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## Release Abatement Measure Plan

Former Raytheon Facility

430 Boston Post Road

Wayland, Massachusetts

VERTEX Project No. 19163

**Release Tracking Number (RTN): 3-13302**

**VERTEX**

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Prepared By:

**VERTEX Environmental Services, Inc.**

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Weymouth, MA 02189

August 5, 2011

Prepared For:

Twenty Wayland

10 Memorial Boulevard

Suite 901

Providence, RI 02903

Attention: Mr. Frank Dougherty

Submitted To:

Massachusetts Department of

Environmental Protection

Northeast Regional Office

205B Lowell Street

Wilmington, MA 01887

Attention: Bureau of Waste Site Cleanup



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August 5, 2011

Massachusetts Department of Environmental Protection  
Northeast Regional Office  
205B Lowell Street  
Wilmington, MA 01887

RE: Release Abatement Measure Plan  
Former Raytheon Facility  
430 Boston Post Road  
Wayland, Massachusetts  
VERTEX Project No. 19163  
Release Tracking Number (RTN): 3-13302

Attention: Bureau of Waste Site Cleanup;

VERTEX Environmental Services, Inc. (VERTEX) is pleased to submit this Release Abatement Measure (RAM) Plan for the release listed under the above referenced RTN (the "Subject Site"). This document has been prepared for Twenty Wayland in accordance with the provisions contained in Section 40.0444 of the Massachusetts Contingency Plan (MCP).

Pursuant to 310 CMR 40.1403(3)(d)(2), public notice of the RAM Plan implementation has been provided to both the Town of Wayland Health Department and the Town Administrator's office, concurrently with this RAM Plan. The Subject Site is subject to a Public Involvement Plan (PIP) for which a PIP dated July 13, 2004 was prepared by ERM on behalf of Raytheon, the Responsible Party for the above RTN. Accordingly, a draft of this RAM Plan has been submitted to the repository for a 20-day public comment period. Subsequent to the receipt of comments from the public, VERTEX will prepare a summary of the comments and responses and submit to the repository within 60 days from the close of the public comment period.

Please do not hesitate to contact us should you have any questions or require additional information.



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Sincerely,

**Vertex Environmental Services, Inc.**

Arie Bar Josef, PG  
Sr. Project Manager

James B. O'Brien, LSP  
President



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## 1.0 SUMMARY OF THE GENERAL SITE INFORMATION

Details regarding the Subject Site information are contained in various phased reports that were previously submitted to the MADEP. The property that contains the Subject Site is listed by the MADEP under multiple Release Tracking Numbers (RTNs) due to releases of oil and/or hazardous materials (OHM) that occurred at different locations across the property. The portion of the property that is the subject of this RAM Plan (the Subject Site) is listed under RTN 3-13302. A summary of the Subject Site information and regulatory status is presented below.

### 1.1 EXISTING SITE CONDITIONS AND LIMITS OF THE RAM AREA

The MADEP database lists Subject Site address as 430 Boston Post Road in Wayland, Massachusetts. The Subject Site is bounded by Boston Post Road (Route 20) and a Massachusetts Bay Transportation Authority (MBTA) easement to the south, Old Sudbury Road (Route 27) to the east, the Sudbury River and its associated wetlands to the west, and undeveloped land and wetlands to the north. The general site location is shown on **FIGURE 1**. The Subject Site was formerly operated as a research and design facility by Raytheon Company between 1955 and 1995 for electronic testing and chemical process research. In 1995, Raytheon ceased operations as the Subject Site and decommissioned the facility. The portion of the Subject Site that is proposed for redevelopment is currently occupied by three (3) vacant one and two-story buildings that have no basements, and associated paved and landscaped areas.

The current buildings are scheduled for demolition prior to the Subject Site redevelopment. The Subject Site topography within the proposed RAM area is relatively flat, with elevations varying from approximately EL. 133 to EL. 135 as referenced to the National Geodetic Vertical Datum (NGVD) 1929. The limits of the RAM area are depicted on the enclosed **FIGURE 2**.

### 1.2 SITE HISTORY AND USAGE

Details regarding the Subject Site history and usage are contained in previously submitted reports. In summary, the property that contains the Subject Site was utilized for agricultural and



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residential purposes until circa 1955. From 1955 to 1995, the Subject Site was occupied by a Raytheon research facility for electronic testing equipment and that included printed circuit board laboratory and operation of small-scale chemical processes. During the Subject Site operation by Raytheon, wastewaters were treated onsite and discharged to the Sudbury River under a NPDES permit. Reportedly, a leaching field was utilized for the sanitary waste prior to 1962 and industrial waste prior to 1972. Subsequently, the use of the leaching field was discontinued and the Subject Site is currently serviced by a municipal sanitary sewer and water supply and by other public utilities. In 1995, Raytheon ceased operations and decommissioned the facility. Subsequently, the buildings were utilized by Polaroid Corporation and by subsequent various other tenants until circa 2007 when the buildings were vacated and remained vacant to-date.

## 1.3 PROPOSED SUBJECT SITE REDEVELOPMENT AND RAM OBJECTIVES

The limits of the property addressed by this RAM Plan are shown on the enclosed **FIGURE 2** and encompass the majority of the former Raytheon property hereinafter referred to as the Subject Site. As shown in **FIGURE 2**, the Subject Site contains two (2) areas: east and west of the “Raytheon Line”. The purpose of the “Raytheon Line” is explained in Section 3 below. Based on available information, the proposed redevelopment of the former Raytheon property will include the following concurrent elements:

- **Eastern Portion.** The portion of the Subject Site that is situated to the east of the “Raytheon Line” and currently occupied by the vacant Raytheon facility will be redeveloped to include construction of commercial buildings including retail stores, a supermarket, offices, multi-unit residences and associated paved parking areas, roadways and new utilities and infrastructure as shown on **FIGURE 2**. The proposed residences will utilize the upper floors of some of the commercial buildings.
- **Western Portion.** The portion of the Subject Site that is situated to the west of the “Raytheon Line” that currently contains paved parking lots, undeveloped land and a small vacant building is scheduled for redevelopment into a multi-unit residential community and



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a public open space. However, it is understood that general site re-grading and preparatory work will be completed concurrent to the development of the eastern portion of the Subject Site and that the proposed residential buildings will be constructed subsequent to the completion of the construction activities at the eastern portion of the Subject Site.

Since the proposed redevelopment of the former Raytheon property will occur in phases, this RAM Plan is focused on addressing MCP response actions associated with the implementation of the first phase of development at the eastern portion of the Subject Site and the preparatory work at the western portion of the Subject Site. A subsequent RAM Plan Modification will be submitted to the MADEP prior to the commencement of MCP response actions during future development at the western portion of the Subject Site.

None of the proposed buildings will have basements and below-grade structures will be limited to subsurface utilities, foundations and other infrastructure elements. Excavations during construction are anticipated to be relatively limited as incidental to the proposed development. A sanitary sewer pump station will be constructed as part of the proposed redevelopment. The site preparation work will likely include removal of existing asphalt pavement, existing building foundations and abandoned utilities and will involve localized excavation of potential fill or natural soil. Localized dewatering is likely to be required. It is anticipated that the construction dewatering effluent will be recharged onsite subsequent to appropriate characterization and in accordance with applicable regulatory requirements. Details regarding the proposed on-site recharge are presented below.

The objectives of the proposed RAM are to achieve a condition of No Significant Risk of harm to human health, public safety and welfare, and the environment predicated upon a Permanent Solution as defined in the MCP.

## 1.4 RESPONSIBLE PARTY CONDUCTING THE RAM

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## 1.6 SUMMARY OF THE SUBJECT SITE REGULATORY STATUS

Presently, there is one (1) parent RTN listed for the Subject Site: RTN 3-13302. Several other RTNs are linked to RTN 3-13302, as described below.

### 1.6.1 RTN 3-13302

RTN 3-13302 was issued on January 2, 1996 in response to the discovery of petroleum contamination in a groundwater monitoring well that is located adjacent to a former 20,000-gallon No. 6 fuel oil underground storage tank (UST). This RTN is currently utilized as the primary RTN for MCP response actions related to Tier IB Permit No. 133939.

The following RTNs were assigned to separate releases, but have been linked to the primary RTN 3-13302. A portion of the Disposal Site listed under RTN 3-13302 is located within the limits of the proposed RAM (refer to **FIGURE 2**).

- **RTN 3-1783** was issued on January 15, 1987 in response to an EPA listing due to a “waste storage impoundment” identified in aerial photographs which were reported as correlated with wastewater treatment impoundments associated with the former Raytheon facility Sanitary Treatment Plant. This RTN was closed by the MADEP on July 31, 1995 subsequent to the submittal of an LSP Evaluation Opinion.



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- **RTN 3-13574** was issued March 28, 1996 as a result of the discovery of volatile organics (VOCs) contamination in tested groundwater samples at concentrations in excess of the MCP Reportable Concentrations (RC) for groundwater category RCGW-1. This RTN was closed by the MADEP on November 28, 2000.
- **RTN 3-14042** was issued July 25, 1996 as a result of the discovery of polychlorinated biphenyls (PCBs) contamination in tested soil samples at levels in excess of the applicable RC. This RTN was closed by the MADEP on November 28, 2000.
- **RTN 3-19482** was issued May 9, 2000 in response to the discovery of PCBs and metals impacts to wetland. This RTN was closed by the MADEP on November 28, 2000.
- **RTN 3-22665** was issued March 12, 2003 in response to the discovery of chromium in groundwater at concentrations above the applicable RC. Subsequent investigation by others concluded that the chromium in groundwater was attributed to a naturally-occurring chemical oxidation due to in-situ remediation activities. This RTN was closed by the MADEP on December 10, 2003 subsequent to an LSP opinion to that effect.

In 2002, Environmental Resource Management (ERM) submitted to MADEP a Phase IV Remedy Implementation Plan (RIP) for two distinct remedial actions at the Subject Site under RTN 3-13302. ERM proposed wetland remediation on the western portion of the property which is outside of the proposed RAM limits and in-situ groundwater remediation on the southern and eastern portions of the Subject Site, which are partially contained within the proposed RAM limits. In situ chemical oxidation of the groundwater was conducted by ERM during May through July 2004. The Disposal Site listed under RTN 3-13302 is currently in Phase V - Remedy Operation Status, and ERM continues to perform semi-annual groundwater quality monitoring.

### ***1.6.2 RTN 3-22408 (linked to RTN 3-13302)***



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The Disposal Site listed under RTN 3-22408 consists of three (3) distinct and separate affected areas for which MCP response actions are conducted under a Tier 1B permit No. W045278. The three distinct and separate areas are located outside the proposed RAM limits for RTN 3-13302. The Contaminants of Concern (COCs) listed under RTN 3-13302 include chlorinated VOCs, arsenic and methyl-tertiary-butyl-ether (MTBE). In 2007, ERM submitted a Partial Class B-1 RAO for the arsenic release in the western portion of the property which is located outside of proposed RAM limits. ERM attributed the detected levels of arsenic in groundwater to naturally-occurring arsenic in soil that was mobilized as a result of natural reducing conditions in the wetlands associated with the Sudbury River.

Subsequently, ERM submitted a Phase IV - Remedy Implementation Plan (RIP) for the remaining portions of RTN 3-22408. ERM proposed excavation and removal of soil impacted by CVOCs from the northern portion of the property, outside the limits of the RAM proposed herein. ERM also proposed the implementation of in-situ bioremediation of the groundwater within the area impacted chlorinated VOCs, which is also outside the limits of the proposed RAM. In July 2008, ERM submitted a Modified Phase IV RIP. In June 2009, RTN 3-22408 was linked to the parent RTN 3-13302 and MCP response actions are on-going under RTN 3-13302.

### ***1.6.3 Activity and Use Limitation (AUL)***

Three (3) Notices of AUL had been recorded for the Subject Site. A summary of the Notices of AUL are presented below.

- Site-Wide AUL: On October 21, 1997, a “site-wide” AUL was recorded to restrict certain activities and uses at the Subject Site to mitigate potential human exposure and maintain the condition of No Significant Risk of harm to human health upon which the AUL is based. This “site-wide” AUL applies the entire property, including the area subject to this RAM Plan (the Subject Site). Activities and uses that are considered in the Notice of AUL as consistent with a condition of No Significant Risk of harm to human health include any



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commercial and/or industrial uses including such uses as offices, retail, wholesale, storage and warehouses or manufacturing.

In summary, the Notice of AUL restricts residential or other uses where children would be present at high frequency and potentially exposed at high intensity. Other restricted activities include the growing of fruit or vegetables for human consumption, excavation, below-grade construction, and below-grade utility maintenance unless determined by an LSP that such activities would not pose a substantial hazard or significant risk to human health, public safety, welfare, or the environment. The existing Notice of AUL will be revised to allow residential usage of the Subject Site.

The Notice of AUL contains provisions for the management of contaminated soil or groundwater during construction, if encountered. This RAM Plan contains provisions for the management of impacted soil and/or groundwater during the redevelopment of the Subject Site consistent with the requirements of the Notice of AUL.

UST Area AUL: A Notice of AUL was recorded on April 13, 1999 for approximately 0.8-acre portion of the Subject Site (refer to **FIGURE 2**). This Notice of AUL was recorded as part of a Class A-3 Response Action Outcome (RAO) Statement for the release of petroleum hydrocarbons associated with a former fuel oil UST and listed under RTN 3-13302. This Notice of AUL is generally consistent with the provisions contained in the Site-Wide Notice of AUL. This RAM Plan contains provisions for the management of impacted soil and/or groundwater, if encountered, during the redevelopment of the Subject Site consistent with the requirements of the Notice of AUL.

- Hamlen Property AUL: A Notice of AUL was filed on January 9, 2006 for an approximately 5.5-acre portion of the former Hamlen property to address a release of PCBs. Based on information regarding the proposed Subject Site redevelopment, this Notice of AUL pertains to a release which occurred on a portion of the property that is located outside of proposed RAM limits to the west. Thus, this Notice of AUL is not considered relevant to the proposed RAM.



## 1.7 Receptors Information

### 1.7.1 Human Receptors

The Subject Site is located adjacent to commercial and residential properties and a protected open space. Identified potential human receptors who may be exposed through direct contact or incidental ingestion of impacted soil during construction at the Subject Site include construction and/or utility workers, adult visitors, occasional trespassers (including children), residents at near-by residences and the general public as passers-by. In accordance with the requirements of the Notice of AUL, a Health and Safety Plan will be prepared for and implemented at the Subject Site during construction activities. Thus potential exposure by the on-site construction and/or utility workers, and visitors will be managed through the use of appropriate personal protective equipment (PPE) and implementation of risk-mitigating measures. The criteria regarding usage of PPE and implementation of risk reduction measures are addressed in Section 6.5 below.

In addition, the Subject Site is located within a Zone II Wellhead Protection Area for the Baldwin Pond Wellfield, which according to ERM's 1996 Phase I Report for RTN 3-13302 is located cross-gradient to the Subject Site, approximately 0.5 miles to the north. Based on information contained in the ERM reports there is no evidence suggesting adverse impacts at the Baldwin Pond Wellfield due to the known groundwater conditions listed under RTN 3-13302. As noted above, groundwater remediation/monitoring at RTN 3-13302 is on-going by ERM on behalf of Raytheon. Thus the potential for human exposure due to ingestion of potable water that originates from the Baldwin Pond Wellfield is considered insignificant.

### 1.7.2 Ecological Receptors

As noted above and as shown in **FIGURE 2**, this RAM Plan pertains to most of the former Raytheon property which includes the western portion of the property that contains wetlands or other undeveloped areas. However, current site development plans indicate that construction activities within the western portion of the former Raytheon property would be limited at this



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time to general regarding or resurfacing in preparation to potential future development. As noted on **FIGURE 2**, there are no identified ecological receptors such as wetlands, surface water bodies or terrestrial habitats located within the eastern portion of the Subject Site.

The Great Meadows National Wildlife Refuge (GMNWR), which includes the Sudbury River (a Class B Surface Water) and adjacent wetlands, abuts the Subject Site to the north and west and is managed by the U.S. Fish and Wildlife Service for protection of fresh-water wetlands and other terrestrial habitats. Open space maintained by the Wayland Conservation Commission is located to the north and northwest of the Subject Site.



## 2.0 SITE SUBSURFACE CONDITIONS

The Subject Site subsurface conditions had been assessed during the various phases of investigation, the results of which are contained in reports that were previously submitted to the MADEP for the above referenced RTNs. The following is a summary of the Subject Site subsurface conditions.

The geologic units present at the site are listed in order of occurrence from ground surface downward:

Lacustrine Sequence

Fluvial Deposits

Glacial Till

Bedrock

A description of each geologic unit follows:

- Lacustrine Sequence - In general, naturally-deposited or disturbed lacustrine sand and silt deposits are present below topsoil in landscaped areas or below minor fill material and beneath existing pavement or building footprint. The lacustrine sequence consists of brown coarse to medium sand which varies in thickness from 30 to 50 feet, underlain by gray silt which is generally 5 to 20 feet thick. The silt deposit is underlain by gray-brown fine to medium sand which is generally 5 to 10 feet thick.
- Fluvial Deposits- A discontinuous deposit of sand and gravel was identified by ERM below the glaciolacustrine deposits at some locations. The fluvial deposits are typically described as brown fine to coarse sand and gravel with a thickness ranging up to 5 feet.
- Glacial Till Deposit- A discontinuous deposit of glacial till, generally less than 5 feet in thickness, was identified at some locations by ERM. The glacial till deposits are



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described as very dense coarse to fine sand and gravel with varying amounts of silt, occasional cobbles and boulders.

- Bedrock- Bedrock was encountered in borings across the property at a depth ranging from 60 to 80 feet below grade. The bedrock consists of a hard, generally sound igneous and metamorphic sequence of the Claypit Hill formation.

In general, groundwater was encountered at depths in excess of ten (10) feet below ground surface. ERM has previously identified groundwater below the eastern portion of the property at about El. 116 to El. 124 which corresponds to a depth ranging from fifteen (15) to nineteen (19) feet below grade. Local groundwater levels are likely to be affected by factors such as existing subsurface structures, precipitation, surface runoff, underground utilities, and seasonal fluctuations.





### 3.0 RELEASE ABATEMENT MEASURE PLAN

The objective of this RAM Plan is to provide procedures for management of contaminated soil and/or groundwater if encountered consistent with the requirements of the existing Site-Wide Notice of AUL, as they pertain to the RAM area.

In summary, the existing Site-Wide Notice of AUL requires that activities involving excavation, disturbance or otherwise potential exposure to subsurface contaminated media be performed in accordance with a contingency plan that will include the following elements:

- Implementation of a program of environmental monitoring;
- Notification procedures to be implemented upon discovery of conditions or contamination that require such notification;
- Conduct of all MCP response actions under a supervision of an LSP;
- Implementation of a Soil Management Plan (SMP) including procedures for handling, storage, transportation and off-site disposal of impacted soil and/or groundwater, if encountered, and;
- Implementation of a Health and safety Plan (HASP) in accordance with applicable state and federal regulations.

As noted in **TABLE 3**, none of the tested soil samples exhibited concentrations of any of the analytes tested for in excess of the MCP Method 1 S-1/GW-1 standards, thus suggesting that soil situated within the RAM area would not require the implementation of special risk mitigating measures and would not be considered remediation waste. However, this RAM plan contains provisions for the management of impacted soil if such soil is encountered during the proposed construction activities. In addition, in accordance with the existing Site-Wide Notice of AUL, temporary construction dewatering requirements are addressed in this RAM Plan.

No federal permits are expected to be required for the RAM activities. The RAM activities will be performed in coordination with Raytheon and their environmental consultant ERM under the



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two existing Tier IB permits for the site (No. 133939 and No. W045278). As Raytheon will be providing such oversight, Twenty Wayland LLC will not need to be named on the Tier IB permit to implement the RAM Activities.

The proposed RAM Activities are as follows:

- Excavated soil will be observed for visual and olfactory evidence of contamination. Representative soil samples will be collected during the excavation and screened for the presence of total volatile organics (TVOC). Soils that exhibit TVOC readings in excess of 10 parts per million (ppm) or exhibit visual or olfactory evidence of contamination will be either assessed in place or relocated to temporary stockpiles on-site and characterized to determine their suitability for on-site reuse or off-site disposal. Based on their evaluation of historic site operations, Raytheon has conservatively created a line deemed the “Raytheon Line” (**FIGURE 2**), which separates the portion of the site to be developed with mixed use commercial and residential (residences at upper floors of commercial buildings) south and east of the line (“Commercial Area”), and the portion of the site to be developed for residential usage (north and west of the line – “Residential Area”). However, as noted above, current development plans for the Residential Area are limited to general site grading or preparatory utility work and the construction of future residential buildings will be conducted in accordance with a Modified RAM Plan that will be prepared and submitted to the MADEP prior to the commencement of construction activities at the Residential Area. Per Raytheon requirements, soil originating from the eastern portion of the Subject Site, east of the “Raytheon Line”, will not be reused on western portion of the Subject Site, to the west of the “Raytheon Line”. However, soil from the west side of the “Raytheon Line” may be reused to the east of the line.
- Based on the results of the characterization, excavated soils may require off-site disposal. Any off-site disposal will be managed in accordance with applicable MADEP policies and regulations. Specifically, if the results of the characterization indicate that the soil requires off-site disposal, such soil will be disposed off-site in accordance with relevant



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regulations. Based on the results of the soil samples analyses (**TABLE 3**) it is anticipated that off-site disposal would not be required. However, an estimated volume of 500 CY for off-site disposal is included herewith as a contingency.

- Temporary stockpiles will be managed as described below.
- Existing chemical test data indicates that none of the tested samples exhibited the presence leachable metals (TCLP) in excess of the RCRA lower hazardous waste limits. However, should the results of the stockpiles characterization indicate TCLP exceedences, an on-site TCLP treatment of up to 500 CY is included as a contingent RAM activity. The TCLP treatment will result in a reduction the leachable metals to levels below the RCRA lower hazardous waste limits. Upon completion, the TCLP treated soil will be disposed off-site in a manner consistent with applicable MADEP policies and regulations based on the results of the characterization.
- The proposed construction excavation, including for the sewer pump station that extends to about Elevation 111.5 which is approximately 21 feet below grade, is not anticipated to encounter impacted groundwater. Available groundwater quality data indicates that groundwater situated at a shallow depth, generally less than 25 feet below grade, is not affected by the COCs at concentrations that require the implementation of response actions under the MCP. It is anticipated that the limited quantities of groundwater that may accumulate in the localized excavations (foundations, utilities or other infrastructure) will be re-charged on-site in accordance with applicable MADEP policies and regulations. However, should impacted groundwater be encountered, the management of such groundwater will be coordinated with Raytheon and ERM in conjunction with the on-going groundwater remediation. Construction dewatering is described further in Section 5.0.
- As part of the proposed RAM activities, and in accordance with the requirements presented by Raytheon, the infrastructure for a future venting system including crushed stone and slotted PVC pipe will be installed within the soil vadose zone beneath the



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concrete slabs of the proposed residential and possibly commercial buildings. As noted by the results of the soil gas analyses and by the results of the groundwater samples chemical tests, mitigation of potential vapor intrusion is not required however the infrastructure will be installed as an added conservative risk reduction measure. The specific design of the venting systems will be prepared upon completion of the proposed building designs.

