If not, explain:
3) **Are all the samples in good condition?** **Yes** **No**
   If not, explain:
4) **How were the samples received:**

On Ice ☑ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☑

Were the samples received in Temperature Compliance of (2-6°C)? **Yes** **No** **N/A**

Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.3

5) **Are there Dissolved samples for the lab to filter?** **Yes** **No**
   Who was notified _____ Date _____ Time _____
6) **Are there any RUSH or SHORT HOLDING TIME samples?** **Yes** **No**
   Who was notified _____ Date _____ Time _____
7) **Location where samples are stored:** 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: _____

8) **Do all samples have the proper Acid pH:** **Yes** **No** **N/A** _____
9) **Do all samples have the proper Base pH:** **Yes** **No** **N/A** _____
10) **Was the PC notified of any discrepancies with the CoC vs the samples:** **Yes** **No** **N/A**

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		8 oz amber/clear jar	27
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Air Cassette	
500 mL Plastic		Hg/Hopcalite Tube	
250 mL plastic		Plastic Bag / Ziploc	
40 mL Vial - type listed below		PM 2.5 / PM 10	
Colisure / bacteria bottle		PUF Cartridge	
Dissolved Oxygen bottle		SOC Kit	
Encore		TO-17 Tubes	
Flashpoint bottle		Non-ConTest Container	
Perchlorate Kit		Other glass jar	
Other		Other	

Laboratory Comments:

40 mL vials: # HCl _____ # Methanol _____
Bisulfate _____ # DI Water _____
Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

August 9, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension
Client Job Number:
Project Number: 20120096.001-A
Laboratory Work Order Number: 13H0094

Enclosed are results of analyses for samples received by the laboratory on August 2, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 8/9/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20120096.001-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13H0094

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Southeast 3 Asphalt 6in	13H0094-01	Product/Solid		SW-846 8082A	
Southeast 3 Asphalt 12in	13H0094-02	Product/Solid		SW-846 8082A	
Southeast 3 Asphalt 24in	13H0094-03	Product/Solid		SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8082A

Qualifications:

Due to continuing calibration non-conformance on the confirmatory detector, the lower of two results was reported.

Analyte & Samples(s) Qualified:

Aroclor-1260

13H0094-01[Southeast 3 Asphalt 6in], 13H0094-02[Southeast 3 Asphalt 12in], 13H0094-03[Southeast 3 Asphalt 24in]

Continuing calibration verification was outside of control limits on the confirmation column, but within control limits on the primary column.
All sample results are reported from the column within control criteria.

Analyte & Samples(s) Qualified:

Aroclor-1260

13H0094-01[Southeast 3 Asphalt 6in], 13H0094-02[Southeast 3 Asphalt 12in], 13H0094-03[Southeast 3 Asphalt 24in]

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0094

Date Received: 8/2/2013

Field Sample #: Southeast 3 Asphalt 6in | Sampled: 8/1/2013 08:20

Sample ID: 13H0094-01

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1221 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1232 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1242 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1248 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1254 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1260 [1]	0.18	0.080	mg/Kg	1	P-04, V-24	SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1262 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG
Aroclor-1268 [1]	ND	0.080	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:41	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	93.9	30-150		8/9/13 6:41
Decachlorobiphenyl [2]	83.6	30-150		8/9/13 6:41
Tetrachloro-m-xylene [1]	96.1	30-150		8/9/13 6:41
Tetrachloro-m-xylene [2]	81.2	30-150		8/9/13 6:41

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0094

Date Received: 8/2/2013

Field Sample #: Southeast 3 Asphalt 12in | Sampled: 8/1/2013 08:35

Sample ID: 13H0094-02

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1221 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1232 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1242 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1248 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1254 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1260 [1]	0.87	0.083	mg/Kg	1	P-04, V-24	SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1262 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG
Aroclor-1268 [1]	ND	0.083	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 6:54	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	78.6	30-150		8/9/13 6:54
Decachlorobiphenyl [2]	71.7	30-150		8/9/13 6:54
Tetrachloro-m-xylene [1]	81.7	30-150		8/9/13 6:54
Tetrachloro-m-xylene [2]	67.9	30-150		8/9/13 6:54

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0094

Date Received: 8/2/2013

Field Sample #: Southeast 3 Asphalt 24in | Sampled: 8/1/2013 08:50

Sample ID: 13H0094-03

Sample Matrix: Product/Solid

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1221 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1232 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1242 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1248 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1254 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1260 [1]	0.85	0.095	mg/Kg	1	P-04, V-24	SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1262 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG
Aroclor-1268 [1]	ND	0.095	mg/Kg	1		SW-846 8082A	8/6/13	8/9/13 7:07	PJG

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	87.6	30-150		8/9/13 7:07
Decachlorobiphenyl [2]	78.0	30-150		8/9/13 7:07
Tetrachloro-m-xylene [1]	91.8	30-150		8/9/13 7:07
Tetrachloro-m-xylene [2]	75.0	30-150		8/9/13 7:07

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13H0094-01 [Southeast 3 Asphalt 6in]	B078238	2.50	10.0	08/06/13
13H0094-02 [Southeast 3 Asphalt 12in]	B078238	2.40	10.0	08/06/13
13H0094-03 [Southeast 3 Asphalt 24in]	B078238	2.10	10.0	08/06/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078238 - SW-846 3540C										
Blank (B078238-BLK1)				Prepared: 08/06/13 Analyzed: 08/07/13						
Aroclor-1016	ND	0.10	mg/Kg							
Aroclor-1016 [2C]	ND	0.10	mg/Kg							
Aroclor-1221	ND	0.10	mg/Kg							
Aroclor-1221 [2C]	ND	0.10	mg/Kg							
Aroclor-1232	ND	0.10	mg/Kg							
Aroclor-1232 [2C]	ND	0.10	mg/Kg							
Aroclor-1242	ND	0.10	mg/Kg							
Aroclor-1242 [2C]	ND	0.10	mg/Kg							
Aroclor-1248	ND	0.10	mg/Kg							
Aroclor-1248 [2C]	ND	0.10	mg/Kg							
Aroclor-1254	ND	0.10	mg/Kg							
Aroclor-1254 [2C]	ND	0.10	mg/Kg							
Aroclor-1260	ND	0.10	mg/Kg							
Aroclor-1260 [2C]	ND	0.10	mg/Kg							
Aroclor-1262	ND	0.10	mg/Kg							
Aroclor-1262 [2C]	ND	0.10	mg/Kg							
Aroclor-1268	ND	0.10	mg/Kg							
Aroclor-1268 [2C]	ND	0.10	mg/Kg							
Surrogate: Decachlorobiphenyl	*2.40*		mg/Kg	2.00		120	30-150			
Surrogate: Decachlorobiphenyl [2C]	*2.26*		mg/Kg	2.00		113	30-150			
Surrogate: Tetrachloro-m-xylene	*2.02*		mg/Kg	2.00		101	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*2.02*		mg/Kg	2.00		101	30-150			
LCS (B078238-BS1)				Prepared: 08/06/13 Analyzed: 08/07/13						
Aroclor-1016	0.24	0.10	mg/Kg	0.250		97.8	40-140			
Aroclor-1016 [2C]	0.28	0.10	mg/Kg	0.250		111	40-140			
Aroclor-1260	0.24	0.10	mg/Kg	0.250		97.6	40-140			
Aroclor-1260 [2C]	0.24	0.10	mg/Kg	0.250		96.6	40-140			
Surrogate: Decachlorobiphenyl	*1.03*		mg/Kg	1.00		103	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.940*		mg/Kg	1.00		94.0	30-150			
Surrogate: Tetrachloro-m-xylene	*0.957*		mg/Kg	1.00		95.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.947*		mg/Kg	1.00		94.7	30-150			
LCS Dup (B078238-BSD1)				Prepared: 08/06/13 Analyzed: 08/07/13						
Aroclor-1016	0.20	0.10	mg/Kg	0.250		78.5	40-140	21.8	30	
Aroclor-1016 [2C]	0.22	0.10	mg/Kg	0.250		87.2	40-140	24.1	30	
Aroclor-1260	0.21	0.10	mg/Kg	0.250		83.8	40-140	15.2	30	
Aroclor-1260 [2C]	0.20	0.10	mg/Kg	0.250		80.6	40-140	18.1	30	
Surrogate: Decachlorobiphenyl	*0.838*		mg/Kg	1.00		83.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.763*		mg/Kg	1.00		76.3	30-150			
Surrogate: Tetrachloro-m-xylene	*0.749*		mg/Kg	1.00		74.9	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.741*		mg/Kg	1.00		74.1	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
P-04	Due to continuing calibration non-conformance on the confirmatory detector, the lower of two results was reported.
V-24	Continuing calibration verification was outside of control limits on the confirmation column, but within control limits on the primary column. All sample results are reported from the column within control criteria.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Product/Solid	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

1340094

Rev 04.05.12

39 Spruce Street
East longmeadow, MA 01028

Company Name: Kleinfelder
Telephone: 617-498-4705
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Project # 20120096.001A
Client PO#
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Jenna Almquist

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
01	Southeast 3 Asphalt 6"	8/1 (JKA) ~~7/31~~/2013	8:20	X		○	U	✓	
02	Southeast 3 Asphalt 12"	8/1 (JKA) ~~7/31~~/2013	8:35	X		○	U	✓	
03	Southeast 3 Asphalt 24"	8/1 (JKA) ~~7/31~~/2013	8:50	X		○	U	✓	

	1	1									
# of Containers	1	1									
** Preservation	I	I									
***Container Code	A	A									

ANALYSIS REQUESTED

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:**
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:
GRIND ENTIRE SAMPLE