- As an additional risk-mitigating measure and in accordance with the requirements by Raytheon, a vapor barrier will be installed across the entire foot print of each residential and possibly commercial building that will be constructed at the Subject Site. The vapor barrier will consist of material of sufficiently low permeance to mitigate potential migration of VOC vapors. The vapor barrier material will be selected and the barrier designed upon completion of the buildings foundation design. The vapor barrier will be installed below the concrete slab of the buildings and over the crushed stone and slotted PVC pipe infrastructure.
- There are three closed-in-place underground storage tanks (USTs) located within the limits of the RAM Area (the Subject Site). If a closed-in-place UST is encountered during RAM activities, it will be managed appropriately in accordance with all applicable laws, regulations and policies.
- As noted in the Focused Risk Characterization (FRC) below none of the soil samples exhibited the presence of the COCs at concentrations in excess of the MCP Method 1 S-1/GW-1, 2 and 3 thus are considered to pose No Significant Risk (NSR) of harm to human health. Additionally, the results of the FRC indicate that a condition of NSR exists for construction workers and other identified human receptors. However, as a conservative measure, VERTEX will perform dust monitoring utilizing Dust Trak dust monitors at up-wind, down-wind and perimeter locations. Details regarding the proposed dust action level are presented in Section 6.5 below.



## 4.0 RAM WASTE MANAGEMENT

The objective of this RAM Plan is to minimize the generation of remediation waste. The proposed construction is not anticipated to require off-site disposal of excavated soil or off-site discharge of dewatering effluent. Most of the excavated soil is likely to be reused on-site for foundation, infrastructure and utility backfill. On-site reuse will be conducted in accordance with applicable MADEP policies and regulations. As noted below, dewatering effluent will be recharged on-site.

However, in the event excess soil will require off-site disposal, such soil will be appropriately characterized and disposed off-site in a manner consistent with applicable MADEP policies and regulations. Records of such characterization and off-site disposal will be submitted to the MADEP as required.

- **Soil stockpiles management.** Temporary stockpiles will be placed on polyethylene substrate and covered with polyethylene until it is determined that the soil either can be reused on-site or disposed off-site. In addition, such stockpiles will be surrounded with silt fences or booms in order to mitigate potential migration during precipitation events.
- **Off-site reuse, recycling or disposal.** Soil destined for off-site reuse or disposal will be characterized in accordance with MADEP Policy COMM-97-001. Based on the results of the soil characterization, the soil will be reused, disposed or recycled off-site. Additional characterization, beyond the requirements contained in Policy COMM-97-001 will be performed depending on specific facility requirements. As noted above, soil exhibiting leachable metals in excess of the RCRA lower hazardous waste limit (TCLP) will be treated on-site to reduce the levels of TCLP below the hazardous waste limits. Any off-site transportation of RAM waste will be accompanied by appropriate Bills of Lading as required.



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It is anticipated that the total volume of soil that potentially may require off-site disposal would not exceed the 1500 cubic yard limit set forth in 310 CMR 40.0442(5) thus a statement of financial ability is considered not required.



## 5.0 CONSTRUCTION DEWATERING

Based on information regarding the proposed redevelopment of the Subject Site, localized construction dewatering is likely to be required in order to manage groundwater that may accumulate at excavations for foundations, utilities or other infrastructure. It is anticipated that relatively limited amounts of water will be handled under the construction dewatering, including the excavation for the proposed sewer pump station.

The dewatering activities will be performed in accordance with MADEP Policy WSC-00-425 and pursuant to the provisions contained in Section 40-0045 of the MCP. The results of the groundwater sampling and testing (**TABLE 4**) indicate that except for VOCs none of the analytes tested for (SVOCs, PCBs, pesticides and dissolved metals) were detected in any of the samples obtained from the area subject to the RAM at levels in excess of the RDLs. The 2010 and 2011 ERM groundwater quality data that is included in phased reports that were previously submitted to the MADEP and are made a part of this RAM Plan by reference (refer to **APPENDIX B** for the ERM well locations), indicates that samples obtained from some of the monitoring wells that are situated within the Subject Site exhibited detectable concentrations of chloroform, tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethene (1,1-DCE), vinyl chloride (VC) and 1,1-dichloroethane (1,1-DCA) collectively referred to as chlorinated VOCs (CVOCs). As shown in **TABLE 4**, the detected levels of PCE, TCE, cis-1,2-DCE and VC exceed the Method 1 GW-1 or GW-2 standard, but are below the Method 1 GW-3 standards. However, based on available groundwater data contained in various ERM reports that were previously submitted to the MADEP indicates that groundwater that is situated at a depth shallower than 25 feet below grade generally did not exhibit levels of CVOCs in excess of the MCP Method 1 standards, thus are considered reflective of the groundwater conditions that are anticipated to be encountered within the proposed construction excavations.

Therefore, it is concluded that groundwater that may accumulate in localized excavations may be pumped into a proximate recharge trench or well that will be constructed for this purpose within



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the limits of the RAM area without causing degradation at the location of discharge, in accordance with the “non-degradation” provisions of the MCP.

Since the on-site recharge of the dewatering effluent is considered an MCP remedial action that is conducted under MGL Ch. 21E, the proposed dewatering does not require a permit as defined in 310 CMR 5.05(16). However, if on-site recharge of the dewatered effluent is considered not possible, VERTEX will coordinate the off-site discharge thereof with ERM through a National Pollution Discharge and Elimination System (NPDES) Remediation General Permit (RGP) subsequent to appropriate characterization.





## 6.0 FOCUSED RISK CHARACTERIZATION

A Focused Risk Characterization (FRC) was performed for the Subject Site in support of the RAM Plan. The FRC was performed in accordance with the provisions contained in Section 40.0442(3) of the MCP and the MADEP Policy WSC-00-425.

A Method 3 Risk Characterization, as described in Section 40.0995 of the MCP was utilized in this FRC to characterize the potential risk of harm to human health during construction activities at the Subject Site. In addition, potential exposure and risk of harm to future Subject Site workers, buildings occupants and potential residents of the upper floors of the proposed commercial buildings are addressed.

### 6.1 HAZARD IDENTIFICATION

Hazard identification involves the assessment of the human health effects associated with potential exposures to the identified COCs in each environmental medium.

- **Soil.** The soil data selected for use in the FRC consist of data from sampling locations within the Subject Site (RAM Area) that are considered representative of soil to which identified human receptors could be exposed during the conduct of the RAM and construction activities. The soil data include samples collected by Haley & Aldrich, Inc. and by ERM across the Subject Site during their investigations. Results of the sampling performed by Haley & Aldrich are contained in **APPENDIX A** and summarized in **TABLE 3**. Results of the ERM soil sampling and testing are contained in reports that were previously submitted to the MADEP.

The COCs are identified as those compounds that were detected at concentrations in excess of the laboratory reported detection limits (RDLs) and include VOCs, extractable petroleum hydrocarbons (EPH) fractions C9-C18 aliphatics, C19-C36 aliphatics and C11-C22 aromatics, and RCRA metals (arsenic, barium, chromium, and lead).



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- **Groundwater.** The groundwater data selected for use in the FRC consist of test results from wells located within or most proximate to the area subject to this RAM Plan. Refer to **FIGURE 2** for the monitoring well locations at the eastern portion of the Subject Site. Monitoring wells located at the western portion of the Subject Site are shown on figures contained in previously submitted reports prepared by ERM and made a part of this RAM Plan by reference (refer to **APPENDIX B** for the ERM well locations). The groundwater data included three (3) samples collected by ERM in 1995, 1998, and 2002 and samples collected by ERM in 2010 and in 2011 the results of which are contained in a Remedy Operation Status (ROS) Report prepared by ERM, dated May 2011 and previously submitted to the MADEP. Refer to **TABLE 4** for the analyses results. Analytical results for the three (3) samples obtained in 1995, 1998 and 2002, indicate that none of the tested samples exhibited concentrations of the COCs in excess of the RDLs which are below the applicable MCP Method 1 risk-based groundwater standards. As noted above, the results of the 2010 and 2011 analyses indicated that samples obtained from some of the monitoring wells that are situated generally within the western portion of the Subject Site exhibited concentrations of chlorinated volatile organics (CVOCs) at levels in excess of the MCP Method 1 GW-1 or GW-2 standards, but below the MCP Method 1 GW-3 standards. The detected concentrations of CVOCs in the tested groundwater samples were identified as a potential source of indoor air impacts. The potential indoor air impacts are evaluated below.
- **Soil gas.** The soil gas data used in the FRC consists of results from sampling locations within the eastern portion of the Subject Site (RAM area) that are considered representative of conditions which identified receptors could be exposed to during construction and during post-RAM commercial and possibly residential usage, as described above. Refer to **FIGURE 2** for the soil gas sampling locations. The soil gas data consists of samples collected by Haley & Aldrich, Inc. across the Subject Site in 2008. The soil gas samples were analyzed for VOCs via Method TO-15, the results of which are summarized in **TABLE 1**. The soil gas analytical results (refer to **APPENDIX A**) were used to estimate ambient and indoor air concentrations as a result of diffusion from the vadose zone.



## 6.2 IDENTIFICATION OF CONTAMINANTS OF CONCERN (COCS) AND RISK ESTIMATION PROCEDURES

Of the analytes tested for, CVOCs were detected in groundwater samples at concentrations in excess of the RDLs or the applicable MCP risk-based standards, thus are identified as COCs for the Subject Site groundwater. With respect to metals detected in the tested soil samples, the maximum detected levels were compared to background concentrations for natural soil published by the MADEP (Technical Update 2002). In general, COCs for which the maximum detected concentrations do not exceed the published MADEP background concentrations need not be included in the FRC because they are considered to meet the background definition contained in the MCP and thus, by definition, pose No Significant Risk. However, conservatively, these COCs were included in the estimation of the cumulative risk of harm posed to construction and/or utility workers, site visitors, occasional trespassers and/or passers-by.

Metals were detected in the tested soil samples at levels generally below the MADEP applicable background concentrations for natural soil, thus by definition are considered to pose No Significant Risk. In addition, as shown in **TABLE 3**, none of the EPCs that were identified for the detected metals are in excess of the MCP Method 1 S-1/GW-1 standards thus are considered to pose No Significant Risk of harm to human health under unrestricted exposure scenarios. However, as noted above, in order to address the potential cumulative health effects to the identified human receptors, the detected levels of metals were included in this FRC.

With respect to the EPH fractions and VOCs detected in the tested soil samples, the EPCs are well below the MCP Method 1 S-1/GW-1 Standards which are considered by the MADEP protective of human health under any unrestricted usage and/or exposure. However, as noted above, in order to address the potential cumulative health effects to the identified human receptors, the detected levels of EPH fractions were included in this FRC.

Detected concentrations of VOCs (including CVOCs) in samples of the soil gas are quantitatively addressed in this FRC in order to evaluate the potential inhalation exposure through a diffusion model that estimates the concentrations of the detected VOCs in air and



compares the estimated concentrations in air to the RDLs. In addition, the estimated indoor air concentrations were assessed with respect to potential human health risk factors that include Excess Lifetime Cancer Risk (ELCR) for the VOCs that are considered carcinogens and Hazard Index (HI) for those compounds that are identified by the MADEP as non-carcinogens. Finally, the detected levels of VOCs in the tested soil gas samples were evaluated for a potential residential usage of the upper floors of the proposed commercial buildings.

## 6.3 EXPOSURE ASSESSMENT

This FRC is focused mainly on the evaluation of the risk of harm during the implementation of the proposed RAM activities at the eastern portion of the Subject Site because most of the excavation will occur as incidental to the construction of the proposed buildings and other site development elements. Excavation activities across the western portion of the Subject Site will mostly be limited to surficial grading and other preparatory work. Finally, the potential risk of harm to human health has also been evaluated for anticipated post-remediation Subject Site uses and activities.

- **Exposure During RAM Activities.** During implementation of the RAM in conjunction with the proposed construction potential human receptors which may be present include: construction and/or utility workers, adult visitors, adult and children trespassers and the general public as passers-by or occupants of near-by residences. During the conduct of the RAM and during construction excavation, exposure to the COCs may occur in the ambient air via inhalation of the COCs detected in the tested samples of soil gas or by inhalation of the COCs entrained in dust particles. Additional human exposure routes that are considered relevant to this FRC are direct contact and incidental ingestion.

It should be noted that in order to manage the potential risk that may be associated with the above exposures, a Site-Specific Health and Safety Plan that will be prepared for the conduct of construction activities will contain provisions for usage of appropriate personal protective equipment (PPE) and for implementation of risk-mitigating measures, if required.



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The identified human receptors that are not construction-related but may be present in the vicinity of the Subject Site during the RAM activities such as occasional trespassers (including children), visitors and passers-by, would likely be exposed at significantly lower frequencies and potential intensities. Potential exposures to vapors of the COCs in ambient air were evaluated by comparison of the estimated concentrations in air to the laboratory reported detection limits (RDLs). The use of the RDLs as the risk estimation is considered appropriate because all of the RDLs are well below applicable inhalation risk factors. Given the relatively low levels of the COCs detected in the tested soil gas samples which result in yet lower levels in the ambient air due to dispersion and dilution, and the distance between the Subject Site and nearby residences, quantitative evaluation of the potential exposure by residents in nearby residences to the VOCs in air is considered not necessary. The already low estimated levels of VOCs in air are expected to be significantly reduced as a result of dispersion thus rendering this exposure pathway incomplete or insignificant. However, the potential for direct contact or incidental ingestion by visitors, trespassers or by passers-by are addressed in this FRC separately.

- **Exposure by Future Site Workers or Occupants.** This exposure potential is addressed in Section 6.6 below.
- **Exposure Point Concentrations (EPCs).** The EPCs were identified pursuant to the provisions contained in Section 40.0926 of the MCP. EPCs are defined in the MCP as the concentrations of the COCs in each identified environmental medium with which human or ecological receptors may come in contact at the point of exposure. The soil EPCs are summarized in **TABLE 3**. The maximum detected levels of the COCs in the tested groundwater samples are considered EPCs as shown **TABLE 4**. For the VOCs that were detected in the tested soil gas samples, the EPCs were identified as the maximum detected concentrations (refer to **TABLES 1 and 2**).



## 6.4 FOCUSED RISK CHARACTERIZATION

The detected levels of CVOCs in the tested groundwater samples and their potential indoor or outdoor air impacts is evaluated through the results of the soil gas analyses that are considered reflective of the potential for migration of vapors of VOCs as a result of partitioning from the groundwater through the soil vadoze zone. Concentrations of VOCs in air were estimated based on the results of the soil gas analyses (**TABLES 1 and 2**) utilizing the US EPA air simulation model (2006) and are summarized in **TABLE 2A**. The estimated concentrations in air then were compared to the RDLs (**TABLE 2**). As shown in **TABLE 2A**, none of the estimated VOCs concentrations in air exceed the RDLs, thus it is concluded that any additional quantification of the risk of harm to construction workers, visitors, trespassers or passers-by due to potential exposure to vapors of the VOCs is not necessary and a qualitative risk evaluation is considered sufficient.

The current MADEP Method 3 Short Forms were used in this FRC for the estimation of the risks posed by the EPCs of the COCs detected in the tested soil samples to construction and/or utility workers and to occasional trespassers and passers-by during the conduct of the RAM. Pursuant to the provisions contained in Section 40.0933(6) of the MCP a condition of No Significant Risk of harm to human health exists at any disposal site if the identified cancer and non-cancer risk quotients do not exceed the limits established by the MADEP. For carcinogenic Excess Lifetime Cancer Risk (ELCR) the MADEP established a lower risk limit of one in one-hundred thousand (1.0E-05) and for non-cancer risk the MADEP established a lower Hazard Index (HI) limit of one (1).

The results of the risk quantification are contained in **APPENDIX B** and indicate the following:

- For construction workers the ELCR is 2E-07 and the cumulative HI is 1E-01;
- For occasional trespassers the ELCR is 2E-07, the chronic HI is 6E-03 and the sub-chronic HI is 1E-02.



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Since none of the above risk quotients exceed the MADEP human health risk limits, VERTEX has concluded that a condition of No Significant Risk exists for construction workers and for occasional trespassers. In addition, because the exposure potential of occasional trespassers (within the site limits) is predicated upon an exposure period of 30 weeks at a frequency of 2 days per each week it is unlikely that an exposure by a passer-by (outside the site limits) for the same duration and frequency would result in greater risk quotients. Thus it is concluded that the condition of NSR that applies to trespassers also applies to passers-by or the general public who may be exposed outside the Subject Site limits. Similarly, the exposure by construction workers is predicated upon a frequency of 182 days per year for 8 hours per day which is significantly greater than the exposure potential by visitors or by utility workers. Therefore, the estimated risk quotients for construction workers would not under estimate the risk to visitors or utility workers.

Based on the results of the air simulation model and based on the information summarized above, VERTEX has concluded that a condition of No Significant Risk exists at the Subject Site for the implementation of the proposed RAM. However, it should be noted that RAM activities will be conducted in accordance with a Site-Specific Health and Safety Plan that will contain provisions for the implementation of risk-mitigating measures based upon actual conditions disclosed during the conduct of the RAM.

In addition, VERTEX has concluded that further quantification of the risk of harm to the general public as passers-by, visitors, and occasional trespassers is not necessary because: (1) the potential exposure by construction workers (183 days per year, 5 days per week and 8 hours per day) is of a significantly longer duration, frequency and intensity than the anticipated exposure by visitors, occasional trespassers or passers-by, and (2) a condition of No Significant Risk of harm to construction workers is considered to exist at the Subject Site, predicated upon an unrestricted exposure. Therefore, the results of any quantification of the risk of harm to the occasional human receptors would result in significantly lower risk quotients. Thus, it is concluded that a condition of No Significant Risk exists for the identified occasional human receptors.



## 6.5 ENVIRONMENTAL MONITORING

Based on the above conclusion that a condition of No Significant Risk of harm to human health exists for the COCs identified in the tested soil samples, it is concluded that quantification of dust action levels or instrument monitoring of the dust in ambient air are not required. However, conservatively, VERTEX will implement a program of dust monitoring utilizing a Mini-RAE dust monitor with an action level of  $0.15 \text{ mg/m}^3$  (US EPA/600/P-95/002 – Exposure Factors, 1997). In addition, the Site-Specific Health and Safety Plan will contain provisions for dust management as a source of nuisance if visual observations indicate a potential for off-site migration of dust. Provisions for other environmental monitoring, such as instrument measurements of total VOCs (TVOCs) in ambient air or odor control, will also be included in the Site-Specific Health and Safety Plan to address conditions that may be disclosed during the conduct of the RAM.

Finally, appropriate erosion control measures, such as installation of silt fences and hay bales, will be implemented during the performance of the RAM in order to mitigate potential off-site migration of the Subject Site soil as a result of precipitation events.

## 6.6 RISK OF HARM TO FUTURE SITE WORKERS, USERS AND/OR OCCUPANTS

As noted above, the proposed redevelopment of the eastern portion of the Subject Site includes the demolition of the existing former Raytheon facility and construction of mixed-use commercial establishments including retail stores and offices. A potential residential usage of the upper floors of the proposed commercial buildings is considered. In addition, future development plans for the western portion of the Subject Site include multi-unit residences and a two-acre public open space. The proposed buildings will be constructed as “slab-on-grade” and will have no below-grade structures except for utilities or infrastructure.

Portions of the eastern portion of the Subject Site not occupied by the footprint of the proposed buildings will be paved and utilized as parking lots with landscaped margins. Most of the soil will be situated beneath the footprint of the proposed buildings, paved areas or landscaped margins.





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Therefore, subsequent to the completion of the proposed redevelopment, most of the Subject Site soils will be categorized pursuant to 310 CMR 40.0933(9) as Isolated Subsurface Soils and relatively minor portions of the Subject Site soils will be categorized as Potentially Accessible Soils.

Occasional future exposures to the Subject Site soils by construction and/or utility workers, and by future site workers, trespassers, the general public and visitors could occur during temporary utility work or other excavation activities (in response to emergency or utility maintenance) that are typically of limited duration. Based on the results of the FRC above that indicate the existence of a condition of No Significant Risk for construction and/or utility workers, visitors, passers-by and for occasional trespassers, it is concluded that the existing condition of No Significant Risk would continue to be applicable to the occasional future exposures during temporary excavation activities. In addition, an evaluation of the risk of harm for a potential usage of a portion of the western portion of the Subject Site as a public open space was conducted utilizing the current MADEP Method 3 Short Forms for park visitors (refer to **APPENDIX B**). The results of the risk quantification indicate that the EPCs of the COCs identified in the tested soil samples pose No Significant Risk of harm for park visitors, including children. Specifically, the estimated ELCR is 3E-06, the chronic HI is 6E-02 and the sub-chronic HI is 1E-01. None of these risk quotients exceed the MADEP lower risk limits.

Any additional quantification under this RAM Plan of the risk of harm to potential future workers or the general public that may be posed by the COCs in soil is considered not necessary because the frequency of exposure and its potential intensity by construction workers during the conduct of the RAM (in conjunction with the proposed redevelopment) is significantly greater than the potential exposure by future site workers or the general public thus mitigating the potential for underestimation of the risk of harm under future occasional or short duration exposures.

Based on the above, the main exposure pathway that is considered applicable to the evaluation of the risk of harm to future site workers, occupants or potential residents of the upper floors of the proposed commercial buildings at the eastern portion of the Subject Site is inhalation of the VOCs detected in the tested soil gas samples as a result of potential migration into indoor air. To assess the potential for indoor air impacts, a US EPA air simulation model (2006) was utilized to estimate



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the potential human health risk quotients. Results are summarized in **TABLE 5**. The human health risk quotients are based on a residential exposure frequency of 365 days per year with an averaging time of 70 years for carcinogens and 30 years for non-carcinogens.

As shown in **TABLE 5**, none of the estimated ELCR or HI quotients exceed the human health risk limits established by the MADEP. In addition, the cumulative cancer risk quotients for ELCR (3.12E-06) and the cumulative non-cancer HI (8.12E-02) are well below the above referenced MADEP risk limits.

Thus it is concluded that the detected concentrations of VOCs in the tested soil gas samples are not anticipated to pose a significant risk of harm to future occupants or workers at the eastern portion of the Subject Site or to potential residents of the upper floors of the commercial buildings. It should be noted that pursuant to the provisions contained in Section 40.0900 of the MCP a comprehensive Risk Characterization will be performed for the Subject Site upon completion of the RAM activities in support of a Response Action Outcome (RAO) Statement. It is anticipated that the RAM will result in a condition of No Significant Risk predicated upon a Permanent Solution, as defined in the MCP.