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 8/2/13 12:30	
Received by: (signature)	Date/Time: 8/2/13 12:30	
Relinquished by: (signature)	Date/Time: 8/2/13 18:30	
Received by: (signature)	Date/Time: 8-2-13 1830	

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac

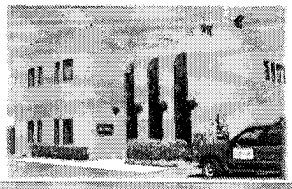
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY



Sample Receipt Checklist

CLIENT NAME: Kleinfelder **RECEIVED BY:** JMH **DATE:** 8/2/13

1) Was the chain(s) of custody relinquished and signed? Yes No No CoC Included

2) Does the chain agree with the samples? Yes No

If not, explain:

3) Are all the samples in good condition? Yes No

If not, explain:

4) How were the samples received:

On Ice ☒ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☒

Were the samples received in Temperature Compliance of (2-6°C)? Yes No N/A

Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.2°

5) Are there Dissolved samples for the lab to filter? Yes No

Who was notified _____ Date _____ Time _____

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes No

Who was notified _____ Date _____ Time _____

7) Location where samples are stored: 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature: _____

8) Do all samples have the proper Acid pH: Yes No N/A _____

9) Do all samples have the proper Base pH: Yes No N/A _____

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes No N/A

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		8 oz amber/clear jar	3
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Air Cassette	
500 mL Plastic		Hg/Hopcalite Tube	
250 mL plastic		Plastic Bag / Ziploc	
40 mL Vial - type listed below		PM 2.5 / PM 10	
Colisure / bacteria bottle		PUF Cartridge	
Dissolved Oxygen bottle		SOC Kit	
Encore		TO-17 Tubes	
Flashpoint bottle		Non-ConTest Container	
Perchlorate Kit		Other glass jar	
Other		Other	

Laboratory Comments:

40 mL vials: # HCl _____ # Methanol _____
Bisulfate _____ # DI Water _____
Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

August 6, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension
Client Job Number:
Project Number: 2012096.01-A
Laboratory Work Order Number: 13H0095

Enclosed are results of analyses for samples received by the laboratory on August 2, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 8/6/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.01-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13H0095

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
NE Window Soil 36in (12-18in)	13H0095-01	Soil		SM 2540G	
				SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0095

Date Received: 8/2/2013

Field Sample #: NE Window Soil 36in (12-18in) | Sampled: 7/17/2013 14:35

Sample ID: 13H0095-01

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1260 [1]	0.77	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	99.2	30-150		8/6/13 15:32
Decachlorobiphenyl [2]	88.5	30-150		8/6/13 15:32
Tetrachloro-m-xylene [1]	106	30-150		8/6/13 15:32
Tetrachloro-m-xylene [2]	97.1	30-150		8/6/13 15:32

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13H0095

Date Received: 8/2/2013

Field Sample #: NE Window Soil 36in (12-18in)
Sampled: 7/17/2013 14:35

Sample ID: 13H0095-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.9		% Wt	1		SM 2540G	8/6/13	8/6/13 13:09	MLA

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
13H0095-01 [NE Window Soil 36in (12-18in)]	B078193	08/06/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13H0095-01 [NE Window Soil 36in (12-18in)]	B078161	10.0	10.0	08/05/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078161 - SW-846 3540C										
Blank (B078161-BLK1)				Prepared: 08/05/13 Analyzed: 08/06/13						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.193*		mg/Kg wet	0.200		96.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.178*		mg/Kg wet	0.200		88.9	30-150			
Surrogate: Tetrachloro-m-xylene	*0.203*		mg/Kg wet	0.200		101	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.204*		mg/Kg wet	0.200		102	30-150			
LCS (B078161-BS1)				Prepared: 08/05/13 Analyzed: 08/06/13						
Aroclor-1016	0.22	0.10	mg/Kg wet	0.200		109	40-140			
Aroclor-1016 [2C]	0.20	0.10	mg/Kg wet	0.200		100	40-140			
Aroclor-1260	0.20	0.10	mg/Kg wet	0.200		102	40-140			
Aroclor-1260 [2C]	0.17	0.10	mg/Kg wet	0.200		86.6	40-140			
Surrogate: Decachlorobiphenyl	*0.191*		mg/Kg wet	0.200		95.6	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.172*		mg/Kg wet	0.200		85.8	30-150			
Surrogate: Tetrachloro-m-xylene	*0.212*		mg/Kg wet	0.200		106	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.205*		mg/Kg wet	0.200		102	30-150			
LCS Dup (B078161-BSD1)				Prepared: 08/05/13 Analyzed: 08/06/13						
Aroclor-1016	0.21	0.10	mg/Kg wet	0.200		104	40-140	5.17	30	
Aroclor-1016 [2C]	0.19	0.10	mg/Kg wet	0.200		96.8	40-140	3.44	30	
Aroclor-1260	0.20	0.10	mg/Kg wet	0.200		100	40-140	1.94	30	
Aroclor-1260 [2C]	0.17	0.10	mg/Kg wet	0.200		86.8	40-140	0.173	30	
Surrogate: Decachlorobiphenyl	*0.186*		mg/Kg wet	0.200		93.2	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.169*		mg/Kg wet	0.200		84.4	30-150			
Surrogate: Tetrachloro-m-xylene	*0.201*		mg/Kg wet	0.200		100	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.194*		mg/Kg wet	0.200		97.0	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078193 - % Solids										
Duplicate (B078193-DUP1)		**Source: 13H0095-01**		Prepared & Analyzed: 08/06/13						
% Solids	94.6		% Wt		93.9			0.743	20	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