Finally, as noted above, a vapor barrier and infrastructure for sub-slab venting systems will be installed within the footprints of all of the proposed residential buildings and potentially within the footprints of the proposed commercial buildings to mitigate potential vapor intrusion into the indoor space of the buildings. Therefore, upon completion of the installation of the venting system infrastructure and the vapor barrier this exposure pathway will be considered incomplete and thus by definition, pose No Significant Risk of harm to human health.



## 7.0 FOCUSED FEASIBILITY EVALUATION

An evaluation of the feasibility to achieve or approach background was performed as part of this RAM Plan. The feasibility evaluation was conducted pursuant to the provisions contained in Section 40.0442(3)(c) of the MCP and in accordance with MADEP Policy WSC-04-160.

Based on the current Subject Site redevelopment plans, the soil generated during excavation activities will be re-used on-site and only a small amount of soil is considered as a contingency for off-site disposal. As noted above, the objective of the RAM is to implement on-site reuse of the soil that will be excavated during the installation of foundations, utilities and infrastructure. Such soil will be reused on-site as backfill material. As noted above, the results of the Focused Risk Characterization indicate that a condition of No Significant Risk already exists for the Subject Site soil under unrestricted exposure scenarios. Therefore, given the significant costs of any additional excavation, off-site disposal and replacement with fill material from an off-site source, the results of a cost-benefit evaluation [(310 CMR 40.0860(7))] indicate that the costs of any additional excavation, beyond what is required for the redevelopment of the Subject Site, are significantly disproportionate to the little risk-reduction benefits.

Finally, the results of the estimation of the risk of harm to human health posed by the detected concentrations of VOCs in the tested soil gas samples indicate that the estimated risk quotients are well below the MCP risk limits (refer to **TABLE 5**) for carcinogens and for non-carcinogens thus there is no evidence for the presence of a condition described in the MCP as Critical Exposure Pathway (CEP). In the absence of a CEP, and since the objective of the RAM is to achieve a Permanent Solution it is concluded that implementation of any additional remedial action, beyond the scope of this RAM Plan, would result in a risk-reduction benefit that is insignificant but would require significantly disproportionate costs and effort.

Based on the above, VERTEX has concluded that the requirements of the MCP with regards to feasibility evaluation had been met and it is further concluded that conduct of any additional remedial action, beyond the provisions of the proposed RAM, is infeasible.



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## 8.0 QUALIFICATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. VERTEX is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration and laboratory test data presented in this report. Our professional opinion and the conclusions contained herein are based solely on the scope of work conducted as described in this RAM Plan.

It must be recognized that environmental investigations are inherently limited in the sense that conclusions are drawn and recommendations developed from information obtained from limited research and site investigation. All site subsurface conditions were not field investigated as part of this study and may differ from the conditions described herein. Additionally, the passage of time may result in a change in the environmental characteristics at this site and surrounding properties. This report does not warrant against future operations or conditions, nor does this report warrant against operations or conditions present of a type or at a location not investigated.

The reference to various MCP or other risk-based cleanup standards contained in this report is intended to provide a focused evaluation of the risk of harm to human health for the conduct of the RAM and is not intended to be used as a comprehensive risk characterization as defined in the MCP, but rather to provide an assessment of the risk under focused exposures.



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TABLES



Environmental



Construction



Air Quality



Energy

TABLE 1 - SUMMARY OF SOIL VAPOR ANALYSES

**400 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS**  
**MADEP RTN 3-13302**  
**VERTEX PROJECT No. 19163**

SAMPLE DESIGNATION	SV-1	SV-2	SV-3	SV-4	SV-5	SVE-2	SV-11	SV-12	SV-13
LABORATORY ID	L0809833-01	L0809833-02	L0809833-03	L0809956-01	L0809956-02	L0809898-02	L0809960-01	L0809960-02	L0809960-03
SAMPLING DATE	1-Jul-08	1-Jul-08	1-Jul-08	2-Jul-08	2-Jul-08	3-Jul-08	3-Jul-08	3-Jul-08	3-Jul-08
<b>VOCs</b>	<b>(µg/m3)</b>	<b>(µg/m3)</b>	<b>(µg/m3)</b>	<b>(µg/m3)</b>	<b>(µg/m3)</b>	<b>(µg/m3)</b>	<b>(µg/m3)</b>	<b>(µg/m3)</b>	<b>(µg/m3)</b>
1,1,1-Trichloroethane	ND(5.45)	ND(1.09)	ND(1.09)	ND(1.09)	ND(1.09)	7.93	25.2	2.32	4.38
1,2,4-Trichlorobenzene	ND(7.4)	ND(1.485)	7.43	ND(1.485)	ND(1.485)	ND(0.74)	ND(0.74)	ND(0.74)	ND(1.485)
1,2,4-Trimethylbenzene	ND(4.91)	ND(0.98)	ND(0.98)	ND(0.98)	ND(0.98)	5.12	1.05	1.31	ND(0.98)
1,3,5-Trimethylbenzene	ND(4.91)	ND(0.98)	ND(0.98)	ND(0.98)	ND(0.98)	1.88	ND(0.491)	ND(0.491)	ND(0.98)
1,4-Dichlorobenzene	ND(6)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.2)	2.02	ND(0.6)	ND(0.6)	ND(1.2)
2-Butanone	53.5	58.2	67.5	39.1	54.2	255	15	16	9.31
2-Hexanone	ND(4.095)	11	13.6	10.2	12.5	66.8	5.24	5.88	2.66
4-Ethyltoluene	ND(4.91)	ND(0.98)	ND(0.98)	ND(0.98)	ND(0.98)	1.47	ND(0.491)	ND(0.491)	ND(0.98)
Acetone	1130	505	419	374	181	1850	43.6	51.3	74.4
Benzene	ND(3.19)	ND(0.64)	ND(0.64)	1.56	ND(0.64)	11.5	ND(0.319)	0.99	ND(0.64)
Carbon disulfide	ND(3.11)	1.6	ND(0.62)	ND(0.62)	ND(0.62)	15.4	ND(0.311)	0.648	ND(0.62)
Chloroethane	ND(2.635)	ND(0.525)	ND(0.525)	ND(0.525)	ND(0.525)	0.725	ND(0.2635)	ND(0.2635)	ND(0.525)
Chloroform	ND(4.88)	5.47	ND(0.975)	ND(0.975)	9.61	1.47	5.11	4.57	8.62
Chloromethane	ND(2.065)	ND(0.4125)	ND(0.4125)	ND(0.4125)	ND(0.4125)	1.78	ND(0.2065)	0.418	ND(0.4125)
Cyclohexane	ND(3.44)	ND(0.69)	ND(0.69)	ND(0.69)	ND(0.69)	1.67	ND(0.344)	ND(0.344)	ND(0.69)
Dichlorodifluoromethane	ND(4.94)	2.4	2.43	2.39	2.66	2.38	4.75	9.42	14.3
Ethanol	ND(23.55)	31.6	23.4	16.9	14.8	146	15.6	20	13.7
Ethylbenzene	ND(4.34)	ND(0.87)	ND(0.87)	ND(0.87)	ND(0.87)	4.41	ND(0.434)	1.19	ND(0.87)
Freon 113	ND(7.65)	ND(1.53)	ND(1.53)	ND(1.53)	ND(1.53)	1.57	1.93	ND(0.765)	ND(1.53)
Isopropanol	65.4	41.7	17.8	32.3	12.6	17.1	3.64	4.98	3.81
Methylene chloride	17.4	4.54	4.51	4.38	4.29	3.91	3.27	4.54	4.07
4-Methyl-2-pentanone	ND(4.095)	ND(0.82)	ND(0.82)	ND(0.82)	ND(0.82)	9.89	0.982	1.31	ND(0.82)
m/p-Xylene	ND(8.7)	3.9	ND(1.735)	ND(1.735)	ND(1.735)	11	2.95	3.98	ND(1.735)
o-Xylene	ND(4.34)	ND(0.87)	ND(0.87)	ND(0.87)	ND(0.87)	4.88	1.04	1.55	ND(0.87)
Heptane	ND(4.095)	ND(0.82)	1.8	2.6	ND(0.82)	12.4	ND(0.4095)	0.874	ND(0.82)
n-Hexane	9.67	8.11	8.49	6.21	6.64	13.3	1.97	4.66	ND(0.705)
Propylene	ND(1.72)	3.76	3.37	2.26	1.75	49.4	ND(0.172)	ND(0.172)	ND(0.344)
Styrene	ND(4.255)	ND(0.85)	ND(0.85)	ND(0.85)	ND(0.85)	1.65	ND(0.4255)	ND(0.4255)	ND(0.85)
Tetrachloroethylene	44.3	29.9	13.7	ND(1.355)	22.2	107	32.5	13.3	59.3
Tetrahydrofuran	ND(2.945)	ND(0.59)	ND(0.59)	ND(0.59)	ND(0.59)	ND(0.2945)	2.39	2.53	1.62
Toluene	ND(3.765)	6.31	3.87	3.61	3.85	19	3.34	6.95	3.22
Trichloroethylene	20.5	29.1	9.24	5.9	59	99.4	8.83	96.4	79.7
Trichlorofluoromethane	111	241	149	86	434	16.7	847	398	345
Vinyl acetate	ND(3.52)	4.32	7.39	2.31	2.88	47.7	ND(0.352)	ND(0.352)	ND(0.705)

**Notes:**

1. ND(XX) = Not detected (0.5 RDL).
2. Table limited to compounds detected
3. Samples collected by Haley & Aldrich, Inc.

**TABLE 2 - SUMMARY OF SOIL GAS CONTAMINANTS OF CONCERN AND EXPOSURE POINT CONCENTRATIONS**

**430 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS  
MADEP RTN 3-13302  
VERTEX PROJECT No. 19163**

DETECTED CONTAMINANT IN SOIL GAS	CAS NUMBER	SOIL GAS EPC ( $\mu\text{g}/\text{m}^3$ )	ESTIMATED AMBIENT AIR CONCENTRATION ( $\mu\text{g}/\text{m}^3$ )	METHOD TO-15 DETECTION LIMITS ( $\mu\text{g}/\text{m}^3$ )
1,1,1-Trichloroethane	71-55-6	2.5E+01	5.9E-06	1.1E+00
1,2,4-Trichlorobenzene	120-82-1	7.4E+00	1.7E-06	1.5E+00
1,2,4-Trimethylbenzene	95-63-6	5.1E+00	1.2E-06	1.0E+00
1,3,5-Trimethylbenzene	108-67-8	1.9E+00	4.4E-07	1.0E+00
1,4-Dichlorobenzene	106-46-7	2.0E+00	4.8E-07	1.2E+00
2-Dichlorobenzene	78-93-3	2.6E+02	6.0E-05	6.0E-01
2-Hexanone	591-78-6	6.7E+01	3.2E-06	8.3E-01
4-Ethyltoluene	622-96-8	1.5E+00	1.8E-07	9.8E-01
Acetone	67-64-1	1.9E+03	4.4E-04	4.8E-01
Benzene	71-43-2	1.2E+01	2.7E-06	6.5E-01
Carbon disulfide	75-15-0	1.5E+01	3.6E-06	6.3E-01
Chloroethane	75-00-3	7.3E-01	1.7E-07	5.4E-01
Chloroform	67-66-3	9.6E+00	2.3E-06	9.9E-01
Chloromethane	74-87-3	1.8E+00	4.2E-07	4.2E-01
Cyclohexane	110-82-7	1.7E+00	7.2E-08	7.0E-01
Dichlorodifluoromethane	75-71-8	1.4E+01	3.4E-06	1.0E+00
Ethanol	64-17-5	1.5E+02	2.3E-02	2.8E-01
Ethylbenzene	100-41-4	4.4E+00	1.1E-06	8.8E-01
Freon 113	76-13-1	1.9E+00	1.5E-05	1.6E+00
Isopropanol	67-63-0	6.5E+01	7.9E-02	5.0E-01
Methylene chloride	75-09-2	1.7E+01	4.1E-06	7.1E-01
4-Methyl-2-pentanone	108-10-1	9.9E+00	2.3E-06	8.3E-01
m/p-Xylene	108-38-3	1.1E+01	2.6E-06	8.8E-01
o-Xylene	95-47-6	4.9E+00	1.5E-06	8.8E-01
Heptane	142-82-5	1.2E+01	3.9E-07	8.3E-01
n-Hexane	110-54-3	1.3E+01	6.8E-08	7.2E-01
Propylene	115-07-1	4.9E+01	1.2E-05	3.5E-01
Styrene	100-42-5	1.7E+00	3.9E-07	8.7E-01
Tetrachloroethylene	127-18-4	1.1E+02	2.5E-05	1.4E+00
Tetrahydrofuran	109-99-9	2.5E+00	7.9E-04	6.0E-01
Toluene	108-88-3	1.9E+01	4.5E-06	7.7E-01
Trichloroethylene	79-01-6	9.9E+01	2.3E-05	1.1E+00
Trichlorofluoromethane	75-69-4	8.5E+02	2.0E-04	1.1E+00
Vinyl acetate	108-05-4	4.8E+01	1.3E-05	7.2E-01

**Notes:**

1. The soil vapor Exposure Point Concentration (EPC) is the maximum detected level.
2. Predicted ambient air concentrations were estimated using  
US EPA Air Simulation - 2006 (TABLE 2A)

TABLE 2A - DIFFUSION OF CONTAMINANTS IN AIR USING SOIL VAPOR DATA

430 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS  
MADEP RTN 3-13302  
VERTEX PROJECT No. 19163

DETECTED CONTAMINANT	DIFFUSION MODEL ASSUMPTIONS			EFFECTIVE DIFFUSION COEFFICIENT (cm2/s)	SOIL GAS CONCENTRATION (EPC) (mg/m3)	SOIL GAS TO AIR ATTENUATION FACTOR	ESTIMATED AMBIENT AIR CONCENTRATION (ug/m3)	METHOD TO-15 DETECTION LIMITS (mg/m3)	EXCEEDENCE OF REPORTED DETECTION LIMIT (RDL)
	EXCAVATION AREA (m2)	BREATHING ZONE HEIGHT (cm)	DEPTH TO SOIL GAS SOURCE (cm)						
SOIL GAS									
1,1,1-Trichloroethane	1,000	125	33	1.30E-02	2.52E-02	2.4E-07	5.9E-06	1.11E-03	NO
1,2,4-Trichlorobenzene	1,000	125	33	5.00E-03	7.43E-03	2.2E-07	1.7E-06	1.51E-03	NO
1,2,4-Trimethylbenzene	1,000	125	33	9.80E-03	5.12E-03	2.3E-07	1.2E-06	1.00E-03	NO
1,3,5-Trimethylbenzene	1,000	125	33	9.70E-03	1.88E-03	2.4E-07	4.4E-07	1.00E-03	NO
1,4-Dichlorobenzene	1,000	125	33	1.10E-02	2.02E-03	2.4E-07	4.8E-07	1.23E-03	NO
2-Butanone	1,000	125	33	1.30E-02	2.55E-01	2.4E-07	6.0E-05	6.01E-04	NO
2-Hexanone	1,000	125	33	3.20E-02	6.68E-02	2.4E-07	3.2E-06	8.35E-04	NO
4-Ethyltoluene	1,000	125	33	2.10E-02	1.47E-03	2.6E-07	1.8E-07	9.75E-04	NO
Acetone	1,000	125	33	2.10E-02	1.85E+00	2.3E-07	4.4E-04	4.83E-04	NO
Benzene	1,000	125	33	1.50E-02	1.15E-02	2.4E-07	2.7E-06	6.51E-04	NO
Carbon disulfide	1,000	125	33	1.70E-02	1.54E-02	2.4E-07	3.6E-06	6.35E-04	NO
Chloroethane	1,000	125	33	4.40E-02	7.25E-04	2.4E-07	1.7E-07	5.38E-04	NO
Chloroform	1,000	125	33	1.70E-02	9.61E-03	2.4E-07	2.3E-06	9.95E-04	NO
Chloromethane	1,000	125	33	2.10E-02	1.78E-03	2.3E-07	4.2E-07	4.21E-04	NO
Cyclohexane	1,000	125	33	3.10E-02	1.67E-03	2.7E-07	7.2E-08	7.02E-04	NO
Dichlorodifluoromethane	1,000	125	33	1.10E-02	1.43E-02	2.5E-07	3.4E-06	1.01E-03	NO
Ethanol	1,000	125	33	9.00E-03	1.46E-01	2.3E-07	2.3E-02	2.83E-04	NO
Ethylbenzene	1,000	125	33	1.20E-02	4.41E-03	2.4E-07	1.1E-06	8.85E-04	NO
Freon 113	1,000	125	33	1.00E-02	1.93E-02	2.7E-07	1.5E-05	1.56E-03	NO
Isopropanol	1,000	125	33	1.40E-02	6.54E-02	2.4E-07	7.9E-02	5.00E-04	NO
Methylene chloride	1,000	125	33	1.60E-02	1.74E-02	2.4E-07	4.1E-06	7.08E-04	NO
4-Methyl-2-pentanone	1,000	125	33	1.20E-02	9.89E-03	2.3E-07	2.3E-06	8.35E-04	NO
m/p-Xylene	1,000	125	33	1.40E-02	1.10E-02	2.4E-07	2.6E-06	8.84E-04	NO
o-Xylene	1,000	125	33	1.40E-02	4.88E-03	2.4E-07	1.5E-06	8.85E-04	NO
Heptane	1,000	125	33	1.10E-02	1.24E-02	2.3E-07	3.9E-07	8.33E-04	NO
n-Hexane	1,000	125	33	3.10E-02	1.33E-02	2.4E-07	6.8E-08	7.18E-04	NO
Propylene	1,000	125	33	9.70E-03	4.94E-02	2.3E-07	1.2E-05	3.50E-04	NO
Styrene	1,000	125	33	1.20E-02	1.65E-03	2.3E-07	3.9E-07	8.68E-04	NO
Tetrachloroethylene	1,000	125	33	1.20E-02	1.07E-01	2.3E-07	2.5E-05	1.38E-03	NO
Tetrahydrofuran	1,000	125	33	1.30E-02	2.53E-03	2.6E-07	7.9E-04	6.01E-04	NO
Toluene	1,000	125	33	1.40E-02	1.90E-02	2.4E-07	4.5E-06	7.68E-04	NO
Trichloroethylene	1,000	125	33	1.30E-02	9.94E-02	2.4E-07	2.3E-05	1.09E-03	NO
Trichloroflouromethane	1,000	125	33	1.40E-02	8.47E-01	2.4E-07	2.0E-04	1.15E-03	NO
Vinyl acetate	1,000	125	33	1.40E-02	4.77E+00	2.4E-07	1.3E-05	7.18E-04	NO

NOTES: (1) Model utilized: US EPA Air Similation Model (2006)  
(2) Table limited to detected analytes



TABLE 3 - SUMMARY OF SOIL ANALYSES AND RISK DATA

430 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS  
RTN 3-13302  
VERTEX PROJECT No. 19163

SAMPLE DESIGNATION SAMPLING DATE SAMPLE DEPTH (ft.) LAB SAMPLE ID	MCP Method 1 S-1/GW-1 Standard	MADEP Background for "Natural" Soil	Exposure Point Concentration	SB-1 13-Oct-95 3.5'-5.5'	SB-3 13-Oct-95 18'-20'	SB-4 13-Oct-95 3.9'-6.8'	SB-5 13-Oct-95 6.5'-8.5'	SB-8 13-Oct-95 10.5'-12.5'	SB-8 13-Oct-95 6.5'-8.5'	SB-8 13-Oct-95 8.5'-10.5'	SB-8 13-Oct-95 4.5'-6.5'	SB-8A 13-Oct-95 4.5'-6.5'	SB-8A 13-Oct-95 8.5'-10.5'	SB-9 13-Oct-95 3.5'-5.5'	HA SS-1 11-Oct-00 0-3'	HA SS-2 11-Oct-00 0-3'	HA SS-3 11-Oct-00 0-3'	HA SS-4 11-Oct-00 0-3'	HA SS-5 11-Oct-00 0-3'	HA SS-6 11-Oct-00 0-3'
Volatile Organic Compounds (ug/kg)																				
Tetrachloroethene	1000	NA	32																	
Trichloroethene	300	NA	61.8																	
cis-1,2-Dichloroethene	300	NA	38.4																	
trans-1,2-Dichloroethene	1000	NA	1.2																	
Toluene	30000	NA	1.2																	
Acetone	6000	NA	26.7																	
p-Isopropyltoluene	NS	NA	1.4																	
Chlorobenzene	1000	NA	5.6																	
1,4-Dichlorobenzene	700	NA	7.8																	
Extractable Petroleum Hydrocarbons (mg/kg)																				
C19-C36 Aliphatics	3000	NA	32.5																	
C11-C22 Aromatics, Adjusted	1000	NA	14.1																	
C9-C18 Aliphatics	1000	NA	ND																	
Polychlorinated Biphenyls by MCP 8082 (mg/kg)	2	NA	ND																	
Total Metals by MCP 6000/7000 series (mg/kg)																				
Arsenic, Total	20	20	6.6	5.96	6.6	3.56	7.2	4.8	5.2	4.4	29	2.8	3.5	4.73	ND(2.8)	ND(2.7)	ND(2.7)	ND(2.7)	ND(2.7)	7.5
Barium, Total	1000	50	28.2																	
Chromium, Total	30	30	11.5																	
Lead, Total	300	100	5.9																	

Notes:  
ND(1): Not detected. (0.5 RDL)  
NA: Not applicable  
Table limited to detected contaminants  
Samples collected by Haley & Aldrich, Inc. and ERM  
Blank - Not Tested

TABLE 3 - SUMMARY OF SOIL ANALYSES AND RISK DATA

430 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS  
RTN 3-13302  
VERTEX PROJECT No. 19163

SAMPLE DESIGNATION	HA SS-7	HA SS-7	HA SS-8	HA SS-9	HA SS-10	HA SS-11	HA SS-12	HA SS-13	HA SS-13	B-301	B-302	B-303	B-304	B-305	B-306	B-307	B-308	B-309	B-310	B-311	B-312	B-316
SAMPLING DATE	11-Oct-00	11-Oct-00	11-Oct-00	11-Oct-00	11-Oct-00	11-Oct-00	11-Oct-00	11-Oct-00	11-Oct-00	19-Aug-02	19-Aug-02	19-Aug-02	19-Aug-02	19-Aug-02	19-Aug-02	19-Aug-02	19-Aug-02	19-Aug-02	19-Aug-02	19-Aug-02	19-Aug-02	9-Sep-02
SAMPLE DEPTH (ft.)	0-3'	DUP	0-3'	0-3'	0-3'	0-3'	0-3'	0-3'	DUP	0'-5'	0'-5'	0'-5'	0'-5'	0'-5'	0'-5'	0'-5'	0'-5'	0'-5'	0'-5'	0'-5'	0'-5'	0'-5'
LAB SAMPLE ID																						
Volatile Organic Compounds (ug/kg)																						
Tetrachloroethene																						
Trichloroethene																						
cis-1,2-Dichloroethene																						
trans-1,2-Dichloroethene																						
Toluene																						
Acetone																						
p-Isopropyltoluene																						
Chlorobenzene																						
1,4-Dichlorobenzene																						
Extractable Petroleum Hydrocarbons (mg/kg)																						
C19-C36 Aliphatics																						
C11-C22 Aromatics, Adjusted																						
C9-C18 Aliphatics																						
Polychlorinated Biphenyls by MCP 8082 (mg/kg)																						
Total Metals by MCP 6000/7000 series (mg/kg)																						
Arsenic, Total	ND(2.9)	ND(2.9)	7.2	12	2.80	ND(2.7)	ND(2.8)	7.3	5.9	6.3	5.7	5.8	5.4	6.0	6.3	6.4	6.4	5.3	5.7	5.1	36	5.5
Barium, Total																						
Chromium, Total																						
Lead, Total																						

Notes:  
ND(1): Not detected. (0.5 RDL)  
NA: Not applicable  
Table limited to detected contaminants  
Samples collected by Haley & Aldrich, Inc. and ERM  
Blank - Not Tested

TABLE 3 - SUMMARY OF SOIL ANALYSES AND RISK DATA

430 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS  
RTN 3-13302  
VERTEX PROJECT No. 19163

SAMPLE DESIGNATION	B-317	B-318	B-522	Comp20060201	MW-313	MW-314	MW-315	SW-117-003	SW-117-009	SW-117-018	SW-117-021	SW-117-027	SW-117-023	SW-117-039	SW-117-045	SW-117-051	SW-117-057	SW-117-063	SW-117-069	SW-117-075	SW-117-081	SW-117-087
SAMPLING DATE	9-Sep-02	9-Sep-02	1-Feb-06	1-Feb-06	26-Aug-02	26-Aug-02	26-Aug-02	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06	26-Jul-06
SAMPLE DEPTH (ft.)	0'-5'	0'-5'	10'-15'	Composite	5'-7'	5'-7'	5'-7'	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall
LAB SAMPLE ID																						
Volatile Organic Compounds (ug/kg)																						
Tetrachloroethene								ND(1.0)	4.6	9.2	ND(1.0)	1.9	2.8	5.9	75	1.2	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.1)	ND(1.2)
Trichloroethene								7.5	6.5	59	ND(1.0)	2.1	2.5	19	230	ND(1.1)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.1)	ND(1.2)
cis-1,2-Dichloroethene								ND(1.0)	ND(1.0)	12	ND(1.0)	3.7	6.8	19	180	ND(1.1)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.1)	ND(1.2)
trans-1,2-Dichloroethene								ND(1.6)	ND(1.6)	ND(1.6)	ND(1.6)	ND(1.5)	ND(1.6)	ND(1.3)	ND(1.8)	ND(1.6)	ND(1.8)	ND(1.8)	ND(1.7)	ND(1.7)	ND(1.6)	ND(1.8)
Toluene								ND(1.6)	ND(1.6)	ND(1.6)	ND(1.6)	ND(1.5)	ND(1.6)	ND(1.3)	ND(1.8)	ND(1.6)	ND(1.8)	ND(1.8)	ND(1.7)	ND(1.7)	ND(1.6)	ND(1.8)
Acetone								ND(10)	18	15	ND(10)	19	22	44	46	17	ND(12)	ND(12)	47	13	21	56
p-Isopropyltoluene								1.4	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.1)	ND(0.88)	ND(1.2)	ND(1.1)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.1)	ND(1.2)
Chlorobenzene								ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.1)	ND(0.88)	ND(1.2)	ND(1.1)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.1)	ND(1.2)
1,4-Dichlorobenzene								ND(10)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.1)	ND(0.88)	ND(1.2)	ND(1.1)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.2)	ND(1.1)	ND(1.2)
Extractable Petroleum Hydrocarbons (mg/kg)																						
C19-C36 Aliphatics																						
C11-C22 Aromatics, Adjusted																						
C9-C18 Aliphatics																						
Polychlorinated Biphenyls by MCP 8082 (mg/kg)																						
Total Metals by MCP 6000/7000 series (mg/kg)																						
Arsenic, Total	6.0	5.1	4.9	5.6	ND(2.6)	5.1	ND(3.0)															
Barium, Total																						
Chromium, Total																						
Lead, Total																						

Notes:  
ND(1): Not detected. (0.5 RDL)  
NA: Not applicable  
Table limited to detected contaminants  
Samples collected by Haley & Aldrich, Inc. and ERM  
Blank - Not Tested

TABLE 3 - SUMMARY OF SOIL ANALYSES AND RISK DATA

430 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS  
RTN 3-13302  
VERTEX PROJECT No. 19163

SAMPLE DESIGNATION SAMPLING DATE SAMPLE DEPTH (ft.) LAB SAMPLE ID	SW-117-093 26-Jul-06 Sidewall	SW-117-098 26-Jul-06 Sidewall	SW-117-102 26-Jul-06 Sidewall	SW-117-109 26-Jul-06 Sidewall	SP-A1 11-Jul-07 Stockpile	SP-A2 11-Jul-07 Stockpile	SP-A3 11-Jul-07 Stockpile	SP-A4 11-Jul-07 Stockpile	SP-A5 11-Jul-07 Stockpile	SP-A6 11-Jul-07 Stockpile	SP-B1 11-Jul-07 Stockpile	SP-B2 11-Jul-07 Stockpile	SP-B3 11-Jul-07 Stockpile	SP-B4 11-Jul-07 Stockpile	SP-B5 11-Jul-07 Stockpile	SP-B6 11-Jul-07 Stockpile	SP-C1 11-Jul-07 Stockpile	SP-C2 11-Jul-07 Stockpile	SP-C3 11-Jul-07 Stockpile	SP-C4 11-Jul-07 Stockpile	SP-C5 11-Jul-07 Stockpile	SP-C6 11-Jul-07 Stockpile
Volatile Organic Compounds (ug/kg)																						
Tetrachloroethene	ND(1.3)	6.6	24	ND(0.81)	ND(1.0)	ND(1.0)	1.4	ND(0.97)	ND(0.98)	5.0	46	42	120	4.8	6.7	88	ND(1.1)	ND(0.97)	ND(0.95)	ND(1.2)	ND(1.2)	ND(1.1)
Trichloroethene	ND(1.3)	87	ND(670)	20	ND(1.0)	ND(1.0)	ND(0.96)	ND(0.97)	ND(0.98)	ND(1.0)	110	50	39	4.3	27	220	ND(1.1)	ND(0.97)	ND(0.95)	1.2	1.2	220
cis-1,2-Dichloroethene	ND(1.3)	12	5.9	ND(0.81)	ND(1.0)	ND(1.0)	ND(0.96)	ND(0.97)	ND(0.98)	ND(1.0)	70	48	62	5.0	23	130	ND(1.1)	ND(0.97)	ND(0.95)	1.7	ND(1.2)	1.2
trans-1,2-Dichloroethene	ND(1.9)	ND(1.9)	1.2	ND(1.2)																		
Toluene	ND(1.9)	ND(1.9)	1.2	ND(1.2)	ND(1.5)	ND(1.5)	ND(1.4)	ND(0.15)	ND(1.5)	ND(1.5)	ND(1.6)	ND(1.6)	ND(1.6)	ND(1.6)	ND(1.6)	ND(1.7)	ND(1.6)	ND(1.4)	ND(1.4)	ND(1.7)	ND(1.9)	ND(1.6)
Acetone	38	17	28	15	ND(10)	ND(10)	24	ND(9.7)	ND(9.8)	23	16	46	14	ND(11)	ND(11)	25	ND(11)	ND(9.7)	ND(9.5)	ND(12)	ND(12)	ND(11)
p-Isopropyltoluene	ND(1.3)	ND(1.3)	ND(0.79)	ND(0.81)																		
Chlorobenzene	ND(1.3)	ND(1.3)	ND(0.79)	ND(0.81)																		
1,4-Dichlorobenzene	ND(1.3)	ND(1.3)	ND(0.79)	ND(0.81)																		
Extractable Petroleum Hydrocarbons (mg/kg)																						
C19-C36 Aliphatics																						
C11-C22 Aromatics, Adjusted																						
C9-C18 Aliphatics																						
Polychlorinated Biphenyls by MCP 8082 (mg/kg)																						
Total Metals by MCP 6000/7000 series (mg/kg)																						
Arsenic, Total																						
Barium, Total																						
Chromium, Total																						
Lead, Total																						

Notes:  
ND(1): Not detected. (0.5 RDL)  
NA: Not applicable  
Table limited to detected contaminants  
Samples collected by Haley & Aldrich, Inc. and ERM  
Blank - Not Tested

TABLE 3 - SUMMARY OF SOIL ANALYSES AND RISK DATA

430 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS  
RTN 3-13302  
VERTEX PROJECT No. 19163

SAMPLE DESIGNATION SAMPLING DATE SAMPLE DEPTH (ft.) LAB SAMPLE ID	SP-G1 15-Aug-07 Stockpile	SP-G2 15-Aug-07 Stockpile	CF-1 23-Aug-07 -	CF-2 23-Aug-07 -	CF-3 23-Aug-07 -	CF-4 23-Aug-07 -	CF-5 23-Aug-07 -	CF-6 23-Aug-07 -	AB23 22-Aug-07 Bottom	AB45 22-Aug-07 Bottom	AB67 22-Aug-07 Bottom	CD23-2 22-Aug-07 Bottom	CD45 22-Aug-07 Bottom	CD67 22-Aug-07 Bottom	EF23 22-Aug-07 Bottom	EF45 22-Aug-07 Bottom	EF67 22-Aug-07 Bottom	GH23 22-Aug-07 Bottom	GH45 22-Aug-07 Bottom	GH67 22-Aug-07 Bottom	DE1-4 22-Aug-07 Bottom	DE8 22-Aug-07 Bottom
Volatile Organic Compounds (ug/kg)																						
Tetrachloroethene	ND(1.0)	ND(1.0)	ND(4.6)	ND(4.8)	ND(4.8)	ND(4.6)	ND(4.8)	ND(5.0)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.2)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	1.2	ND(1.1)
Trichloroethene	ND(1.0)	ND(1.0)	ND(4.6)	ND(4.8)	ND(4.8)	ND(4.6)	ND(4.8)	ND(5.0)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.2)	4.0	ND(1.1)	2.4	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	6.5	ND(1.1)
cis-1,2-Dichloroethene	ND(1.0)	ND(1.0)	ND(4.6)	ND(4.8)	ND(4.8)	ND(4.6)	ND(4.8)	ND(5.0)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.2)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.0)	ND(1.1)
trans-1,2-Dichloroethene																						
Toluene	ND(1.5)	ND(1.6)																				
Acetone	ND(10)	ND(10)							16	14	ND(11)	ND(12)	ND(11)	ND(11)	19	52	81	ND	ND	ND	ND(10)	ND
p-Isopropyltoluene									NA	NA	ND(11)	ND(12)	ND(11)									
Chlorobenzene									2.7	7.3	12	ND(1.2)	2.6	3.6	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.1)	ND(1.0)	ND(1.1)
1,4-Dichlorobenzene									ND(5.6)	ND(5.6)	7.8	ND(5.8)	ND(5.4)	ND(5.3)	ND(5.3)	ND(5.6)	ND(5.5)	ND(5.6)	ND(5.6)	ND(5.6)	ND(5.2)	ND(5.6)
Extractable Petroleum Hydrocarbons (mg/kg)																						
C19-C36 Aliphatics																						
C11-C22 Aromatics, Adjusted																						
C9-C18 Aliphatics																						
Polychlorinated Biphenyls by MCP 8082 (mg/kg)			ALL ND	ALL ND	ALL ND	ALL ND	ALL ND	ALL ND														
Total Metals by MCP 6000/7000 series (mg/kg)																						
Arsenic, Total			6.4	6.3	5.5	5.4	6.0	5.8														
Barium, Total																						
Chromium, Total			10	9.5	8.1	8.6	9.1	11														
Lead, Total			7.4	4.0	3.1	3.4	6.5	4.7														

Notes:  
ND(1): Not detected. (0.5 RDL)  
NA: Not applicable  
Table limited to detected contaminants  
Samples collected by Haley & Aldrich, Inc. and ERM  
Blank - Not Tested

TABLE 3 - SUMMARY OF SOIL ANALYSES AND RISK DATA

430 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS  
RTN 3-13302  
VERTEX PROJECT No. 19163

SAMPLE DESIGNATION	STEP1	STEP2	STEP3	STEP4	S1	S4	S6	S7	S8	S10	S11	S12	S15	S16	SE1	SE2
SAMPLING DATE	22-Aug-07	22-Aug-07	22-Aug-07	22-Aug-07	31-Jul-08	31-Jul-08	31-Jul-08	31-Jul-08	1-Aug-08	1-Aug-08	30-Jul-08	31-Jul-08	30-Jul-08	1-Aug-08	1-Aug-08	1-Aug-08
SAMPLE DEPTH (ft.)	Bottom	Bottom	Bottom	Bottom	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
LAB SAMPLE ID					L0811374-04	L0811374-05	L0811374-06	L0811374-07	L0811374-01	L0811375-02	L0811374-02	L0811374-03	L0811374-01	L0811375-03	L0811375-04	L0811375-05
Volatile Organic Compounds (ug/kg)																
Tetrachloroethene	120	82	24	ND(1.1)												
Trichloroethene	240	150	32	4.5												
cis-1,2-Dichloroethene	100	10	ND(1.0)	ND(1.1)												
trans-1,2-Dichloroethene																
Toluene																
Acetone	ND(11)	48	ND(10)	ND(11)												
p-Isopropyltoluene																
Chlorobenzene	ND(1.1)	ND(1.2)	ND(1.0)	ND(1.1)												
1,4-Dichlorobenzene	ND(5.6)	ND(5.9)	ND(5.0)	ND(5.6)												
Extractable Petroleum Hydrocarbons (mg/kg)																
C19-C36 Aliphatics					ND(3.435)	ND(3.47)	ND(3.545)	ND(3.47)	ND(3.79)	ND(3.705)	ND(6.85)	ND(3.4)	ND(3.4)	32.5	ND(3.92)	ND(4.015)
C11-C22 Aromatics, Adjusted					11.4	ND(3.47)	ND(3.545)	8.56	8.44	8.75	23.4	10.6	12.8	32.3	10	ND(4.015)
C9-C18 Aliphatics					ND(3.435)	ND(3.47)	ND(3.545)	ND(3.47)	ND(3.79)	ND(3.705)	ND(6.85)	ND(3.4)	ND(3.4)	ND(3.4)	ND(3.92)	ND(4.015)
Polychlorinated Biphenyls by MCP 8082 (mg/kg)					ALL ND	ALL ND	ALL ND	ALL ND	ALL ND	ALL ND	ALL ND	ALL ND	ALL ND	ALL ND	ALL ND	ALL ND
Total Metals by MCP 6000/7000 series (mg/kg)																
Arsenic, Total					4.8	4.4	3.9	6.6	5.3	6.4	4.9	4.3	3.3	5.5	5.8	6.4
Barium, Total					22	18	33	50	32	30	22	17	36	26	20	32
Chromium, Total					19	7	15	14	11	14	8.3	6	13	11	7.3	12
Lead, Total					3.6	3.1	5.4	6.2	11	9.1	4.4	ND(1.25)	4.6	4.5	ND(1.35)	3.9

Notes:  
ND(1): Not detected (0.5 RDL)  
NA: Not applicable  
Table limited to detected contaminants  
Samples collected by Haley & Aldrich, Inc. and ERM  
Blank - Not Tested

TABLE 4 - SUMMARY OF GROUNDWATER ANALYSES

430 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS

RTN 3-13302

VERTEX PROJECT No. 19163

WELL DESIGNATION SAMPLING DATE SAMPLE COLLECTED BY	Method 1 GW 1 Standard	Method 1 GW 2 Standard	Method 1 GW 3 Standard	MW-1 24-Oct-95 ERM	MW-1 27-May-98 ERM	MW-1 18-Feb-02 ERM	MW-40 5-Oct-10 ERM	MW-40S 5-Oct-10 ERM	MW-43S 6-Oct-10 ERM	MW-47M 6-Oct-10 ERM	MW-118 6-Oct-10 ERM	MW-201M 6-Oct-10 ERM	MW-202M 6-Oct-10 ERM	MW-403 6-Oct-10 ERM	MW-404 6-Oct-10 ERM	DEP-19M 7-Apr-11 ERM	DEP-21 7-Apr-11 ERM	MW-263M 7-Apr-11 ERM	MW-264M 7-Apr-11 ERM	MW-264M(DUP) 7-Apr-11 ERM	MW-266Ma 7-Apr-11 ERM	MW-267M 7-Apr-11 ERM	MW-267S 7-Apr-11 ERM	MW-267S(DUP) 7-Apr-11 ERM	MW-268D 7-Apr-11 ERM	MW-269Ma 7-Apr-11 ERM	MW-554D 7-Apr-11 ERM	MW-555D 7-Apr-11 ERM
Chloroform	70	50	20,000	ND	ND	ND	ND	11	ND	ND	ND	ND	ND	1.2	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5	50	30,000	ND	ND	ND	ND	ND	ND	5.4	ND	ND	ND	1.4	ND	ND	ND	ND	7	7.2	ND	15	11	13	ND	ND	ND	ND
Trichloroethene	5	30	5,000	ND	ND	ND	3.9	4.5	7.3	15	25	56	32	30	13	ND	2.1	ND	37	37	6	240	510	450	8.4	ND	ND	ND
cis-1,2-Dichloroethene	70	100	50,000	ND	ND	ND	ND	ND	ND	ND	ND	48	ND	1.6	ND	2.7	14	ND	28	28	2.3	320	97	85	9.8	2.1	ND	1.3
1,1,1-Trichloroethane	200	4,000	20,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7	80	30,000	ND	ND	ND	ND	ND	ND	ND	ND	4.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND
1,1-Dichloroethane	70	1,000	20,000	ND	ND	ND	ND	ND	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	1.3	1.3	ND	1.2	ND	ND
Vinyl Chloride	2	2	50,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	17	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds (VOC)	NS	NS	NS	ALL ND	ALL ND	ALL ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	3	6,000	50,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.45	NA	1.89
Semi Volatile Organic Compounds (SVOC)	VARIOUS			ALL ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCB)	VARIOUS			ALL ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organchlorine Pesticides	VARIOUS			ALL ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Metals	VARIOUS	NS	VARIOUS	ALL ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:  
ND: Not detected.  
NA: Not analyzed  
NS: No Standard

**TABLE 5 - SUMMARY OF INDOOR AIR CONTAMINANTS OF CONCERN AND HUMAN HEALTH RISK QUOTIENTS**

**400 BOSTON POST ROAD, WAYLAND, MASSACHUSETTS  
MADEP RTN 3-13302  
VERTEX PROJECT No. 19163**

DETECTED CONTAMINANT IN SOIL GAS	CAS NUMBER	SOIL GAS EPC ( $\mu\text{g}/\text{m}^3$ )	ESTIMATED INDOOR AIR CONCENTRATION ( $\mu\text{g}/\text{m}^3$ )	ESTIMATED ELCR QUOTIENT	ESTIMATED HI QUOTIENT
1,1,1-Trichloroethane	71-55-6	2.5E+01	1.03E-01	0.00E+00	4.70E-05
1,2,4-Trichlorobenzene	120-82-1	7.4E+00	2.45E-02	0.00E+00	1.22E-04
1,2,4-Trimethylbenzene	95-63-6	5.1E+00	2.02E-02	0.00E+00	3.40E-03
1,3,5-Trimethylbenzene	108-67-8	1.9E+00	7.42E-03	0.00E+00	1.25E-03
1,4-Dichlorobenzene	106-46-7	2.0E+00	8.18E-03	0.00E+00	1.02E-05
2-Dichlorobenzene	78-93-3	2.6E+02	3.50E-04	1.46E-07	2.36E-03
2-Hexanone	591-78-6	6.7E+01	1.06E+00	0.00E+00	1.06E-03
4-Ethyltoluene	622-96-8	1.5E+00	2.87E-06	0.00E+00	3.25E-04
Acetone	67-64-1	1.9E+03	8.13E+00	0.00E+00	2.32E-02
Benzene	71-43-2	1.2E+01	4.84E-02	1.55E-07	1.20E-09
Carbon disulfide	75-15-0	1.5E+01	6.63E-02	0.00E+00	9.47E-05
Chloroethane	75-00-3	7.3E-01	3.38E-03	1.15E-09	3.38E-07
Chloroform	67-66-3	9.6E+00	4.14E-02	3.91E-07	6.00E-05
Chloromethane	74-87-3	1.8E+00	7.83E-03	3.22E-09	8.70E-05
Cyclohexane	110-82-7	1.7E+00	8.90E-07	0.00E+00	7.25E-05
Dichlorodifluoromethane	75-71-8	1.4E+01	5.75E-02	0.00E+00	2.88E-04
Ethanol	64-17-5	1.5E+02	5.13E-05	0.00E+00	8.21E-05
Ethylbenzene	100-41-4	4.4E+00	1.81E-02	8.19E-09	1.81E-05
Freon 113	76-13-1	1.9E+00	1.35E-06	0.00E+00	6.32E-03
Isopropanol	67-63-0	6.5E+01	2.74E-01	0.00E+00	2.61E-04
Methylene chloride	75-09-2	1.7E+01	7.50E-02	1.44E-08	2.48E-05
4-Methyl-2-pentanone	108-10-1	9.9E+00	4.06E-02	0.00E+00	5.08E-04
m/p-Xylene	108-38-3	1.1E+01	4.46E-02	0.00E+00	6.38E-06
o-Xylene	95-47-6	4.9E+00	2.05E-02	0.00E+00	2.96E-06
Heptane	142-82-5	1.2E+01	6.32E-05	0.00E+00	4.98E-06
n-Hexane	110-54-3	1.3E+01	6.09E-02	0.00E+00	3.05E-04
Propylene	115-07-1	4.9E+01	1.95E-01	0.00E+00	1.39E-03
Styrene	100-42-5	1.7E+00	6.71E-03	0.00E+00	6.71E-06
Tetrachloroethylene	127-18-4	1.1E+02	4.36E-01	5.38E-07	9.80E-05
Tetrahydrofuran	109-99-9	2.5E+00	8.97E-03	0.00E+00	3.25E-02
Toluene	108-88-3	1.9E+01	7.98E-02	0.00E+00	2.00E-04
Trichloroethylene	79-01-6	9.9E+01	4.12E-02	1.86E-06	1.03E-03
Trichloroflouromethane	75-69-4	8.5E+02	3.56E+00	0.00E+00	5.09E-03
Vinyl acetate	108-05-4	4.8E+01	2.00E-01	0.00E+00	9.99E-04
<b>Notes:</b>			<b>Cumulative risk</b>	<b>3.12E-06</b>	<b>8.12E-02</b>

1. The soil vapor Exposure Point Concentration (EPC) is the maximum detected level.
2. Estimated indoor air concentrations via US EPA air simulation model - 2006
3. ELCR - Excess Lifetime Cancer Risk Limit = 1E-05
4. HI - Hazard Index for non-cancer risk limit = 1E+01