13H0095

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Page 1 of 4

~~13G0790~~

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD											
	# of Containers							1	1											
	** Preservation							I	I											
	***Container Code							A	A											
	SW Asphalt 6"	7/17/13	8:35	X		o	U	✓												
	SW Asphalt 6"_Dup	7/17/13	8:35	X		o	U	✓												
	Center Asphalt 6"	7/17/13	8:50	X		o	U	✓												
	SE Asphalt 6"	7/17/13	9:00	X		o	U	✓												
	E Asphalt 6"	7/17/13	9:15	X		o	U	✓												
	NW Window Soil 12" (6-12")	7/17/13	9:40	X		s	U	✓												
01	NW Window Soil 12" (12-18")	7/17/13	10:00	X		s	U		✓											
	Center Window Soil 6" (0-6")	7/17/13	10:15	X		s	U	✓												
	NW Window Soil 24" (0-6")	7/17/13	10:25	X		s	U	✓												
	NW Window Soil 36" (0-6")	7/17/13	10:45	X		s	U	✓												

Comments: 1) For asphalt samples - please grind + composite full contents of each jar
2) HOLD samples in second column pending further instruction from Kleinfelder.
3) All soil samples are fill soil + may contain glass.

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Relinquished by: (signature)	Date/Time:
[signature]	7/18/13 750
Received by: (signature) [signature]	Date/Time: 7-18-13
Relinquished by: (signature) [signature]	Date/Time: 7-18-13
Received by: (signature) [signature] 5.9C	Date/Time: 7/18/13 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0740

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD
	Center Window Soil 24" (0-6")	7/17/13	10:50	X		s	U	✓	
	Center Window Soil 36" (0-6")	7/17/13	11:00	X		s	U	✓	
	Equip Blank	7/17/13	11:10	X		w	U	✓	
	NW Window Soil 48" (0-6")	7/17/13	11:20	X		s	U	✓	
	NE Window Soil 12" (6-12")	7/17/13	11:40	X		s	U	✓	
	NE Window Soil 24" (0-6")	7/17/13	11:45	X		s	U	✓	
	NE Window Soil 36" (0-6")	7/17/13	11:50	X		s	U	✓	
02	Center Window Soil 6" (6-12)	7/17/13	13:00	X		s	U		✓
03	Center Window Soil 24" (6 - 12")	7/17/13	13:05	X		s	U		✓
04	Center Window Soil 36" (6 - 12")	7/17/13	13:15	X		s	U		✓

	PCBs - Soxhlet	PCBs- Soxhlet HOLD
# of Containers	1	1
** Preservation	I	I
***Container Code	A	A

ANALYSIS REQUESTED

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments: Equip blank → collected from open side hand auger

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

	Date/Time:
Relinquished by: (signature)	7/18/13 750
Received by: (signature)	7-18-13 [illegible]
Relinquished by: (signature)	7-18-13 1710
Received by: (signature)	7/18/13 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0740

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project #: 20120096.001A
Client PO#:

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax #: bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDO
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
								1	1
								I	I
								A	A
05	Center Window Soil 36" (12 - 18")	7/17/13	13:20	X		S	U		✓
06	NE Window Soil 12" (12 - 18")	7/17/13	13:55	X		S	U		✓
07	NE Window Soil 24" (6-12")	7/17/13	13:50	X		S	U		✓
08	NE Window Soil 24" (12 - 18")	7/17/13	14:15	X		S	U		✓
09	NE Window Soil 36" (6-12")	7/17/13	14:20	X		S	U		✓
10	NE Window Soil 36" (12-18")	7/17/13	14:35	X		S	U		✓
11	NW Window Soil 24" (6-12")	7/17/13	14:55	X		S	U		✓
12	NW Window Soil 24" (6-12")_DUP	7/17/13	14:55	X		S	U		✓
13	Equip Blank 2	7/17/13	14:55	X		W	U		✓
14	NW-Window-Soil 24" (12-18")	7/17/13	15:15	X		S	U		✓

ANALYSIS REQUESTED

# of Containers
** Preservation
***Container Code

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments: Equip Blank 2 - collected from closed side hand auger