DRAFT

## FIGURES



Environmental



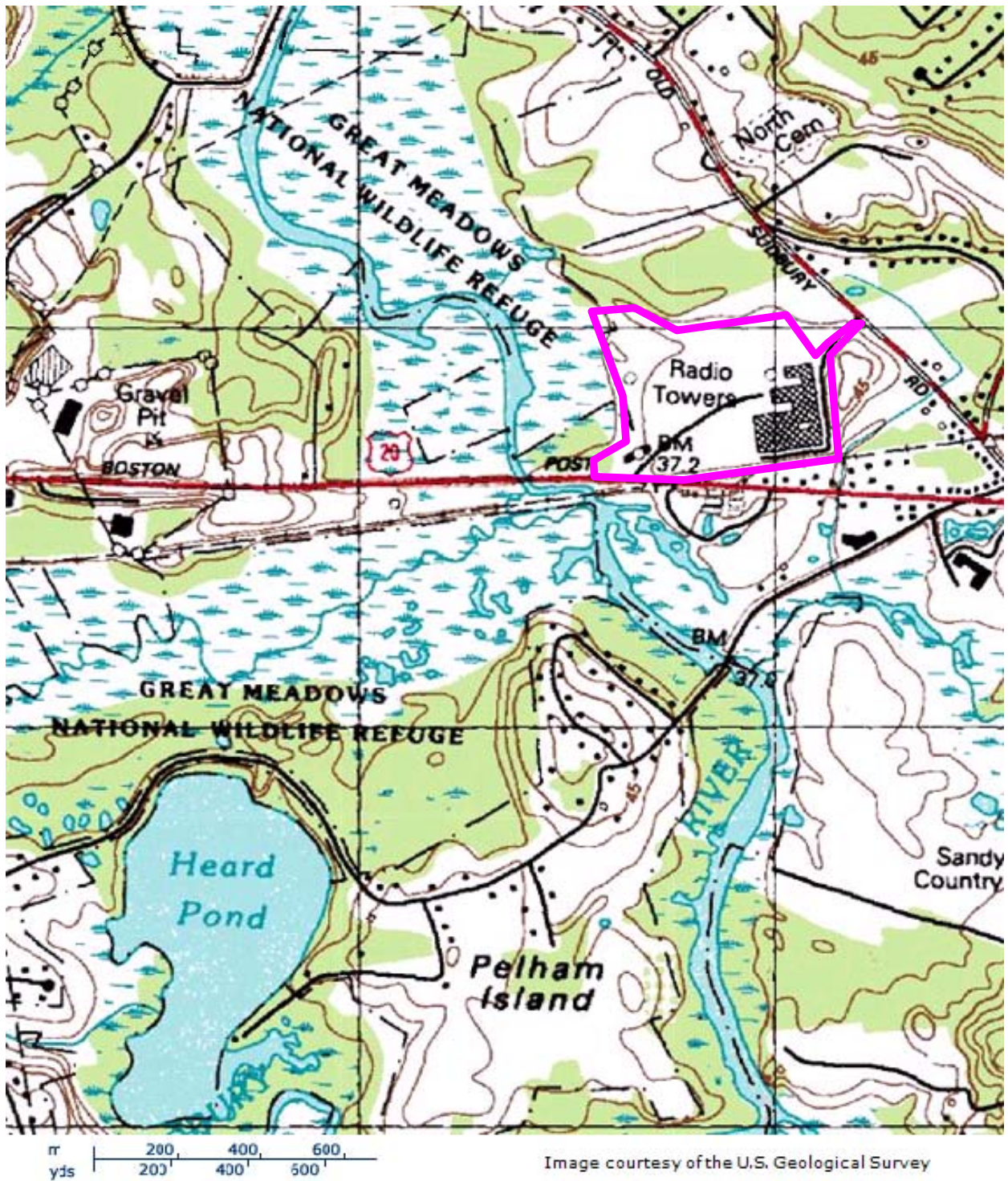
Construction



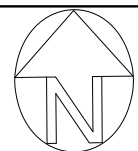
Air Quality



Energy



USGS Topographic Map, 1987  
Wayland, MA Quadrangle  
Contour Interval: As Shown



# **SITE LOCUS MAP**

Former Raytheon Facility  
430 Boston Post Road  
Wayland, MA

SCALE: AS SHOWN

July 2011

VERTEX Proj. No. 19163

**VERTEX**

Environmental Services, Inc.  
FIGURE NO. 1



DRAFT

**APPENDIX A**  
**LABORATORY ANALYTICAL REPORTS**



Environmental



Construction



Air Quality



Energy



## ANALYTICAL REPORT

Lab Number: L0811375

Client: Haley & Aldrich, Inc.  
465 Medford Street, Suite 2200  
Charlestown, MA 02129-1400

ATTN: Kate Leblanc

Project Name: WAYLAND TOWN CENTER

Project Number: 12069-054

Report Date: 08/07/08

Certifications & Approvals: MA (M-MA086), NY NELAC (11148), CT (PH-0574), NH (2003), NJ (MA935), RI (LAO00065), ME (MA0086), PA (Registration #68-03671), USDA (Permit #S-72578), US Army Corps of Engineers, Naval FESC.

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



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Sample Location</b>
L0811375-01	S8	WAYLAND, MA
L0811375-02	S10	WAYLAND, MA
L0811375-03	S16	WAYLAND, MA
L0811375-04	SE1	WAYLAND, MA
L0811375-05	SE2	WAYLAND, MA

Project Name: WAYLAND TOWN CENTER

Lab Number: L0811375

Project Number: 12069-054

Report Date: 08/07/08

**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.

<b>An affirmative response to questions A, B, C &amp; D is required for "Presumptive Certainty" status</b>		
A	Were all samples received by the laboratory in a condition consistent with those described on their Chain-of-Custody documentation for the data set?	YES
B	Were all QA/QC procedures required for the specified analytical methods(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	YES
C	Does the analytical data included in this report meet all the requirements for "Presumptive Certainty", as described in section 2.0 of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	YES
D	VPH and EPH methods only: Was the VPH or EPH method run without significant modifications, as specified in Section 11.3?	YES
<b>A response to questions E and F is required for "Presumptive Certainty" status</b>		
E	Were all QC performance standards and recommendations for the specified method(s) achieved?	NO
F	Were results for all analyte-list compounds/elements for the specified method(s) reported?	NO
<b>For any questions answered "No", please refer to the case narrative section on the following page(s).</b>		

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





**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

### 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.

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.

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.

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#### MCP Related Narratives

##### EPH

L0811375-03 has elevated detection limits due to the dilution required by matrix interferences encountered during the concentration of the sample.

##### PCB

In reference to question E:

L0811375-01: The Continuing Calibration criteria was not met for the confirmatory column; however, the sample was non-detect for the target analytes. Therefore, no further actions were taken.

##### Metals

In reference to question F:

All samples were analyzed for a subset of MCP elements per the Chain of Custody.

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:



Title: Technical Director/Representative

Date: 08/07/08



# ORGANICS

# **PETROLEUM HYDROCARBONS**

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

**Lab ID:** L0811375-01  
**Client ID:** S8  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 19:59  
**Analyst:** MF  
**Percent Solids:** 88%

**Date Collected:** 08/01/08 08:15  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
-----------	--------	-----------	-------	-----	-----------------

**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	7.58	1
C19-C36 Aliphatics	ND		mg/kg	7.58	1
C11-C22 Aromatics	8.44		mg/kg	7.58	1
C11-C22 Aromatics, Adjusted	8.44		mg/kg	7.58	1
Naphthalene	ND		mg/kg	0.379	1
2-Methylnaphthalene	ND		mg/kg	0.379	1
Acenaphthylene	ND		mg/kg	0.379	1
Acenaphthene	ND		mg/kg	0.379	1
Fluorene	ND		mg/kg	0.379	1
Phenanthrene	ND		mg/kg	0.379	1
Anthracene	ND		mg/kg	0.379	1
Fluoranthene	ND		mg/kg	0.379	1
Pyrene	ND		mg/kg	0.379	1
Benzo(a)anthracene	ND		mg/kg	0.379	1
Chrysene	ND		mg/kg	0.379	1
Benzo(b)fluoranthene	ND		mg/kg	0.379	1
Benzo(k)fluoranthene	ND		mg/kg	0.379	1
Benzo(a)pyrene	ND		mg/kg	0.379	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.379	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.379	1
Benzo(ghi)perylene	ND		mg/kg	0.379	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

Lab ID: L0811375-01

Date Collected: 08/01/08 08:15

Client ID: S8

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	47		40-140
o-Terphenyl	69		40-140
2-Fluorobiphenyl	88		40-140
2-Bromonaphthalene	86		40-140

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

**Lab ID:** L0811375-02  
**Client ID:** S10  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 21:37  
**Analyst:** MF  
**Percent Solids:** 90%

**Date Collected:** 08/01/08 09:00  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

Condition of sample received: Satisfactory  
 Sample Temperature upon receipt: Received on Ice  
 Sample Extraction method: Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	7.41	1
C19-C36 Aliphatics	ND		mg/kg	7.41	1
C11-C22 Aromatics	8.75		mg/kg	7.41	1
C11-C22 Aromatics, Adjusted	8.75		mg/kg	7.41	1
Naphthalene	ND		mg/kg	0.370	1
2-Methylnaphthalene	ND		mg/kg	0.370	1
Acenaphthylene	ND		mg/kg	0.370	1
Acenaphthene	ND		mg/kg	0.370	1
Fluorene	ND		mg/kg	0.370	1
Phenanthrene	ND		mg/kg	0.370	1
Anthracene	ND		mg/kg	0.370	1
Fluoranthene	ND		mg/kg	0.370	1
Pyrene	ND		mg/kg	0.370	1
Benzo(a)anthracene	ND		mg/kg	0.370	1
Chrysene	ND		mg/kg	0.370	1
Benzo(b)fluoranthene	ND		mg/kg	0.370	1
Benzo(k)fluoranthene	ND		mg/kg	0.370	1
Benzo(a)pyrene	ND		mg/kg	0.370	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.370	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.370	1
Benzo(ghi)perylene	ND		mg/kg	0.370	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS****Lab ID:** L0811375-02**Date Collected:** 08/01/08 09:00**Client ID:** S10**Date Received:** 08/01/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	47		40-140
o-Terphenyl	73		40-140
2-Fluorobiphenyl	84		40-140
2-Bromonaphthalene	84		40-140

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

**Lab ID:** L0811375-03  
**Client ID:** S16  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/06/08 18:19  
**Analyst:** MF  
**Percent Solids:** 94%

**Date Collected:** 08/01/08 09:50  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	14.2	2
C19-C36 Aliphatics	32.5		mg/kg	14.2	2
C11-C22 Aromatics	32.3		mg/kg	14.2	2
C11-C22 Aromatics, Adjusted	32.3		mg/kg	14.2	2
Naphthalene	ND		mg/kg	0.709	2
2-Methylnaphthalene	ND		mg/kg	0.709	2
Acenaphthylene	ND		mg/kg	0.709	2
Acenaphthene	ND		mg/kg	0.709	2
Fluorene	ND		mg/kg	0.709	2
Phenanthrene	ND		mg/kg	0.709	2
Anthracene	ND		mg/kg	0.709	2
Fluoranthene	ND		mg/kg	0.709	2
Pyrene	ND		mg/kg	0.709	2
Benzo(a)anthracene	ND		mg/kg	0.709	2
Chrysene	ND		mg/kg	0.709	2
Benzo(b)fluoranthene	ND		mg/kg	0.709	2
Benzo(k)fluoranthene	ND		mg/kg	0.709	2
Benzo(a)pyrene	ND		mg/kg	0.709	2
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.709	2
Dibenzo(a,h)anthracene	ND		mg/kg	0.709	2
Benzo(ghi)perylene	ND		mg/kg	0.709	2

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

Lab ID: L0811375-03

Date Collected: 08/01/08 09:50

Client ID: S16

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	58		40-140
o-Terphenyl	72		40-140
2-Fluorobiphenyl	72		40-140
2-Bromonaphthalene	73		40-140



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

**Lab ID:** L0811375-04  
**Client ID:** SE1  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/06/08 17:51  
**Analyst:** MF  
**Percent Solids:** 85%

**Date Collected:** 08/01/08 10:40  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	7.84	1
C19-C36 Aliphatics	ND		mg/kg	7.84	1
C11-C22 Aromatics	10.0		mg/kg	7.84	1
C11-C22 Aromatics, Adjusted	10.0		mg/kg	7.84	1
Naphthalene	ND		mg/kg	0.392	1
2-Methylnaphthalene	ND		mg/kg	0.392	1
Acenaphthylene	ND		mg/kg	0.392	1
Acenaphthene	ND		mg/kg	0.392	1
Fluorene	ND		mg/kg	0.392	1
Phenanthrene	ND		mg/kg	0.392	1
Anthracene	ND		mg/kg	0.392	1
Fluoranthene	ND		mg/kg	0.392	1
Pyrene	ND		mg/kg	0.392	1
Benzo(a)anthracene	ND		mg/kg	0.392	1
Chrysene	ND		mg/kg	0.392	1
Benzo(b)fluoranthene	ND		mg/kg	0.392	1
Benzo(k)fluoranthene	ND		mg/kg	0.392	1
Benzo(a)pyrene	ND		mg/kg	0.392	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.392	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.392	1
Benzo(ghi)perylene	ND		mg/kg	0.392	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

Lab ID: L0811375-04

Date Collected: 08/01/08 10:40

Client ID: SE1

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	53		40-140
o-Terphenyl	62		40-140
2-Fluorobiphenyl	70		40-140
2-Bromonaphthalene	68		40-140

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

**Lab ID:** L0811375-05  
**Client ID:** SE2  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 21:05  
**Analyst:** MF  
**Percent Solids:** 83%

**Date Collected:** 08/01/08 11:25  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	8.03	1
C19-C36 Aliphatics	ND		mg/kg	8.03	1
C11-C22 Aromatics	ND		mg/kg	8.03	1
C11-C22 Aromatics, Adjusted	ND		mg/kg	8.03	1
Naphthalene	ND		mg/kg	0.402	1
2-Methylnaphthalene	ND		mg/kg	0.402	1
Acenaphthylene	ND		mg/kg	0.402	1
Acenaphthene	ND		mg/kg	0.402	1
Fluorene	ND		mg/kg	0.402	1
Phenanthrene	ND		mg/kg	0.402	1
Anthracene	ND		mg/kg	0.402	1
Fluoranthene	ND		mg/kg	0.402	1
Pyrene	ND		mg/kg	0.402	1
Benzo(a)anthracene	ND		mg/kg	0.402	1
Chrysene	ND		mg/kg	0.402	1
Benzo(b)fluoranthene	ND		mg/kg	0.402	1
Benzo(k)fluoranthene	ND		mg/kg	0.402	1
Benzo(a)pyrene	ND		mg/kg	0.402	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.402	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.402	1
Benzo(ghi)perylene	ND		mg/kg	0.402	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

Lab ID: L0811375-05

Date Collected: 08/01/08 11:25

Client ID: SE2

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	45		40-140
o-Terphenyl	71		40-140
2-Fluorobiphenyl	80		40-140
2-Bromonaphthalene	80		40-140

Project Name: WAYLAND TOWN CENTER

Lab Number: L0811375

Project Number: 12069-054

Report Date: 08/07/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 61,EPH-04-1  
 Analytical Date: 08/05/08 15:01  
 Analyst: MF

Extraction Method: EPA 3546  
 Extraction Date: 08/02/08 09:30

Parameter	Result	Qualifier	Units	RDL
Extractable Petroleum Hydrocarbons for sample(s): 01-05 Batch: WG331278-1				
C9-C18 Aliphatics	ND		mg/kg	6.67
C19-C36 Aliphatics	ND		mg/kg	6.67
C11-C22 Aromatics	ND		mg/kg	6.67
C11-C22 Aromatics, Adjusted	ND		mg/kg	6.67
Naphthalene	ND		mg/kg	0.333
2-Methylnaphthalene	ND		mg/kg	0.333
Acenaphthylene	ND		mg/kg	0.333
Acenaphthene	ND		mg/kg	0.333
Fluorene	ND		mg/kg	0.333
Phenanthrene	ND		mg/kg	0.333
Anthracene	ND		mg/kg	0.333
Fluoranthene	ND		mg/kg	0.333
Pyrene	ND		mg/kg	0.333
Benzo(a)anthracene	ND		mg/kg	0.333
Chrysene	ND		mg/kg	0.333
Benzo(b)fluoranthene	ND		mg/kg	0.333
Benzo(k)fluoranthene	ND		mg/kg	0.333
Benzo(a)pyrene	ND		mg/kg	0.333
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.333
Dibenzo(a,h)anthracene	ND		mg/kg	0.333
Benzo(ghi)perylene	ND		mg/kg	0.333

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	58		40-140
o-Terphenyl	65		40-140
2-Fluorobiphenyl	80		40-140
2-Bromonaphthalene	80		40-140

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-054

**Lab Number:** L0811375

**Report Date:** 08/07/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Extractable Petroleum Hydrocarbons Associated sample(s): 01-05 Batch: WG331278-2 WG331278-3					
C9-C18 Aliphatics	51	54	40-140	6	25
C19-C36 Aliphatics	60	62	40-140	3	25
C11-C22 Aromatics	80	80	40-140	0	25
Naphthalene	64	64	40-140	0	25
2-Methylnaphthalene	64	63	40-140	2	25
Acenaphthylene	64	64	40-140	0	25
Acenaphthene	68	68	40-140	0	25
Fluorene	74	73	40-140	1	25
Phenanthrene	80	78	40-140	3	25
Anthracene	78	76	40-140	3	25
Fluoranthene	86	85	40-140	1	25
Pyrene	86	85	40-140	1	25
Benzo(a)anthracene	86	86	40-140	0	25
Chrysene	87	87	40-140	0	25
Benzo(b)fluoranthene	84	84	40-140	0	25
Benzo(k)fluoranthene	87	87	40-140	0	25
Benzo(a)pyrene	77	77	40-140	0	25
Indeno(1,2,3-cd)Pyrene	79	79	40-140	0	25
Dibenzo(a,h)anthracene	82	82	40-140	0	25
Benzo(ghi)perylene	80	80	40-140	0	25
Nonane (C9)	39	44	30-140	12	25

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-054

**Lab Number:** L0811375

**Report Date:** 08/07/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Extractable Petroleum Hydrocarbons Associated sample(s): 01-05 Batch: WG331278-2 WG331278-3					
Decane (C10)	46	51	40-140	10	25
Dodecane (C12)	54	56	40-140	4	25
Tetradecane (C14)	55	57	40-140	4	25
Hexadecane (C16)	58	60	40-140	3	25
Octadecane (C18)	59	60	40-140	2	25
Nonadecane (C19)	60	61	40-140	2	25
Eicosane (C20)	60	63	40-140	5	25
Docosane (C22)	62	64	40-140	3	25
Tetracosane (C24)	65	67	40-140	3	25
Hexacosane (C26)	62	63	40-140	2	25
Octacosane (C28)	62	63	40-140	2	25
Triacontane (C30)	60	62	40-140	3	25
Hexatriacontane (C36)	60	61	40-140	2	25
% Naphthalene Breakthrough	0	0		NC	
% 2-Methylnaphthalene Breakthrough	0	0		NC	

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-054

**Lab Number:** L0811375

**Report Date:** 08/07/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Extractable Petroleum Hydrocarbons Associated sample(s): 01-05 Batch: WG331278-2 WG331278-3					

Surrogate	LCS %Recovery	Qualifier	LCSD %Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	52		56		40-140
o-Terphenyl	85		84		40-140
2-Fluorobiphenyl	83		84		40-140
2-Bromonaphthalene	85		86		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

**Fractionation Check Standard  
Quality Control**

Fractionation check standard for 200818205

Parameter	% Recovery	QC Criteria
C9-C18 Aliphatics	77	40-140
C19-C36 Aliphatics	76	40-140
C11-C22 Aromatics	86	40-140
Naphthalene	82	40-140
2-Methylnaphthalene	78	40-140
Acenaphthylene	76	40-140
Acenaphthene	80	40-140
Fluorene	79	40-140
Phenanthrene	78	40-140
Anthracene	82	40-140
Fluoranthene	84	40-140
Pyrene	84	40-140
Benzo(a)anthracene	82	40-140
Chrysene	88	40-140
Benzo(b)fluoranthene	81	40-140
Benzo(k)fluoranthene	97	40-140
Benzo(a)pyrene	78	40-140
Indeno(1,2,3-cd)Pyrene	76	40-140
Dibenzo(a,h)anthracene	83	40-140
Benzo(g,h,i)perylene	82	40-140
Nonane	72	30-140
Decane	77	40-140
Dodecane	80	40-140
Tetradecane	76	40-140
Hexadecane	78	40-140
Octadecane	76	40-140
Nonadecane	75	40-140
Eicosane	77	40-140
Docosane	79	40-140
Tetracosane	83	40-140
Hexacosane	78	40-140
Octacosane	77	40-140
triacontane	76	40-140
Hexatriacontane	75	40-140
% Naphthalene Breakthrough	0	40-140
% 2-Methylnaphthalene Breakthrough	0	40-140

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**Fractionation Check Standard  
Quality Control**

Fractionation check standard for 200818205

<b>Surrogate</b>	<b>% Recovery</b>	<b>QC Criteria</b>
Chloro-Octadecane	66	40-140
o-Terphenyl	83	40-140
2-Fluorobiphenyl	75	40-140
2-Bromonaphthalene	76	40-140

# PCBS

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

### SAMPLE RESULTS

**Lab ID:** L0811375-01  
**Client ID:** S8  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 23:10  
**Analyst:** JB  
**Percent Solids:** 88%

**Date Collected:** 08/01/08 08:15  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	37.9	1
Aroclor 1221	ND		ug/kg	37.9	1
Aroclor 1232	ND		ug/kg	37.9	1
Aroclor 1242	ND		ug/kg	37.9	1
Aroclor 1248	ND		ug/kg	37.9	1
Aroclor 1254	ND		ug/kg	37.9	1
Aroclor 1260	ND		ug/kg	37.9	1
Aroclor 1262	ND		ug/kg	37.9	1
Aroclor 1268	ND		ug/kg	37.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	53		30-150	A
Decachlorobiphenyl	53		30-150	A
2,4,5,6-Tetrachloro-m-xylene	64		30-150	B
Decachlorobiphenyl	72		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

### SAMPLE RESULTS

**Lab ID:** L0811375-02  
**Client ID:** S10  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 23:37  
**Analyst:** JB  
**Percent Solids:** 90%

**Date Collected:** 08/01/08 09:00  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	37.0	1
Aroclor 1221	ND		ug/kg	37.0	1
Aroclor 1232	ND		ug/kg	37.0	1
Aroclor 1242	ND		ug/kg	37.0	1
Aroclor 1248	ND		ug/kg	37.0	1
Aroclor 1254	ND		ug/kg	37.0	1
Aroclor 1260	ND		ug/kg	37.0	1
Aroclor 1262	ND		ug/kg	37.0	1
Aroclor 1268	ND		ug/kg	37.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	54		30-150	A
Decachlorobiphenyl	59		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	72		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