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 7/18/13 7:50	
Received by: (signature)	Date/Time: 7-18-13 7:50	
Relinquished by: (signature)	Date/Time: 7-18-13 11:00	
Received by: (signature)	Date/Time: 7/18/13 1910	

Turnaround ††
☐ 7-Day
☐ 10-Day
☒ Other 5 Day
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0740

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
15	NW Window Soil 36" (6-12")	7/17/13	15:30	X		S	U		✓
16	NW Window Soil 36" (12-14")	7/17/13	16:00	X		S	U		✓
17	NW Window Soil 48" (6-10")	7/17/13	16:10	X		S	U		✓
18	NW Window Soil 36" (0-6") - Dup								
1									

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other _____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	7/18/13	Date/Time: 2:50
Received by: (signature)	7-18-13	Date/Time:
Relinquished by: (signature)	7-18-13	Date/Time:
Received by: (signature)	7/18/13	Date/Time: 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY

Sample Receipt Checklist

CLIENT NAME: Kleinfelder RECEIVED BY: JMM DATE: 7/18/13

1) Was the chain(s) of custody relinquished and signed? (Yes) No No CoC Included
2) Does the chain agree with the samples? (Yes) No
   If not, explain:
3) Are all the samples in good condition? (Yes) No
   If not, explain:
4) How were the samples received:
   On Ice ☒ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☒
   Were the samples received in Temperature Compliance of (2-6°C)? (Yes) No N/A
   Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.9
5) Are there Dissolved samples for the lab to filter? Yes (No)
   Who was notified _____ Date _____ Time _____
6) Are there any RUSH or SHORT HOLDING TIME samples? Yes (No)
   Who was notified _____ Date _____ Time _____
7) Location where samples are stored: 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature:

8) Do all samples have the proper Acid pH: Yes No (N/A)
9) Do all samples have the proper Base pH: Yes No (N/A)
10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes No (N/A)

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber	2	8 oz amber/clear jar	3
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Air Cassette	
500 mL Plastic		Hg/Hopcalite Tube	
250 mL plastic		Plastic Bag / Ziploc	
40 mL Vial - type listed below		PM 2.5 / PM 10	
Colisure / bacteria bottle		PUF Cartridge	
Dissolved Oxygen bottle		SOC Kit	
Encore		TO-17 Tubes	
Flashpoint bottle		Non-ConTest Container	
Perchlorate Kit		Other glass jar	
Other		Other	

Laboratory Comments: * received NW window sill 76" (0.6") - Dup not on CoC

40 mL vials: # HCl _____ # Methanol _____
Bisulfate _____ # DI Water _____
Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

Doc# 277
Rev. 3 May 2012

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test Analytical Laboratory	Project #: 13H0095
Project Location: Green Line Extension	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

13H0095-01

Matrices: Soil

CAM Protocol (check all that below)

8260 VOC CAM II A ( )	7470/7471 Hg CAM IIIB ( )	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 A ( )	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )	

Affirmative response to Questions A throughF is 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	☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specificed in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
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	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

***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 perfomance standards specified in the CAM protocol(s) achieved?	☑ Yes	☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case 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: M Erickson Position: Laboratory Director

Printed Name: Michael A. Erickson Date: 08/06/13

con-test® ANALYTICAL LABORATORY
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

August 6, 2013

Beck Straley
Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142

Project Location: Green Line Extension
Client Job Number:
Project Number: 2012096.01-A
Laboratory Work Order Number: 13H0095

Enclosed are results of analyses for samples received by the laboratory on August 2, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

James M. Georgantas
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Kleinfelder/SEA - Cambridge, MA
215 First Street, Suite 320
Cambridge, MA 02142
ATTN: Beck Straley

REPORT DATE: 8/6/2013

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 2012096.01-A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 13H0095

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Green Line Extension

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
NE Window Soil 36in (12-18in)	13H0095-01	Soil		SM 2540G	
				SW-846 8082A	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Michael A. Erickson
Laboratory Director

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension | Sample Description: | Work Order: 13H0095

Date Received: 8/2/2013

Field Sample #: NE Window Soil 36in (12-18in) | Sampled: 7/17/2013 14:35

Sample ID: 13H0095-01

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1260 [1]	0.77	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	5		SW-846 8082A	8/5/13	8/6/13 15:32	MJC

Surrogates	% Recovery	Recovery Limits	Flag	
Decachlorobiphenyl [1]	99.2	30-150		8/6/13 15:32
Decachlorobiphenyl [2]	88.5	30-150		8/6/13 15:32
Tetrachloro-m-xylene [1]	106	30-150		8/6/13 15:32
Tetrachloro-m-xylene [2]	97.1	30-150		8/6/13 15:32

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Green Line Extension
Sample Description:
Work Order: 13H0095

Date Received: 8/2/2013

Field Sample #: NE Window Soil 36in (12-18in)
Sampled: 7/17/2013 14:35

Sample ID: 13H0095-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.9		% Wt	1		SM 2540G	8/6/13	8/6/13 13:09	MLA