### SAMPLE RESULTS

**Lab ID:** L0811375-03  
**Client ID:** S16  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 23:51  
**Analyst:** JB  
**Percent Solids:** 94%

**Date Collected:** 08/01/08 09:50  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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#### Polychlorinated Biphenyls by MCP 8082

Aroclor 1016	ND		ug/kg	35.5	1
Aroclor 1221	ND		ug/kg	35.5	1
Aroclor 1232	ND		ug/kg	35.5	1
Aroclor 1242	ND		ug/kg	35.5	1
Aroclor 1248	ND		ug/kg	35.5	1
Aroclor 1254	ND		ug/kg	35.5	1
Aroclor 1260	ND		ug/kg	35.5	1
Aroclor 1262	ND		ug/kg	35.5	1
Aroclor 1268	ND		ug/kg	35.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60		30-150	A
Decachlorobiphenyl	52		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	74		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

### SAMPLE RESULTS

**Lab ID:** L0811375-04  
**Client ID:** SE1  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/06/08 00:05  
**Analyst:** JB  
**Percent Solids:** 85%

**Date Collected:** 08/01/08 10:40  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	39.2	1
Aroclor 1221	ND		ug/kg	39.2	1
Aroclor 1232	ND		ug/kg	39.2	1
Aroclor 1242	ND		ug/kg	39.2	1
Aroclor 1248	ND		ug/kg	39.2	1
Aroclor 1254	ND		ug/kg	39.2	1
Aroclor 1260	ND		ug/kg	39.2	1
Aroclor 1262	ND		ug/kg	39.2	1
Aroclor 1268	ND		ug/kg	39.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	56		30-150	A
Decachlorobiphenyl	48		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	62		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

### SAMPLE RESULTS

**Lab ID:** L0811375-05  
**Client ID:** SE2  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/06/08 00:19  
**Analyst:** JB  
**Percent Solids:** 83%

**Date Collected:** 08/01/08 11:25  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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#### Polychlorinated Biphenyls by MCP 8082

Aroclor 1016	ND		ug/kg	40.2	1
Aroclor 1221	ND		ug/kg	40.2	1
Aroclor 1232	ND		ug/kg	40.2	1
Aroclor 1242	ND		ug/kg	40.2	1
Aroclor 1248	ND		ug/kg	40.2	1
Aroclor 1254	ND		ug/kg	40.2	1
Aroclor 1260	ND		ug/kg	40.2	1
Aroclor 1262	ND		ug/kg	40.2	1
Aroclor 1268	ND		ug/kg	40.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	53		30-150	A
Decachlorobiphenyl	49		30-150	A
2,4,5,6-Tetrachloro-m-xylene	64		30-150	B
Decachlorobiphenyl	65		30-150	B



Project Name: WAYLAND TOWN CENTER

Lab Number: L0811375

Project Number: 12069-054

Report Date: 08/07/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 64,8082  
 Analytical Date: 08/04/08 13:55  
 Analyst: JB

Extraction Method: EPA 3546  
 Extraction Date: 08/04/08 08:45  
 Cleanup Method1: EPA 3665A  
 Cleanup Date1: 08/04/08

Parameter	Result	Qualifier	Units	RDL
Polychlorinated Biphenyls by MCP 8082 for sample(s): 01-05 Batch: WG331341-1				
Aroclor 1016	ND		ug/kg	33.3
Aroclor 1221	ND		ug/kg	33.3
Aroclor 1232	ND		ug/kg	33.3
Aroclor 1242	ND		ug/kg	33.3
Aroclor 1248	ND		ug/kg	33.3
Aroclor 1254	ND		ug/kg	33.3
Aroclor 1260	ND		ug/kg	33.3
Aroclor 1262	ND		ug/kg	33.3
Aroclor 1268	ND		ug/kg	33.3

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	78		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	92		30-150	B

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-054

**Lab Number:** L0811375

**Report Date:** 08/07/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Polychlorinated Biphenyls by MCP 8082 Associated sample(s): 01-05 Batch: WG331341-2 WG331341-3					
Aroclor 1016	89	75	40-140	17	30
Aroclor 1260	83	74	40-140	11	30

Surrogate	LCS %Recovery	Qualifier	LCSD %Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		65		30-150	A
Decachlorobiphenyl	84		77		30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		69		30-150	B
Decachlorobiphenyl	90		80		30-150	B

## **METALS**

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

Lab ID: L0811375-01

Date Collected: 08/01/08 08:15

Client ID: S8

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	5.3		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:52	EPA 3050B	60,6010B	MG
Barium, Total	32		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:52	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:52	EPA 3050B	60,6010B	MG
Chromium, Total	11		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:52	EPA 3050B	60,6010B	MG
Lead, Total	11		mg/kg	2.7	1	08/04/08 12:00	08/05/08 11:52	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.09	1	08/04/08 23:00	08/05/08 18:04	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.7	1	08/04/08 12:00	08/05/08 11:52	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:52	EPA 3050B	60,6010B	MG



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

Lab ID: L0811375-02

Date Collected: 08/01/08 09:00

Client ID: S10

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	6.4		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:55	EPA 3050B	60,6010B	MG
Barium, Total	30		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:55	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:55	EPA 3050B	60,6010B	MG
Chromium, Total	14		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:55	EPA 3050B	60,6010B	MG
Lead, Total	9.1		mg/kg	2.7	1	08/04/08 12:00	08/05/08 11:55	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.09	1	08/04/08 23:00	08/05/08 18:06	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.7	1	08/04/08 12:00	08/05/08 11:55	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.54	1	08/04/08 12:00	08/05/08 11:55	EPA 3050B	60,6010B	MG



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811375**Project Number:** 12069-054**Report Date:** 08/07/08**SAMPLE RESULTS**

Lab ID: L0811375-03

Date Collected: 08/01/08 09:50

Client ID: S16

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	5.5		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:58	EPA 3050B	60,6010B	MG
Barium, Total	26		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:58	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:58	EPA 3050B	60,6010B	MG
Chromium, Total	11		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:58	EPA 3050B	60,6010B	MG
Lead, Total	4.5		mg/kg	2.5	1	08/04/08 12:00	08/05/08 11:58	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.08	1	08/04/08 23:00	08/05/08 18:12	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.5	1	08/04/08 12:00	08/05/08 11:58	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:58	EPA 3050B	60,6010B	MG

Project Name: WAYLAND TOWN CENTER

Lab Number: L0811375

Project Number: 12069-054

Report Date: 08/07/08

## SAMPLE RESULTS

Lab ID: L0811375-04  
 Client ID: SE1  
 Sample Location: WAYLAND, MA  
 Matrix: Soil  
 Percent Solids: 85%

Date Collected: 08/01/08 10:40  
 Date Received: 08/01/08  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	5.8		mg/kg	0.54	1	08/04/08 12:00	08/05/08 12:00	EPA 3050B	60,6010B	MG
Barium, Total	20		mg/kg	0.54	1	08/04/08 12:00	08/05/08 12:00	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.54	1	08/04/08 12:00	08/05/08 12:00	EPA 3050B	60,6010B	MG
Chromium, Total	7.3		mg/kg	0.54	1	08/04/08 12:00	08/05/08 12:00	EPA 3050B	60,6010B	MG
Lead, Total	ND		mg/kg	2.7	1	08/04/08 12:00	08/05/08 12:00	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.10	1	08/04/08 23:00	08/05/08 18:13	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.7	1	08/04/08 12:00	08/05/08 12:00	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.54	1	08/04/08 12:00	08/05/08 12:00	EPA 3050B	60,6010B	MG



Project Name: WAYLAND TOWN CENTER

Lab Number: L0811375

Project Number: 12069-054

Report Date: 08/07/08

## SAMPLE RESULTS

Lab ID: L0811375-05  
 Client ID: SE2  
 Sample Location: WAYLAND, MA  
 Matrix: Soil  
 Percent Solids: 83%

Date Collected: 08/01/08 11:25  
 Date Received: 08/01/08  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	6.4		mg/kg	0.58	1	08/04/08 12:00	08/05/08 12:03	EPA 3050B	60,6010B	MG
Barium, Total	32		mg/kg	0.58	1	08/04/08 12:00	08/05/08 12:03	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.58	1	08/04/08 12:00	08/05/08 12:03	EPA 3050B	60,6010B	MG
Chromium, Total	12		mg/kg	0.58	1	08/04/08 12:00	08/05/08 12:03	EPA 3050B	60,6010B	MG
Lead, Total	3.9		mg/kg	2.9	1	08/04/08 12:00	08/05/08 12:03	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.10	1	08/04/08 23:00	08/05/08 18:15	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.9	1	08/04/08 12:00	08/05/08 12:03	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.58	1	08/04/08 12:00	08/05/08 12:03	EPA 3050B	60,6010B	MG





Project Name: WAYLAND TOWN CENTER

Lab Number: L0811375

Project Number: 12069-054

Report Date: 08/07/08

## Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series for sample(s): 01-05 Batch: WG331366-1									
Arsenic, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Barium, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Chromium, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Lead, Total	ND		mg/kg	2.5	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Selenium, Total	ND		mg/kg	2.5	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Silver, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG

### Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series for sample(s): 01-05 Batch: WG331485-1									
Mercury, Total	ND		mg/kg	0.08	1	08/04/08 23:00	08/05/08 17:38	64,7471A	HG

### Prep Information

Digestion Method: EPA 7471A

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-054

**Lab Number:** L0811375

**Report Date:** 08/07/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals by MCP 6000/7000 series Associated sample(s): 01-05 Batch: WG331366-2 WG331366-3					
Arsenic, Total	89	92	75-125	3	30
Barium, Total	90	91	75-125	1	30
Cadmium, Total	92	95	75-125	3	30
Chromium, Total	90	93	75-125	3	30
Lead, Total	92	91	75-125	1	30
Selenium, Total	89	91	75-125	2	30
Silver, Total	92	94	75-125	2	30
Total Metals by MCP 6000/7000 series Associated sample(s): 01-05 Batch: WG331485-2 WG331485-3					
Mercury, Total	98	100	75-125	2	30

# **INORGANICS & MISCELLANEOUS**

**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811375**Report Date:** 08/07/08**SAMPLE RESULTS****Lab ID:** L0811375-01**Client ID:** S8**Sample Location:** WAYLAND, MA**Matrix:** Soil**Date Collected:** 08/01/08 08:15**Date Received:** 08/01/08**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	88		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811375**Report Date:** 08/07/08**SAMPLE RESULTS****Lab ID:** L0811375-02**Client ID:** S10**Sample Location:** WAYLAND, MA**Matrix:** Soil**Date Collected:** 08/01/08 09:00**Date Received:** 08/01/08**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	90		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

**SAMPLE RESULTS**

**Lab ID:** L0811375-03  
**Client ID:** S16  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil

**Date Collected:** 08/01/08 09:50  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	94		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

**SAMPLE RESULTS**

**Lab ID:** L0811375-04  
**Client ID:** SE1  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil

**Date Collected:** 08/01/08 10:40  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	85		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

**SAMPLE RESULTS**

**Lab ID:** L0811375-05  
**Client ID:** SE2  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil

**Date Collected:** 08/01/08 11:25  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	83		%	0.10	1	-	08/02/08 13:50	30,2540G	NM





**Lab Duplicate Analysis**  
Batch Quality Control**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811375**Report Date:** 08/07/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Associated sample(s): 01-05   QC Batch ID: WG331294-1   QC Sample: L0811343-01   Client ID: DUP Sample					
Solids, Total	86	88	%	2	20

**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811375**Report Date:** 08/07/08**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

Container ID	Container Type	Cooler	pH	Temp	Pres	Seal	Analysis
L0811375-01A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)
L0811375-02A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)
L0811375-03A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)
L0811375-04A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)
L0811375-05A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)

\*Hold days indicated by values in parentheses



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

## 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.
- 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.
- NI - Not Ignitable.
- 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.
- ND - Not detected at the reported detection limit for the sample.
- RDL - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL 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.

### **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**

The following data qualifiers have been identified for use under the CT DEP Reasonable Confidence Protocols.

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.

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

J - Estimated value. The analyte was tentatively identified; the quantitation is an estimation. (Tentatively identified compounds only.)

### **Standard Qualifiers**

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

Report Format: Not Specified



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811375  
**Report Date:** 08/07/08

## REFERENCES

- 30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.
- 60 Quality Assurance and Quality Control Requirements and Performance Standards for SW-846 Methods. MADEP BWSC. WSC-CAM-IIA (Revision 4), WSC-CAM-V C (Revision 2), WSC-CAM-IIIA (Revision 5). May 2004.
- 61 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH). Massachusetts Department of Environmental Protection, DEA/ORS/BWSC. May 2004, Revision 1.1.
- 64 Quality Assurance and Quality Control Requirements and Performance Standards for SW-846 Methods. MADEP BWSC. WSC-CAM-IIA (Revision 4), WSC-CAM-V C (Revision 2), WSC-CAM-IIIA (Revision 5). August 2004.

## LIMITATION OF LIABILITIES

Alpha Woods Hole Labs 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 Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Woods Hole Labs 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 Woods Hole Labs.

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.



ALPHA Job # 10811375**HALEY & ALDRICH**Haley & Aldrich, Inc.  
465 Medford St.,  
Suite 2200,  
Boston, MA 02129-1402

## CHAIN OF CUSTODY RECORD

Phone (617) 886-7400  
Fax (617) 886-7600  
Page 1 of 1H&A FILE NO. 12069-054  
PROJECT NAME Wingfield Park Center  
H&A CONTACT Steve ParnicaLABORATORY ADDRESS 465 Medford St.,  
CONTACT Kate O'BrienDELIVERY DATE 8/15/08  
TURNAROUND TIME 15 DAY  
PROJECT MANAGER Kate O'Brien

Sample No.	Date	Time	Depth	Type	VOA	ARNC PAH only	MCP Metals	Perchlorate PCBs	VPH Full Suite C-ranges only	EPH Full Suite C-ranges only	TPH (specify)	TCLP (specify)	Reactivity Ignitability Corrosivity	Number of Containers	Comments (special instructions, precautions, additional method numbers, etc.)
SB	8/1/08	0815	0-6'	Soil	X	X	X	X	X	X	X	X	X	1	DRUG & Metals
SB	8/1/08	0900			X	X	X	X	X	X	X	X	X	1	② PCBs 8082
SB	8/1/08	1040			X	X	X	X	X	X	X	X	X	1	③ EPH carbon + target analytes
SB	8/1/08	1115			X	X	X	X	X	X	X	X	X	1	
<p>Sampled and Relinquished by: <u>Don Banks</u> Sign: <u>Don Banks</u> Received by: <u>Don Banks</u></p> <p>Print: <u>Don Banks</u> Print: <u>Don Banks</u></p> <p>Firm: <u>ALPHA</u> Firm: <u>ALPHA</u></p> <p>Date: <u>8/1/08</u> Time: <u>1545</u> Date: <u>8/1/08</u> Time: <u>1545</u></p> <p>Relinquished by: <u>Don Banks</u> Sign: <u>Don Banks</u> Received by: <u>Don Banks</u></p> <p>Print: <u>Don Banks</u> Print: <u>Don Banks</u></p> <p>Firm: <u>ALPHA</u> Firm: <u>ALPHA</u></p> <p>Date: <u>8/1/08</u> Time: <u>1745</u> Date: <u>8/1/08</u> Time: <u>1745</u></p> <p>Relinquished by: <u>Don Banks</u> Sign: <u>Don Banks</u> Received by: <u>Don Banks</u></p> <p>Print: <u>Don Banks</u> Print: <u>Don Banks</u></p> <p>Firm: <u>ALPHA</u> Firm: <u>ALPHA</u></p> <p>Date: <u>8/1/08</u> Time: <u>1745</u> Date: <u>8/1/08</u> Time: <u>1745</u></p>															

## PRESUMPTIVE CERTAINTY DATA PACKAGE (Laboratory to use applicable DEP CAM methods)

Sample collected: A Sample filtered: D

C: NaOH E: H<sub>2</sub>SO<sub>4</sub> G: Methanol

D: HNO F: HCl H: Water/NaHSO<sub>4</sub> (catalyst)

## PRESERVATION KEY

VOA: Vial  
Amber Glass  
Plastic Bottle  
Preservative  
Volume

## SOLID

VOA: Vial  
Amber Glass  
Plastic Bottle  
Preservative  
Volume

Existence samples were tampered with? YES NO

If YES, please explain in section below.

## Required Reporting Limits and Data Quality Objectives

PC-S1 ☒ S1 ☐ GW1 ☐  
 PC-S2 ☐ S2 ☐ GW2 ☐  
 PC-GW1 ☐ S3 ☐ GW3 ☐  
 PC-GW2 ☐

ALPHA Job # 1081375

**HALEY & ALDRICH**  
465 Medford St.,  
Suite 2200,  
Boston, MA 02129-1402

# CHAIN OF CUSTODY RECORD

Phone (617) 886-7400  
Fax (617) 886-7600  
Page 1 of 1

H&A FILE NO. 12069-054  
PROJECT NAME Weymouth Town Center  
H&A CONTACT Steve Parnica

LABORATORY ADDRESS Weymouth, MA  
CONTACT Kate O'Brien

DELIVERY DATE 8/15/08  
TURNAROUND TIME 24 HRS  
PROJECT MANAGER Kate O'Brien

Sample No.	Date	Time	Depth	Type	Analysis Requested										Number of Containers	Comments (special instructions, precautions, additional method numbers, etc.)	
					VOA	AAHC PAH only	MCP Metals	Perfluorinated PCBs	VPH Full Suite C-ranges only	EPH Full Suite C-ranges only	TPH (specify)	TCLP (specify)	Reactivity Ignitability Corrosivity				
SB	8/1/08	0815	0-6'	Soil	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	① DILUA & Metals ② PCBs 8082 ③ EPH carbon + target analytes
SB		0900			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
SB		1040			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
SB		1115			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<p>Sampled and Relinquished by <u>[Signature]</u> Received by <u>Don Banks</u></p> <p>Print <u>Don Banks</u> Print <u>Don Banks</u></p> <p>Firm <u>ALPHA</u> Firm <u>ALPHA</u></p> <p>Date <u>8/1/08</u> Time <u>1545</u> Date <u>8/1/08</u> Time <u>1545</u></p> <p>Relinquished by <u>[Signature]</u> Received by <u>[Signature]</u></p> <p>Print <u>Don Banks</u> Print <u>William McEnder</u></p> <p>Firm <u>ALPHA</u> Firm <u>ALPHA</u></p> <p>Date <u>8/1/08</u> Time <u>1745</u> Date <u>8/1/08</u> Time <u>1745</u></p> <p>Relinquished by <u>[Signature]</u> Received by <u>[Signature]</u></p> <p>Print <u>[Signature]</u> Print <u>[Signature]</u></p> <p>Firm <u>[Signature]</u> Firm <u>[Signature]</u></p> <p>Date <u>[Signature]</u> Time <u>[Signature]</u> Date <u>[Signature]</u> Time <u>[Signature]</u></p>																	

## Presumptive Certainty Data Package (Laboratory to use applicable DEP CAM methods)

The required minimum field QC samples as designated in BWS-CAM-VII have been or will be collected, as appropriate, to meet the requirements of Presumptive Certainty.

Matrix Spike (MS) samples for MCP Metals and/or C analytes are included and identified herein.

☒ This Chain of Custody Record (specify) includes does not include samples defined as Drinking Water Samples.

If this Chain of Custody Record identifies samples defined as Drinking Water Samples, Trip Blanks and Field Duplicates are included and identified and analysis of TICs are required, as appropriate. Laboratory should (specify, if applicable) analyze



## ANALYTICAL REPORT

Lab Number: L0811374

Client: Haley & Aldrich, Inc.  
465 Medford Street, Suite 2200  
Charlestown, MA 02129-1400

ATTN: Kate Leblanc

Project Name: WAYLAND TOWN CENTER

Project Number: 12069-054

Report Date: 08/08/08

Certifications & Approvals: MA (M-MA086), NY NELAC (11148), CT (PH-0574), NH (2003), NJ (MA935), RI (LAO00065), ME (MA0086), PA (Registration #68-03671), USDA (Permit #S-72578), US Army Corps of Engineers, Naval FESC.

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



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Sample Location</b>
L0811374-01	S15	WAYLAND, MA
L0811374-02	S11	WAYLAND, MA
L0811374-03	S12	WAYLAND, MA
L0811374-04	S1	WAYLAND, MA
L0811374-05	S4	WAYLAND, MA
L0811374-06	S6	WAYLAND, MA
L0811374-07	S7	WAYLAND, MA



Project Name: WAYLAND TOWN CENTER

Lab Number: L0811374

Project Number: 12069-054

Report Date: 08/08/08

**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.

<b>An affirmative response to questions A, B, C &amp; D is required for "Presumptive Certainty" status</b>		
A	Were all samples received by the laboratory in a condition consistent with those described on their Chain-of-Custody documentation for the data set?	YES
B	Were all QA/QC procedures required for the specified analytical methods(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	YES
C	Does the analytical data included in this report meet all the requirements for "Presumptive Certainty", as described in section 2.0 of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	YES
D	VPH and EPH methods only: Was the VPH or EPH method run without significant modifications, as specified in Section 11.3?	YES
<b>A response to questions E and F is required for "Presumptive Certainty" status</b>		
E	Were all QC performance standards and recommendations for the specified method(s) achieved?	NO
F	Were results for all analyte-list compounds/elements for the specified method(s) reported?	NO
<b>For any questions answered "No", please refer to the case narrative section on the following page(s).</b>		

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



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

### 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.

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.

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.

---

#### MCP Related Narratives

##### EPH

L0811374-02 has elevated detection limits due to the dilution required by matrix interferences encountered during the concentration of the sample.

##### PCB

In reference to question E:

L0811374-01 through -07: The Continuing Calibration criteria was not met for the confirmatory column; however, the sample was non-detect for the target analytes. Therefore, no further actions were taken.

##### Metals

In reference to question F:

All samples were analyzed for a subset of MCP elements per the Chain of Custody.