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
13H0095-01 [NE Window Soil 36in (12-18in)]	B078193	08/06/13

Prep Method: SW-846 3540C-SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
13H0095-01 [NE Window Soil 36in (12-18in)]	B078161	10.0	10.0	08/05/13

con-test® ANALYTICAL LABORATORY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078161 - SW-846 3540C										
Blank (B078161-BLK1)				Prepared: 08/05/13 Analyzed: 08/06/13						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.193*		mg/Kg wet	0.200		96.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.178*		mg/Kg wet	0.200		88.9	30-150			
Surrogate: Tetrachloro-m-xylene	*0.203*		mg/Kg wet	0.200		101	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.204*		mg/Kg wet	0.200		102	30-150			
LCS (B078161-BS1)				Prepared: 08/05/13 Analyzed: 08/06/13						
Aroclor-1016	0.22	0.10	mg/Kg wet	0.200		109	40-140			
Aroclor-1016 [2C]	0.20	0.10	mg/Kg wet	0.200		100	40-140			
Aroclor-1260	0.20	0.10	mg/Kg wet	0.200		102	40-140			
Aroclor-1260 [2C]	0.17	0.10	mg/Kg wet	0.200		86.6	40-140			
Surrogate: Decachlorobiphenyl	*0.191*		mg/Kg wet	0.200		95.6	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.172*		mg/Kg wet	0.200		85.8	30-150			
Surrogate: Tetrachloro-m-xylene	*0.212*		mg/Kg wet	0.200		106	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.205*		mg/Kg wet	0.200		102	30-150			
LCS Dup (B078161-BSD1)				Prepared: 08/05/13 Analyzed: 08/06/13						
Aroclor-1016	0.21	0.10	mg/Kg wet	0.200		104	40-140	5.17	30	
Aroclor-1016 [2C]	0.19	0.10	mg/Kg wet	0.200		96.8	40-140	3.44	30	
Aroclor-1260	0.20	0.10	mg/Kg wet	0.200		100	40-140	1.94	30	
Aroclor-1260 [2C]	0.17	0.10	mg/Kg wet	0.200		86.8	40-140	0.173	30	
Surrogate: Decachlorobiphenyl	*0.186*		mg/Kg wet	0.200		93.2	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.169*		mg/Kg wet	0.200		84.4	30-150			
Surrogate: Tetrachloro-m-xylene	*0.201*		mg/Kg wet	0.200		100	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.194*		mg/Kg wet	0.200		97.0	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B078193 - % Solids										
Duplicate (B078193-DUP1)		**Source: 13H0095-01**		Prepared & Analyzed: 08/06/13						
% Solids	94.6		% Wt		93.9			0.743	20	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,ME,NC,VA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1221	CT,NH,NY,ME,NC,VA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1232	CT,NH,NY,ME,NC,VA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1242	CT,NH,NY,ME,NC,VA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1248	CT,NH,NY,ME,NC,VA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1254	CT,NH,NY,ME,NC,VA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA
Aroclor-1260	CT,NH,NY,ME,NC,VA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Publilc Health	PH-0567	09/30/2013
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2013
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2012

13H0095

CHAIN OF CUSTODY RECORD

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com
39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

Page 1 of 4

~~13G0790~~

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD											
	# of Containers							1	1											
	** Preservation							I	I											
	***Container Code							A	A											
	SW Asphalt 6"	7/17/13	8:35	X		o	U	✓												
	SW Asphalt 6"_Dup	7/17/13	8:35	X		o	U	✓												
	Center Asphalt 6"	7/17/13	8:50	X		o	U	✓												
	SE Asphalt 6"	7/17/13	9:00	X		o	U	✓												
	E Asphalt 6"	7/17/13	9:15	X		o	U	✓												
	NW Window Soil 12" (6-12")	7/17/13	9:40	X		s	U	✓												
01	NW Window Soil 12" (12-18")	7/17/13	10:00	X		s	U		✓											
	Center Window Soil 6" (0-6")	7/17/13	10:15	X		s	U	✓												
	NW Window Soil 24" (0-6")	7/17/13	10:25	X		s	U	✓												
	NW Window Soil 36" (0-6")	7/17/13	10:45	X		s	U	✓												

Comments: 1) For asphalt samples - please grind + composite full contents of each jar
2) HOLD samples in second column pending further instruction from Kleinfelder.
3) All soil samples are fill soil + may contain glass.