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:



Title: Technical Director/Representative

Date: 08/08/08

# ORGANICS

# **PETROLEUM HYDROCARBONS**

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

**Lab ID:** L0811374-01  
**Client ID:** S15  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 16:43  
**Analyst:** MF  
**Percent Solids:** 98%

**Date Collected:** 07/30/08 12:00  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
-----------	--------	-----------	-------	-----	-----------------

**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	6.80	1
C19-C36 Aliphatics	ND		mg/kg	6.80	1
C11-C22 Aromatics	12.8		mg/kg	6.80	1
C11-C22 Aromatics, Adjusted	12.8		mg/kg	6.80	1
Naphthalene	ND		mg/kg	0.340	1
2-Methylnaphthalene	ND		mg/kg	0.340	1
Acenaphthylene	ND		mg/kg	0.340	1
Acenaphthene	ND		mg/kg	0.340	1
Fluorene	ND		mg/kg	0.340	1
Phenanthrene	ND		mg/kg	0.340	1
Anthracene	ND		mg/kg	0.340	1
Fluoranthene	ND		mg/kg	0.340	1
Pyrene	ND		mg/kg	0.340	1
Benzo(a)anthracene	ND		mg/kg	0.340	1
Chrysene	ND		mg/kg	0.340	1
Benzo(b)fluoranthene	ND		mg/kg	0.340	1
Benzo(k)fluoranthene	ND		mg/kg	0.340	1
Benzo(a)pyrene	ND		mg/kg	0.340	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.340	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.340	1
Benzo(ghi)perylene	ND		mg/kg	0.340	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-01

Date Collected: 07/30/08 12:00

Client ID: S15

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	51		40-140
o-Terphenyl	81		40-140
2-Fluorobiphenyl	90		40-140
2-Bromonaphthalene	90		40-140

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

**Lab ID:** L0811374-02  
**Client ID:** S11  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 22:11  
**Analyst:** MF  
**Percent Solids:** 97%

**Date Collected:** 07/30/08 13:45  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
-----------	--------	-----------	-------	-----	-----------------

**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	13.7	2
C19-C36 Aliphatics	ND		mg/kg	13.7	2
C11-C22 Aromatics	23.4		mg/kg	13.7	2
C11-C22 Aromatics, Adjusted	23.4		mg/kg	13.7	2
Naphthalene	ND		mg/kg	0.687	2
2-Methylnaphthalene	ND		mg/kg	0.687	2
Acenaphthylene	ND		mg/kg	0.687	2
Acenaphthene	ND		mg/kg	0.687	2
Fluorene	ND		mg/kg	0.687	2
Phenanthrene	ND		mg/kg	0.687	2
Anthracene	ND		mg/kg	0.687	2
Fluoranthene	ND		mg/kg	0.687	2
Pyrene	ND		mg/kg	0.687	2
Benzo(a)anthracene	ND		mg/kg	0.687	2
Chrysene	ND		mg/kg	0.687	2
Benzo(b)fluoranthene	ND		mg/kg	0.687	2
Benzo(k)fluoranthene	ND		mg/kg	0.687	2
Benzo(a)pyrene	ND		mg/kg	0.687	2
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.687	2
Dibenzo(a,h)anthracene	ND		mg/kg	0.687	2
Benzo(ghi)perylene	ND		mg/kg	0.687	2

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-02

Date Collected: 07/30/08 13:45

Client ID: S11

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
-----------	--------	-----------	-------	-----	-----------------

**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	42		40-140
o-Terphenyl	80		40-140
2-Fluorobiphenyl	87		40-140
2-Bromonaphthalene	88		40-140



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

### SAMPLE RESULTS

**Lab ID:** L0811374-03  
**Client ID:** S12  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 17:16  
**Analyst:** MF  
**Percent Solids:** 98%

**Date Collected:** 07/31/08 08:15  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

### Quality Control Information

Condition of sample received: Satisfactory  
 Sample Temperature upon receipt: Received on Ice  
 Sample Extraction method: Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
-----------	--------	-----------	-------	-----	-----------------

### Extractable Petroleum Hydrocarbons

C9-C18 Aliphatics	ND		mg/kg	6.80	1
C19-C36 Aliphatics	ND		mg/kg	6.80	1
C11-C22 Aromatics	10.6		mg/kg	6.80	1
C11-C22 Aromatics, Adjusted	10.6		mg/kg	6.80	1
Naphthalene	ND		mg/kg	0.340	1
2-Methylnaphthalene	ND		mg/kg	0.340	1
Acenaphthylene	ND		mg/kg	0.340	1
Acenaphthene	ND		mg/kg	0.340	1
Fluorene	ND		mg/kg	0.340	1
Phenanthrene	ND		mg/kg	0.340	1
Anthracene	ND		mg/kg	0.340	1
Fluoranthene	ND		mg/kg	0.340	1
Pyrene	ND		mg/kg	0.340	1
Benzo(a)anthracene	ND		mg/kg	0.340	1
Chrysene	ND		mg/kg	0.340	1
Benzo(b)fluoranthene	ND		mg/kg	0.340	1
Benzo(k)fluoranthene	ND		mg/kg	0.340	1
Benzo(a)pyrene	ND		mg/kg	0.340	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.340	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.340	1
Benzo(ghi)perylene	ND		mg/kg	0.340	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-03

Date Collected: 07/31/08 08:15

Client ID: S12

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
-----------	--------	-----------	-------	-----	-----------------

**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	64		40-140
o-Terphenyl	76		40-140
2-Fluorobiphenyl	89		40-140
2-Bromonaphthalene	88		40-140

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

**Lab ID:** L0811374-04  
**Client ID:** S1  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 17:49  
**Analyst:** MF  
**Percent Solids:** 97%

**Date Collected:** 07/31/08 09:55  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	6.87	1
C19-C36 Aliphatics	ND		mg/kg	6.87	1
C11-C22 Aromatics	11.4		mg/kg	6.87	1
C11-C22 Aromatics, Adjusted	11.4		mg/kg	6.87	1
Naphthalene	ND		mg/kg	0.344	1
2-Methylnaphthalene	ND		mg/kg	0.344	1
Acenaphthylene	ND		mg/kg	0.344	1
Acenaphthene	ND		mg/kg	0.344	1
Fluorene	ND		mg/kg	0.344	1
Phenanthrene	ND		mg/kg	0.344	1
Anthracene	ND		mg/kg	0.344	1
Fluoranthene	ND		mg/kg	0.344	1
Pyrene	ND		mg/kg	0.344	1
Benzo(a)anthracene	ND		mg/kg	0.344	1
Chrysene	ND		mg/kg	0.344	1
Benzo(b)fluoranthene	ND		mg/kg	0.344	1
Benzo(k)fluoranthene	ND		mg/kg	0.344	1
Benzo(a)pyrene	ND		mg/kg	0.344	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.344	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.344	1
Benzo(ghi)perylene	ND		mg/kg	0.344	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-04

Date Collected: 07/31/08 09:55

Client ID: S1

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	55		40-140
o-Terphenyl	74		40-140
2-Fluorobiphenyl	80		40-140
2-Bromonaphthalene	80		40-140

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

**Lab ID:** L0811374-05  
**Client ID:** S4  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 18:22  
**Analyst:** MF  
**Percent Solids:** 96%

**Date Collected:** 07/31/08 11:00  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

**Condition of sample received:** Satisfactory  
**Sample Temperature upon receipt:** Received on Ice  
**Sample Extraction method:** Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	6.94	1
C19-C36 Aliphatics	ND		mg/kg	6.94	1
C11-C22 Aromatics	ND		mg/kg	6.94	1
C11-C22 Aromatics, Adjusted	ND		mg/kg	6.94	1
Naphthalene	ND		mg/kg	0.347	1
2-Methylnaphthalene	ND		mg/kg	0.347	1
Acenaphthylene	ND		mg/kg	0.347	1
Acenaphthene	ND		mg/kg	0.347	1
Fluorene	ND		mg/kg	0.347	1
Phenanthrene	ND		mg/kg	0.347	1
Anthracene	ND		mg/kg	0.347	1
Fluoranthene	ND		mg/kg	0.347	1
Pyrene	ND		mg/kg	0.347	1
Benzo(a)anthracene	ND		mg/kg	0.347	1
Chrysene	ND		mg/kg	0.347	1
Benzo(b)fluoranthene	ND		mg/kg	0.347	1
Benzo(k)fluoranthene	ND		mg/kg	0.347	1
Benzo(a)pyrene	ND		mg/kg	0.347	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.347	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.347	1
Benzo(ghi)perylene	ND		mg/kg	0.347	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-05

Date Collected: 07/31/08 11:00

Client ID: S4

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	45		40-140
o-Terphenyl	74		40-140
2-Fluorobiphenyl	88		40-140
2-Bromonaphthalene	89		40-140

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

**Lab ID:** L0811374-06  
**Client ID:** S6  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 18:54  
**Analyst:** MF  
**Percent Solids:** 94%

**Date Collected:** 07/31/08 13:30  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

C9-C18 Aliphatics	ND		mg/kg	7.09	1
C19-C36 Aliphatics	ND		mg/kg	7.09	1
C11-C22 Aromatics	ND		mg/kg	7.09	1
C11-C22 Aromatics, Adjusted	ND		mg/kg	7.09	1
Naphthalene	ND		mg/kg	0.355	1
2-Methylnaphthalene	ND		mg/kg	0.355	1
Acenaphthylene	ND		mg/kg	0.355	1
Acenaphthene	ND		mg/kg	0.355	1
Fluorene	ND		mg/kg	0.355	1
Phenanthrene	ND		mg/kg	0.355	1
Anthracene	ND		mg/kg	0.355	1
Fluoranthene	ND		mg/kg	0.355	1
Pyrene	ND		mg/kg	0.355	1
Benzo(a)anthracene	ND		mg/kg	0.355	1
Chrysene	ND		mg/kg	0.355	1
Benzo(b)fluoranthene	ND		mg/kg	0.355	1
Benzo(k)fluoranthene	ND		mg/kg	0.355	1
Benzo(a)pyrene	ND		mg/kg	0.355	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.355	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.355	1
Benzo(ghi)perylene	ND		mg/kg	0.355	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-06

Date Collected: 07/31/08 13:30

Client ID: S6

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	46		40-140
o-Terphenyl	71		40-140
2-Fluorobiphenyl	82		40-140
2-Bromonaphthalene	82		40-140



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

**Lab ID:** L0811374-07  
**Client ID:** S7  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 61,EPH-04-1  
**Analytical Date:** 08/05/08 19:27  
**Analyst:** MF  
**Percent Solids:** 96%

**Date Collected:** 07/31/08 15:30  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/02/08 09:30

**Quality Control Information**

**Condition of sample received:** Satisfactory  
**Sample Temperature upon receipt:** Received on Ice  
**Sample Extraction method:** Extracted Per the Method

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
<b>Extractable Petroleum Hydrocarbons</b>					
C9-C18 Aliphatics	ND		mg/kg	6.94	1
C19-C36 Aliphatics	ND		mg/kg	6.94	1
C11-C22 Aromatics	8.56		mg/kg	6.94	1
C11-C22 Aromatics, Adjusted	8.56		mg/kg	6.94	1
Naphthalene	ND		mg/kg	0.347	1
2-Methylnaphthalene	ND		mg/kg	0.347	1
Acenaphthylene	ND		mg/kg	0.347	1
Acenaphthene	ND		mg/kg	0.347	1
Fluorene	ND		mg/kg	0.347	1
Phenanthrene	ND		mg/kg	0.347	1
Anthracene	ND		mg/kg	0.347	1
Fluoranthene	ND		mg/kg	0.347	1
Pyrene	ND		mg/kg	0.347	1
Benzo(a)anthracene	ND		mg/kg	0.347	1
Chrysene	ND		mg/kg	0.347	1
Benzo(b)fluoranthene	ND		mg/kg	0.347	1
Benzo(k)fluoranthene	ND		mg/kg	0.347	1
Benzo(a)pyrene	ND		mg/kg	0.347	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.347	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.347	1
Benzo(ghi)perylene	ND		mg/kg	0.347	1

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-07

Date Collected: 07/31/08 15:30

Client ID: S7

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
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**Extractable Petroleum Hydrocarbons**

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	53		40-140
o-Terphenyl	80		40-140
2-Fluorobiphenyl	93		40-140
2-Bromonaphthalene	92		40-140

Project Name: WAYLAND TOWN CENTER

Lab Number: L0811374

Project Number: 12069-054

Report Date: 08/08/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 61,EPH-04-1

Extraction Method: EPA 3546

Analytical Date: 08/05/08 15:01

Extraction Date: 08/02/08 09:30

Analyst: MF

Parameter	Result	Qualifier	Units	RDL
Extractable Petroleum Hydrocarbons for sample(s): 01-07 Batch: WG331278-1				
C9-C18 Aliphatics	ND		mg/kg	6.67
C19-C36 Aliphatics	ND		mg/kg	6.67
C11-C22 Aromatics	ND		mg/kg	6.67
C11-C22 Aromatics, Adjusted	ND		mg/kg	6.67
Naphthalene	ND		mg/kg	0.333
2-Methylnaphthalene	ND		mg/kg	0.333
Acenaphthylene	ND		mg/kg	0.333
Acenaphthene	ND		mg/kg	0.333
Fluorene	ND		mg/kg	0.333
Phenanthrene	ND		mg/kg	0.333
Anthracene	ND		mg/kg	0.333
Fluoranthene	ND		mg/kg	0.333
Pyrene	ND		mg/kg	0.333
Benzo(a)anthracene	ND		mg/kg	0.333
Chrysene	ND		mg/kg	0.333
Benzo(b)fluoranthene	ND		mg/kg	0.333
Benzo(k)fluoranthene	ND		mg/kg	0.333
Benzo(a)pyrene	ND		mg/kg	0.333
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.333
Dibenzo(a,h)anthracene	ND		mg/kg	0.333
Benzo(ghi)perylene	ND		mg/kg	0.333

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	58		40-140
o-Terphenyl	65		40-140
2-Fluorobiphenyl	80		40-140
2-Bromonaphthalene	80		40-140

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-054

**Lab Number:** L0811374

**Report Date:** 08/08/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Extractable Petroleum Hydrocarbons Associated sample(s): 01-07 Batch: WG331278-2 WG331278-3					
C9-C18 Aliphatics	51	54	40-140	6	25
C19-C36 Aliphatics	60	62	40-140	3	25
C11-C22 Aromatics	80	80	40-140	0	25
Naphthalene	64	64	40-140	0	25
2-Methylnaphthalene	64	63	40-140	2	25
Acenaphthylene	64	64	40-140	0	25
Acenaphthene	68	68	40-140	0	25
Fluorene	74	73	40-140	1	25
Phenanthrene	80	78	40-140	3	25
Anthracene	78	76	40-140	3	25
Fluoranthene	86	85	40-140	1	25
Pyrene	86	85	40-140	1	25
Benzo(a)anthracene	86	86	40-140	0	25
Chrysene	87	87	40-140	0	25
Benzo(b)fluoranthene	84	84	40-140	0	25
Benzo(k)fluoranthene	87	87	40-140	0	25
Benzo(a)pyrene	77	77	40-140	0	25
Indeno(1,2,3-cd)Pyrene	79	79	40-140	0	25
Dibenzo(a,h)anthracene	82	82	40-140	0	25
Benzo(ghi)perylene	80	80	40-140	0	25
Nonane (C9)	39	44	30-140	12	25

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-054

**Lab Number:** L0811374

**Report Date:** 08/08/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Extractable Petroleum Hydrocarbons Associated sample(s): 01-07 Batch: WG331278-2 WG331278-3					
Decane (C10)	46	51	40-140	10	25
Dodecane (C12)	54	56	40-140	4	25
Tetradecane (C14)	55	57	40-140	4	25
Hexadecane (C16)	58	60	40-140	3	25
Octadecane (C18)	59	60	40-140	2	25
Nonadecane (C19)	60	61	40-140	2	25
Eicosane (C20)	60	63	40-140	5	25
Docosane (C22)	62	64	40-140	3	25
Tetracosane (C24)	65	67	40-140	3	25
Hexacosane (C26)	62	63	40-140	2	25
Octacosane (C28)	62	63	40-140	2	25
Triacontane (C30)	60	62	40-140	3	25
Hexatriacontane (C36)	60	61	40-140	2	25
% Naphthalene Breakthrough	0	0		NC	
% 2-Methylnaphthalene Breakthrough	0	0		NC	

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Lab Number:** L0811374

**Project Number:** 12069-054

**Report Date:** 08/08/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Extractable Petroleum Hydrocarbons Associated sample(s): 01-07 Batch: WG331278-2 WG331278-3					

Surrogate	LCS %Recovery	Qualifier	LCSD %Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	52		56		40-140
o-Terphenyl	85		84		40-140
2-Fluorobiphenyl	83		84		40-140
2-Bromonaphthalene	85		86		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

**Fractionation Check Standard  
Quality Control**

Fractionation check standard for 200818205

Parameter	% Recovery	QC Criteria
C9-C18 Aliphatics	77	40-140
C19-C36 Aliphatics	76	40-140
C11-C22 Aromatics	86	40-140
Naphthalene	82	40-140
2-Methylnaphthalene	78	40-140
Acenaphthylene	76	40-140
Acenaphthene	80	40-140
Fluorene	79	40-140
Phenanthrene	78	40-140
Anthracene	82	40-140
Fluoranthene	84	40-140
Pyrene	84	40-140
Benzo(a)anthracene	82	40-140
Chrysene	88	40-140
Benzo(b)fluoranthene	81	40-140
Benzo(k)fluoranthene	97	40-140
Benzo(a)pyrene	78	40-140
Indeno(1,2,3-cd)Pyrene	76	40-140
Dibenzo(a,h)anthracene	83	40-140
Benzo(g,h,i)perylene	82	40-140
Nonane	72	30-140
Decane	77	40-140
Dodecane	80	40-140
Tetradecane	76	40-140
Hexadecane	78	40-140
Octadecane	76	40-140
Nonadecane	75	40-140
Eicosane	77	40-140
Docosane	79	40-140
Tetracosane	83	40-140
Hexacosane	78	40-140
Octacosane	77	40-140
triacontane	76	40-140
Hexatriacontane	75	40-140
% Naphthalene Breakthrough	0	40-140
% 2-Methylnaphthalene Breakthrough	0	40-140

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**Fractionation Check Standard  
Quality Control**

Fractionation check standard for 200818205

<b>Surrogate</b>	<b>% Recovery</b>	<b>QC Criteria</b>
Chloro-Octadecane	66	40-140
o-Terphenyl	83	40-140
2-Fluorobiphenyl	75	40-140
2-Bromonaphthalene	76	40-140



# PCBS

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

### SAMPLE RESULTS

**Lab ID:** L0811374-01  
**Client ID:** S15  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 21:33  
**Analyst:** JB  
**Percent Solids:** 98%

**Date Collected:** 07/30/08 12:00  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	34.0	1
Aroclor 1221	ND		ug/kg	34.0	1
Aroclor 1232	ND		ug/kg	34.0	1
Aroclor 1242	ND		ug/kg	34.0	1
Aroclor 1248	ND		ug/kg	34.0	1
Aroclor 1254	ND		ug/kg	34.0	1
Aroclor 1260	ND		ug/kg	34.0	1
Aroclor 1262	ND		ug/kg	34.0	1
Aroclor 1268	ND		ug/kg	34.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	43		30-150	A
Decachlorobiphenyl	40		30-150	A
2,4,5,6-Tetrachloro-m-xylene	53		30-150	B
Decachlorobiphenyl	62		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

### SAMPLE RESULTS

**Lab ID:** L0811374-02  
**Client ID:** S11  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 21:46  
**Analyst:** JB  
**Percent Solids:** 97%

**Date Collected:** 07/30/08 13:45  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	34.4	1
Aroclor 1221	ND		ug/kg	34.4	1
Aroclor 1232	ND		ug/kg	34.4	1
Aroclor 1242	ND		ug/kg	34.4	1
Aroclor 1248	ND		ug/kg	34.4	1
Aroclor 1254	ND		ug/kg	34.4	1
Aroclor 1260	ND		ug/kg	34.4	1
Aroclor 1262	ND		ug/kg	34.4	1
Aroclor 1268	ND		ug/kg	34.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	55		30-150	A
Decachlorobiphenyl	48		30-150	A
2,4,5,6-Tetrachloro-m-xylene	68		30-150	B
Decachlorobiphenyl	74		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

### SAMPLE RESULTS

**Lab ID:** L0811374-03  
**Client ID:** S12  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 22:00  
**Analyst:** JB  
**Percent Solids:** 98%

**Date Collected:** 07/31/08 08:15  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	34.0	1
Aroclor 1221	ND		ug/kg	34.0	1
Aroclor 1232	ND		ug/kg	34.0	1
Aroclor 1242	ND		ug/kg	34.0	1
Aroclor 1248	ND		ug/kg	34.0	1
Aroclor 1254	ND		ug/kg	34.0	1
Aroclor 1260	ND		ug/kg	34.0	1
Aroclor 1262	ND		ug/kg	34.0	1
Aroclor 1268	ND		ug/kg	34.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60		30-150	A
Decachlorobiphenyl	53		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	78		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

### SAMPLE RESULTS

**Lab ID:** L0811374-04  
**Client ID:** S1  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 22:14  
**Analyst:** JB  
**Percent Solids:** 97%

**Date Collected:** 07/31/08 09:55  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	34.4	1
Aroclor 1221	ND		ug/kg	34.4	1
Aroclor 1232	ND		ug/kg	34.4	1
Aroclor 1242	ND		ug/kg	34.4	1
Aroclor 1248	ND		ug/kg	34.4	1
Aroclor 1254	ND		ug/kg	34.4	1
Aroclor 1260	ND		ug/kg	34.4	1
Aroclor 1262	ND		ug/kg	34.4	1
Aroclor 1268	ND		ug/kg	34.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	59		30-150	A
Decachlorobiphenyl	54		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	77		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

### SAMPLE RESULTS

**Lab ID:** L0811374-05  
**Client ID:** S4  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 22:28  
**Analyst:** JB  
**Percent Solids:** 96%

**Date Collected:** 07/31/08 11:00  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	34.7	1
Aroclor 1221	ND		ug/kg	34.7	1
Aroclor 1232	ND		ug/kg	34.7	1
Aroclor 1242	ND		ug/kg	34.7	1
Aroclor 1248	ND		ug/kg	34.7	1
Aroclor 1254	ND		ug/kg	34.7	1
Aroclor 1260	ND		ug/kg	34.7	1
Aroclor 1262	ND		ug/kg	34.7	1
Aroclor 1268	ND		ug/kg	34.7	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	57		30-150	A
Decachlorobiphenyl	56		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	76		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

### SAMPLE RESULTS

**Lab ID:** L0811374-06  
**Client ID:** S6  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 22:42  
**Analyst:** JB  
**Percent Solids:** 94%

**Date Collected:** 07/31/08 13:30  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	35.5	1
Aroclor 1221	ND		ug/kg	35.5	1
Aroclor 1232	ND		ug/kg	35.5	1
Aroclor 1242	ND		ug/kg	35.5	1
Aroclor 1248	ND		ug/kg	35.5	1
Aroclor 1254	ND		ug/kg	35.5	1
Aroclor 1260	ND		ug/kg	35.5	1
Aroclor 1262	ND		ug/kg	35.5	1
Aroclor 1268	ND		ug/kg	35.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	64		30-150	A
Decachlorobiphenyl	64		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		30-150	B
Decachlorobiphenyl	88		30-150	B

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

### SAMPLE RESULTS

**Lab ID:** L0811374-07  
**Client ID:** S7  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Analytical Method:** 64,8082  
**Analytical Date:** 08/05/08 22:56  
**Analyst:** JB  
**Percent Solids:** 96%

**Date Collected:** 07/31/08 15:30  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 08/04/08 11:15  
**Cleanup Method1:** EPA 3665A