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Relinquished by: (signature)	Date/Time:
[signature]	7/18/13 750
Received by: (signature) [signature]	Date/Time: 7-18-13
Relinquished by: (signature) [signature]	Date/Time: 7-18-13
Received by: (signature) [signature] 5.9C	Date/Time: 7/18/13 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
ACCREDITED IN ACCORDANCE WITH nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0740

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs- Soxhlet HOLD
	Center Window Soil 24" (0-6")	7/17/13	10:50	X		s	U	✓	
	Center Window Soil 36" (0-6")	7/17/13	11:00	X		s	U	✓	
	Equip Blank	7/17/13	11:10	X		w	U	✓	
	NW Window Soil 48" (0-6")	7/17/13	11:20	X		s	U	✓	
	NE Window Soil 12" (6-12")	7/17/13	11:40	X		s	U	✓	
	NE Window Soil 24" (0-6")	7/17/13	11:45	X		s	U	✓	
	NE Window Soil 36" (0-6")	7/17/13	11:50	X		s	U	✓	
02	Center Window Soil 6" (6-12)	7/17/13	13:00	X		s	U		✓
03	Center Window Soil 24" (6 - 12")	7/17/13	13:05	X		s	U		✓
04	Center Window Soil 36" (6 - 12")	7/17/13	13:15	X		s	U		✓

	PCBs - Soxhlet	PCBs- Soxhlet HOLD
# of Containers	1	1
** Preservation	I	I
***Container Code	A	A

ANALYSIS REQUESTED

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments: Equip blank → collected from open side hand auger

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

	Date/Time:
Relinquished by: (signature)	7/18/13 750
Received by: (signature)	7-18-13 [illegible]
Relinquished by: (signature)	7-18-13 1710
Received by: (signature)	7/18/13 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.333 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0740

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project #: 20120096.001A
Client PO#:

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax #: bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDO
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
								1	1
								I	I
								A	A
05	Center Window Soil 36" (12 - 18")	7/17/13	13:20	X		S	U		✓
06	NE Window Soil 12" (12 - 18")	7/17/13	13:55	X		S	U		✓
07	NE Window Soil 24" (6-12")	7/17/13	13:50	X		S	U		✓
08	NE Window Soil 24" (12 - 18")	7/17/13	14:15	X		S	U		✓
09	NE Window Soil 36" (6-12")	7/17/13	14:20	X		S	U		✓
10	NE Window Soil 36" (12-18")	7/17/13	14:35	X		S	U		✓
11	NW Window Soil 24" (6-12")	7/17/13	14:55	X		S	U		✓
12	NW Window Soil 24" (6-12")_DUP	7/17/13	14:55	X		S	U		✓
13	Equip Blank 2	7/17/13	14:55	X		W	U		✓
14	NW-Window-Soil 24" (12-18")	7/17/13	15:15	X		S	U		✓

ANALYSIS REQUESTED

# of Containers
** Preservation
***Container Code

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other_____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments: Equip Blank 2 - collected from closed side hand auger

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	Date/Time: 7/18/13 7:50	
Received by: (signature)	Date/Time: 7-18-13 7:50	
Relinquished by: (signature)	Date/Time: 7-18-13 11:00	
Received by: (signature)	Date/Time: 7/18/13 1910	

Turnaround ††
☐ 7-Day
☐ 10-Day
☒ Other 5 Day
RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
◉ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
nelac
NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

con-test® ANALYTICAL LABORATORY
Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East longmeadow, MA 01028

Rev 04.05.12

13G0740

Company Name: Kleinfelder
Address: 215 First Street, Suite 320
Cambridge, MA 02142
Attention: Beck Straley
Project Location: Green Line Extension
Sampled By: Beck Straley

Telephone: 617-498-4705
Project # 20120096.001A
Client PO#

DATA DELIVERY (check all that apply)
○ FAX ◉ EMAIL ◉ WEBSITE
Fax # bstraley@kleinfelder.com
Email: rquateman@kleinfelder.com
Format: ◉ PDF ◉ EXCEL ○ GIS
◉ OTHER KLF EQUIS EDD
○ "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
○ yes _____ proposal date

ANALYSIS REQUESTED

Con-Test Lab ID (laboratory use only)	Client Sample ID / Description	Collection Beginning Date/Time	Collection Ending Date/Time	Composite	Grab	*Matrix Code	Conc Code	PCBs - Soxhlet	PCBs - Soxhlet HOLD
							# of Containers	1	1
							** Preservation	I	I
							***Container Code	A	A
15	NW Window Soil 36" (6-12")	7/17/13	15:30	X		S	U		✓
16	NW Window Soil 36" (12-14")	7/17/13	16:00	X		S	U		✓
17	NW Window Soil 48" (6-10")	7/17/13	16:10	X		S	U		✓
18	NW Window Soil 36" (0-6") - Dup								
1									

Dissolved Metals
○ Field Filtered
○ Lab to Filter

***Cont. Code:
A=amber glass
G=glass
P=plastic
ST=sterile
V= vial
S=summa can
T=tedlar bag
O=Other

**Preservation
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium bisulfate
X = Na hydroxide
T = Na thiosulfate
O = Other _____

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other asphalt

Comments:

Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by: (signature)	7/18/13	Date/Time: 2:50
Received by: (signature)	7-18-13	Date/Time:
Relinquished by: (signature)	7-18-13	Date/Time:
Received by: (signature)	7/18/13	Date/Time: 1910

Turnaround ††
☐ 7-Day
☐ 10-Day
◉ Other 5 Day

RUSH †
☐ †24-Hr ☐ †48-Hr
☐ †72-Hr ☐ †4-Day
† Require lab approval

Detection Limit Requirements
Massachusetts: 0.33 mg/kg or better
Connecticut:
Other:

Is your project MCP or RCP ?
○ MCP Form Required
○ RCP Form Required
○ MA State DW Form Required PWSID # _____

AIHA LAP, LLC ACCREDITED LABORATORY
nelac

NELAC & AIHA-LAP, LLC Accredited
WBE/DBE Certified

†† TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

PLEASE BE CAREFUL NOT TO CONTAMINATE THIS DOCUMENT

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.contestlabs.com

con-test® ANALYTICAL LABORATORY

Sample Receipt Checklist

CLIENT NAME: Kleinfelder RECEIVED BY: JMM DATE: 7/18/13

1) Was the chain(s) of custody relinquished and signed? (Yes) No No CoC Included
2) Does the chain agree with the samples? (Yes) No
   If not, explain:
3) Are all the samples in good condition? (Yes) No
   If not, explain:
4) How were the samples received:
   On Ice ☒ Direct from Sampling ☐ Ambient ☐ In Cooler(s) ☒
   Were the samples received in Temperature Compliance of (2-6°C)? (Yes) No N/A
   Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.9
5) Are there Dissolved samples for the lab to filter? Yes (No)
   Who was notified _____ Date _____ Time _____
6) Are there any RUSH or SHORT HOLDING TIME samples? Yes (No)
   Who was notified _____ Date _____ Time _____
7) Location where samples are stored: 19

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved
Client Signature:

8) Do all samples have the proper Acid pH: Yes No (N/A)
9) Do all samples have the proper Base pH: Yes No (N/A)
10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes No (N/A)

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber	2	8 oz amber/clear jar	3
500 mL Amber		4 oz amber/clear jar	
250 mL Amber (8oz amber)		2 oz amber/clear jar	
1 Liter Plastic		Air Cassette	
500 mL Plastic		Hg/Hopcalite Tube	
250 mL plastic		Plastic Bag / Ziploc	
40 mL Vial - type listed below		PM 2.5 / PM 10	
Colisure / bacteria bottle		PUF Cartridge	
Dissolved Oxygen bottle		SOC Kit	
Encore		TO-17 Tubes	
Flashpoint bottle		Non-ConTest Container	
Perchlorate Kit		Other glass jar	
Other		Other	

Laboratory Comments: * received NW window sill 76" (0.6") - Dup not on CoC

40 mL vials: # HCl _____ # Methanol _____
Bisulfate _____ # DI Water _____
Thiosulfate _____ Unpreserved _____

Time and Date Frozen:

Doc# 277
Rev. 3 May 2012

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test Analytical Laboratory	Project #: 13H0095
Project Location: Green Line Extension	RTN:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

13H0095-01

Matrices: Soil

CAM Protocol (check all that below)

8260 VOC CAM II A ( )	7470/7471 Hg CAM IIIB ( )	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 A ( )	8151 Herbicides CAM V C ( )	8330 Explosives CAM VIII A ( )	TO-15 VOC CAM IX B ( )
6010 Metals CAM III A ( )	6020 Metals CAM III D ( )	8082 PCB CAM V A (X)	9014 Total Cyanide/PAC CAM VI A ( )	6860 Perchlorate CAM VIII B ( )	

Affirmative response to Questions A throughF is 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	☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specificed in the selected CAM protocol(s) followed?	☑ Yes	☐ No[1]
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	☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidlines for the Acquisition and Reporting of Analytical Data?	☑ Yes	☐ No[1]
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No[1]
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Qestions A through E)?	☑ Yes	☐ No[1]

A response to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

***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 perfomance standards specified in the CAM protocol(s) achieved?	☑ Yes	☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case 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: M Erickson Position: Laboratory Director

Printed Name: Michael A. Erickson Date: 08/06/13

APPENDIX F

MBTA CERTIFICATION

MBTA CERTIFICATION

This Section of the Notification provides the certification required by 40 CFR 761.61(a)(3)(i)(E).

I certify that the Self-Implementing Clean-Up Plan proposed in this document will meet the following requirements:

> All sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at the cleanup site are or will be on file at the following location and are available for U.S. EPA inspection:
>
> Massachusetts Bay Transportation Authority
> Department of Environmental Affairs
> 10 Park Plaza, Room 6720
> Boston, Massachusetts 02166
> Attn: Janis Kearney
> (617) 222-1592

Name (Printed) Janis Kearney

Signature Janis Kearney

Title Director of Environmental Compliance

Date 12·20·13