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Polychlorinated Biphenyls by MCP 8082					
Aroclor 1016	ND		ug/kg	34.7	1
Aroclor 1221	ND		ug/kg	34.7	1
Aroclor 1232	ND		ug/kg	34.7	1
Aroclor 1242	ND		ug/kg	34.7	1
Aroclor 1248	ND		ug/kg	34.7	1
Aroclor 1254	ND		ug/kg	34.7	1
Aroclor 1260	ND		ug/kg	34.7	1
Aroclor 1262	ND		ug/kg	34.7	1
Aroclor 1268	ND		ug/kg	34.7	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	40		30-150	A
Decachlorobiphenyl	40		30-150	A
2,4,5,6-Tetrachloro-m-xylene	48		30-150	B
Decachlorobiphenyl	54		30-150	B



Project Name: WAYLAND TOWN CENTER

Lab Number: L0811374

Project Number: 12069-054

Report Date: 08/08/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 64,8082  
 Analytical Date: 08/04/08 13:55  
 Analyst: JB

Extraction Method: EPA 3546  
 Extraction Date: 08/04/08 08:45  
 Cleanup Method1: EPA 3665A  
 Cleanup Date1: 08/04/08

Parameter	Result	Qualifier	Units	RDL
Polychlorinated Biphenyls by MCP 8082 for sample(s): 01-07 Batch: WG331341-1				
Aroclor 1016	ND		ug/kg	33.3
Aroclor 1221	ND		ug/kg	33.3
Aroclor 1232	ND		ug/kg	33.3
Aroclor 1242	ND		ug/kg	33.3
Aroclor 1248	ND		ug/kg	33.3
Aroclor 1254	ND		ug/kg	33.3
Aroclor 1260	ND		ug/kg	33.3
Aroclor 1262	ND		ug/kg	33.3
Aroclor 1268	ND		ug/kg	33.3

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	A
Decachlorobiphenyl	78		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	92		30-150	B

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-054

**Lab Number:** L0811374

**Report Date:** 08/08/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Polychlorinated Biphenyls by MCP 8082 Associated sample(s): 01-07 Batch: WG331341-2 WG331341-3					
Aroclor 1016	89	75	40-140	17	30
Aroclor 1260	83	74	40-140	11	30

Surrogate	LCS %Recovery	Qualifier	LCSD %Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		65		30-150	A
Decachlorobiphenyl	84		77		30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		69		30-150	B
Decachlorobiphenyl	90		80		30-150	B

## **METALS**

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-01

Date Collected: 07/30/08 12:00

Client ID: S15

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 98%

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	3.3		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:19	EPA 3050B	60,6010B	MG
Barium, Total	36		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:19	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:19	EPA 3050B	60,6010B	MG
Chromium, Total	13		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:19	EPA 3050B	60,6010B	MG
Lead, Total	4.6		mg/kg	2.5	1	08/04/08 12:00	08/05/08 11:19	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.08	1	08/04/08 23:00	08/05/08 17:52	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.5	1	08/04/08 12:00	08/05/08 11:19	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:19	EPA 3050B	60,6010B	MG



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

**Lab ID:** L0811374-02  
**Client ID:** S11  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Percent Solids:** 97%

**Date Collected:** 07/30/08 13:45  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	4.9		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:21	EPA 3050B	60,6010B	MG
Barium, Total	22		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:21	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:21	EPA 3050B	60,6010B	MG
Chromium, Total	8.3		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:21	EPA 3050B	60,6010B	MG
Lead, Total	4.4		mg/kg	2.4	1	08/04/08 12:00	08/05/08 11:21	EPA 3050B	60,6010B	MG
Mercury, Total	0.10		mg/kg	0.08	1	08/04/08 23:00	08/05/08 17:54	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.4	1	08/04/08 12:00	08/05/08 11:21	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:21	EPA 3050B	60,6010B	MG



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-03

Date Collected: 07/31/08 08:15

Client ID: S12

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 98%

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	4.3		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:24	EPA 3050B	60,6010B	MG
Barium, Total	17		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:24	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:24	EPA 3050B	60,6010B	MG
Chromium, Total	6.0		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:24	EPA 3050B	60,6010B	MG
Lead, Total	ND		mg/kg	2.5	1	08/04/08 12:00	08/05/08 11:24	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.08	1	08/04/08 23:00	08/05/08 17:56	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.5	1	08/04/08 12:00	08/05/08 11:24	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 11:24	EPA 3050B	60,6010B	MG

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-04  
 Client ID: S1  
 Sample Location: WAYLAND, MA  
 Matrix: Soil  
 Percent Solids: 97%

Date Collected: 07/31/08 09:55  
 Date Received: 08/01/08  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	4.8		mg/kg	0.47	1	08/04/08 12:00	08/05/08 11:41	EPA 3050B	60,6010B	MG
Barium, Total	22		mg/kg	0.47	1	08/04/08 12:00	08/05/08 11:41	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.47	1	08/04/08 12:00	08/05/08 11:41	EPA 3050B	60,6010B	MG
Chromium, Total	19		mg/kg	0.47	1	08/04/08 12:00	08/05/08 11:41	EPA 3050B	60,6010B	MG
Lead, Total	3.6		mg/kg	2.4	1	08/04/08 12:00	08/05/08 11:41	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.08	1	08/04/08 23:00	08/05/08 17:57	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.4	1	08/04/08 12:00	08/05/08 11:41	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.47	1	08/04/08 12:00	08/05/08 11:41	EPA 3050B	60,6010B	MG



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

**Lab ID:** L0811374-05  
**Client ID:** S4  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil  
**Percent Solids:** 96%

**Date Collected:** 07/31/08 11:00  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	4.4		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:44	EPA 3050B	60,6010B	MG
Barium, Total	18		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:44	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:44	EPA 3050B	60,6010B	MG
Chromium, Total	7.0		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:44	EPA 3050B	60,6010B	MG
Lead, Total	3.1		mg/kg	2.4	1	08/04/08 12:00	08/05/08 11:44	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.08	1	08/04/08 23:00	08/05/08 17:59	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.4	1	08/04/08 12:00	08/05/08 11:44	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.48	1	08/04/08 12:00	08/05/08 11:44	EPA 3050B	60,6010B	MG





**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-06  
 Client ID: S6  
 Sample Location: WAYLAND, MA  
 Matrix: Soil  
 Percent Solids: 94%

Date Collected: 07/31/08 13:30  
 Date Received: 08/01/08  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	3.9		mg/kg	0.51	1	08/04/08 12:00	08/05/08 11:46	EPA 3050B	60,6010B	MG
Barium, Total	33		mg/kg	0.51	1	08/04/08 12:00	08/05/08 11:46	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.51	1	08/04/08 12:00	08/05/08 11:46	EPA 3050B	60,6010B	MG
Chromium, Total	15		mg/kg	0.51	1	08/04/08 12:00	08/05/08 11:46	EPA 3050B	60,6010B	MG
Lead, Total	5.4		mg/kg	2.5	1	08/04/08 12:00	08/05/08 11:46	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.08	1	08/04/08 23:00	08/05/08 18:01	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.5	1	08/04/08 12:00	08/05/08 11:46	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.51	1	08/04/08 12:00	08/05/08 11:46	EPA 3050B	60,6010B	MG



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0811374**Project Number:** 12069-054**Report Date:** 08/08/08**SAMPLE RESULTS**

Lab ID: L0811374-07

Date Collected: 07/31/08 15:30

Client ID: S7

Date Received: 08/01/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series										
Arsenic, Total	6.6		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:49	EPA 3050B	60,6010B	MG
Barium, Total	50		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:49	EPA 3050B	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:49	EPA 3050B	60,6010B	MG
Chromium, Total	14		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:49	EPA 3050B	60,6010B	MG
Lead, Total	6.2		mg/kg	2.4	1	08/04/08 12:00	08/05/08 11:49	EPA 3050B	60,6010B	MG
Mercury, Total	ND		mg/kg	0.08	1	08/04/08 23:00	08/05/08 18:03	EPA 7471A	64,7471A	HG
Selenium, Total	ND		mg/kg	2.4	1	08/04/08 12:00	08/05/08 11:49	EPA 3050B	60,6010B	MG
Silver, Total	ND		mg/kg	0.49	1	08/04/08 12:00	08/05/08 11:49	EPA 3050B	60,6010B	MG



Project Name: WAYLAND TOWN CENTER

Lab Number: L0811374

Project Number: 12069-054

Report Date: 08/08/08

## Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series for sample(s): 01-07 Batch: WG331366-1									
Arsenic, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Barium, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Cadmium, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Chromium, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Lead, Total	ND		mg/kg	2.5	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Selenium, Total	ND		mg/kg	2.5	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG
Silver, Total	ND		mg/kg	0.50	1	08/04/08 12:00	08/05/08 10:44	60,6010B	MG

### Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals by MCP 6000/7000 series for sample(s): 01-07 Batch: WG331485-1									
Mercury, Total	ND		mg/kg	0.08	1	08/04/08 23:00	08/05/08 17:38	64,7471A	HG

### Prep Information

Digestion Method: EPA 7471A

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-054

**Lab Number:** L0811374

**Report Date:** 08/08/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals by MCP 6000/7000 series Associated sample(s): 01-07 Batch: WG331366-2 WG331366-3					
Arsenic, Total	89	92	75-125	3	30
Barium, Total	90	91	75-125	1	30
Cadmium, Total	92	95	75-125	3	30
Chromium, Total	90	93	75-125	3	30
Lead, Total	92	91	75-125	1	30
Selenium, Total	89	91	75-125	2	30
Silver, Total	92	94	75-125	2	30
Total Metals by MCP 6000/7000 series Associated sample(s): 01-07 Batch: WG331485-2 WG331485-3					
Mercury, Total	98	100	75-125	2	30

# **INORGANICS & MISCELLANEOUS**

**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811374**Report Date:** 08/08/08**SAMPLE RESULTS****Lab ID:** L0811374-01**Client ID:** S15**Sample Location:** WAYLAND, MA**Matrix:** Soil**Date Collected:** 07/30/08 12:00**Date Received:** 08/01/08**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	98		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811374**Report Date:** 08/08/08**SAMPLE RESULTS****Lab ID:** L0811374-02**Client ID:** S11**Sample Location:** WAYLAND, MA**Matrix:** Soil**Date Collected:** 07/30/08 13:45**Date Received:** 08/01/08**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	97		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811374**Report Date:** 08/08/08**SAMPLE RESULTS****Lab ID:** L0811374-03**Client ID:** S12**Sample Location:** WAYLAND, MA**Matrix:** Soil**Date Collected:** 07/31/08 08:15**Date Received:** 08/01/08**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	98		%	0.10	1	-	08/02/08 13:50	30,2540G	NM





**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811374**Report Date:** 08/08/08**SAMPLE RESULTS****Lab ID:** L0811374-04**Client ID:** S1**Sample Location:** WAYLAND, MA**Matrix:** Soil**Date Collected:** 07/31/08 09:55**Date Received:** 08/01/08**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	97		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811374**Report Date:** 08/08/08**SAMPLE RESULTS****Lab ID:** L0811374-05**Client ID:** S4**Sample Location:** WAYLAND, MA**Matrix:** Soil**Date Collected:** 07/31/08 11:00**Date Received:** 08/01/08**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	96		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811374**Report Date:** 08/08/08**SAMPLE RESULTS****Lab ID:** L0811374-06**Client ID:** S6**Sample Location:** WAYLAND, MA**Matrix:** Soil**Date Collected:** 07/31/08 13:30**Date Received:** 08/01/08**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	94		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

**SAMPLE RESULTS**

**Lab ID:** L0811374-07  
**Client ID:** S7  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil

**Date Collected:** 07/31/08 15:30  
**Date Received:** 08/01/08  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry									
Solids, Total	96		%	0.10	1	-	08/02/08 13:50	30,2540G	NM



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Lab Number:** L0811374  
**Report Date:** 08/08/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Associated sample(s): 01-07 QC Batch ID: WG331294-1 QC Sample: L0811343-01 Client ID: DUP Sample					
Solids, Total	86	88	%	2	20

**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811374**Report Date:** 08/08/08**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

Cooler	Custody Seal
A	Absent

**Container Information**

Container ID	Container Type	Cooler	pH	Temp	Pres	Seal	Analysis
L0811374-01A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)
L0811374-02A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)
L0811374-03A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)
L0811374-04A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)
L0811374-05A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)
L0811374-06A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent	MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)

\*Hold days indicated by values in parentheses



**Project Name:** WAYLAND TOWN CENTER**Project Number:** 12069-054**Lab Number:** L0811374**Report Date:** 08/08/08**Container Information**

Container ID	Container Type	Cooler	pH	Temp	Pres	Seal
L0811374-07A	Amber 250ml unpreserved	A	N/A	2C	Y	Absent

**Analysis**

MCP-BA-6010T(180),MCP-AS-6010T(180),EPH-DELUX-04(14),TS(7),MCP-PB-6010T(180),MCP-8082-04(14),MCP-AG-6010T(180),MCP-SE-6010T(180),MCP-7471T(28),MCP-CD-6010T(180),MCP-CR-6010T(180)

\*Hold days indicated by values in parentheses



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

## 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.
- 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.
- NI - Not Ignitable.
- 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.
- ND - Not detected at the reported detection limit for the sample.
- RDL - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL 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.

### **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**

The following data qualifiers have been identified for use under the CT DEP Reasonable Confidence Protocols.

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.

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

J - Estimated value. The analyte was tentatively identified; the quantitation is an estimation. (Tentatively identified compounds only.)

### **Standard Qualifiers**

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



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-054

**Lab Number:** L0811374  
**Report Date:** 08/08/08

## REFERENCES

- 30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.
- 60 Quality Assurance and Quality Control Requirements and Performance Standards for SW-846 Methods. MADEP BWSC. WSC-CAM-IIA (Revision 4), WSC-CAM-V C (Revision 2), WSC-CAM-IIIA (Revision 5). May 2004.
- 61 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH). Massachusetts Department of Environmental Protection, DEA/ORS/BWSC. May 2004, Revision 1.1.
- 64 Quality Assurance and Quality Control Requirements and Performance Standards for SW-846 Methods. MADEP BWSC. WSC-CAM-IIA (Revision 4), WSC-CAM-V C (Revision 2), WSC-CAM-IIIA (Revision 5). August 2004.

## LIMITATION OF LIABILITIES

Alpha Woods Hole Labs 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 Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Woods Hole Labs 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 Woods Hole Labs.

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.



**HALEY &  
ALDRICH**  
Haley & Aldrich, Inc.  
465 Medford St.,  
Suite 2200,  
Boston, MA 02129-1402

## CHAIN OF CUSTODY RECORD

Phone	(617) 886-7400
Fax	(617) 886-7606

H&A FILE NO.	12069-054
PROJECT NAME	Wayland Town Center
H&A CONTACT	Spitz Promoval

LABORATORY	ATLANTA
ADDRESS	WESTBROOK, MA
CONTACT	KATHY OBARA
Analytic Biomaterial	

DELIVERY DATE	TURNAROUND TIME	PROJECT MANAGER
8/1/08	10 Days	Kate Chance

Sample No.	Date	Time	Depth	Type
515	7/30/8	1200	0-6'	Sci 1
511	"	1345		
512	7/31/8	0815		
517	"	0955		
522	"	1100		
523	"	1330		
524	"	1530		

	VOA
X X X X X X X X	AHGs PAH only
X X X X X X X X	MCP Metals <input checked="" type="checkbox"/>
X X X X X X X X	Pesticides PCBs <input checked="" type="checkbox"/>
X X X X X X X X	VPH Full Suite C-ranges only <input checked="" type="checkbox"/>
X X X X X X X X	EPH Full Suite C-ranges only <input checked="" type="checkbox"/>
	TPH (specify)
	TCLP (specify)
	Reactivity Ignitability Corrosivity
	Number of Containers

Comments (special instructions, precautions, additional method numbers, etc.)
<p>Laboratory to use applicable DEP CAM method, unless otherwise directed.</p> <p>① RCRA Metals</p> <p>② PCBs</p> <p>③ EPA 4-cation and target analytes</p>

Signed by <i>Matthew Dabson</i> Print Matthew Dabson Firm 4 + 4 Date 8/11/08 Time 1545	Sampled and Relinquished by
Signed <i>Dan Baur</i> Print Dan Baur Firm ALPHA Date 8/11/8 Time 1545	Received by

VOA Vinyl	721
Arner Glass	
Plastic Bottle	
Preservative	
Volatile	

Sample Comments

OK

Per MCP RC-S1

Sign <u>Don Bauder</u> Print <u>DON BAUDER</u> Firm <u>ALDHA</u> Date <u>8/1/68</u> Time <u>1745</u> Relinquished by _____	Sign <u>Le Zor</u> Print <u>Le Zor</u> Firm <u>ALDHA</u> Date <u>8/1/68</u> Time <u>1745</u> Relinquished by _____
--	--

SOLID	
VOA Vial	
Amber Glass	X
Clear Glass	X
Preparative	X
Volume	

Evidence samples were tampered with?	YES	NO
If YES, please explain in section below.		

Sign	Sign	
Print	Print	
Firm	Firm	
Date	Date	Time

Presumptive

PRESERVATION KEY			
<del>A</del> Sample collected	C NaOH	E H <sub>2</sub> SO <sub>4</sub>	G Methanol
H Sample filtered	D HNO <sub>3</sub>	F HCL	I Water/NalSO <sub>4</sub> (aq)

Use Certainty Data Package (Laboratory to use applicable DEP CAM methods)

[illegible]

The required minimum field QC samples, as designated in BMS-C (A-M-VII) have been or will be collected, as appropriate, to meet the requirements of Presumptive Certainty. Matrix Spike (MS) samples for Mn, P, Metals and Cr (variate) are included and identified herein.

~~X~~ This Chain of Custody Record (specify) \_\_\_\_\_ includes \_\_\_\_\_ does not include samples defined as Drinking Water Samples

If this Chain of Custody Record identifies samples defined as Drinking Water Samples, Trip Blanks and Field Duplicates are included and identified and analysis of TIC's are required, as appropriate. Laboratory should (specify if applicable) \_\_\_\_\_ analyze \_\_\_\_\_

Figure 2 (continued)

WILTF - Laboratory

## CANAR Project Manager

**PINK - Tiley & Aldrich Laboratory**

**GOLDENROD - Italy & Adriatic contact**

AUGUST 2003

ALPHA Job # 1-0811374

**HALEY & ALDRICH**  
465 Medford St.,  
Suite 2200,  
Boston, MA 02129-1402

**CHAIN OF CUSTODY RECORD**

Phone (617) 886-7400  
Fax (617) 886-7600

H&A FILE NO. 12069-054  
PROJECT NAME Hydrex Town Center  
H&A CONTACT Spoke Environmental  
LABORATORY ADDRESS Alpha Westborough, MA  
CONTACT Kent O'Brien  
DELIVERY DATE 8/1/02  
TURNAROUND TIME 2 Days  
PROJECT MANAGER Kate Chace

Sample No.	Date	Time	Depth	Type	Analysis Requested										Number of Containers	Comments (special instructions, precautions, additional method numbers, etc.)
					VOA	AHAs PAHs only	MCP Metals	Pesticides PCBs	VPH Full Suite C-ranges only	EPH Full Suite C-ranges only	TPH (specify)	TCLP (specify)	Reactivity Ignitability Corrosivity			
S15	7/30/02	1200	0-6'	Soil	X	X	X	X	X	X					1	Laboratory to use applicable DEP CAM methods, unless otherwise directed.
S11	"	1345	"	"	X	X	X	X	X	X					1	① REACT Metals
S12	7/31/02	0815	"	"	X	X	X	X	X	X					1	② REACT
S17	"	0955	"	"	X	X	X	X	X	X					1	③ REACT
S18	"	1100	"	"	X	X	X	X	X	X					1	target analytes
S19	"	1330	"	"	X	X	X	X	X	X					1	
S20	"	1530	"	"	X	X	X	X	X	X					1	

Sample and Relinquished by Sign <u>Matthew Dobson</u> Print <u>Matthew Dobson</u> Firm <u>4+4</u> Date <u>8/1/02</u> Time <u>1545</u>	Received by Sign <u>Don Baulz</u> Print <u>Don Baulz</u> Firm <u>ALPHA</u> Date <u>8/1/02</u> Time <u>1545</u>	LIQ ID	VOA Vial Amber Glass Plastic Bottle Preservative Volume
Relinquished by Sign <u>Don Baulz</u> Print <u>Don Baulz</u> Firm <u>ALPHA</u> Date <u>8/1/02</u> Time <u>1745</u>	Received by Sign <u>Brilliam McLean</u> Print <u>Brilliam McLean</u> Firm <u>Alpha</u> Date <u>8/1/02</u> Time <u>1745</u>	SOLID	VOA Vial Amber Glass Clear Glass Preservative Volume
Sign Print Firm Date	Sign Print Firm Date	PRESERVATION KEY A Sample collected B Sample filtered C NaOH D HNO <sub>3</sub> E H <sub>2</sub> SO <sub>4</sub> F HCL G Methanol H Water/NaOH (ratio)	Evidence samples were tampered with? YES NO If YES, please explain in section below.

Presumptive Certainty Data Package (Laboratory to use applicable DEP CAM methods)

The required minimum field QC samples, as designated in HWSF (CAM-VI) have been or will be collected, as appropriate, to meet the requirements of Presumptive Certainty. Matrix Spike (MS) samples for MCP Metals and/or C-Vanilla are included and identified herein.

This Chain of Custody Record (specify) X includes X does not include samples defined as Drinking Water Samples. If this Chain of Custody Record identifies samples defined as Drinking Water Samples, Trip Blanks and Field Duplicates are included and identified and analysis of TICs are required, as appropriate. Laboratory should specify if applicable analyze

Required Reporting Limits and Data Quality Objectives  
☒ RC-S1 ☐ S1 ☐ GW1  
☐ RC-S2 ☐ S2 ☐ GW2  
☐ RC-GW1 ☐ S3 ☐ GW3  
☐ RC-GW2



## ANALYTICAL REPORT

Lab Number: L0809833

Client: Haley & Aldrich, Inc.  
465 Medford Street, Suite 2200  
Charlestown, MA 02129-1400

ATTN: Kate Leblanc

Project Name: PROPOSED WAYLAND TEAM CENTER

Project Number: 12069-052

Report Date: 07/11/08

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Sample Location</b>
L0809833-01	SV-1	WAYLAND, MA
L0809833-02	SV-2	WAYLAND, MA
L0809833-03	SV-3	WAYLAND, MA

**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

### 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.

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.

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.

---

#### TO-15

L0809833-01 through -03 have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L0809833-02 The Acetone result slightly exceeded the calibration in original analysis. The Acetone result was within calibration on the duplicate analysis. The Relative Percent Difference between the sample and duplicate was within criteria for Acetone. No further action taken.

The WG328542-2 LCS recovery for Vinyl Acetate is outside the 70%-130% acceptance limit. The LCS was within overall method allowances, therefore the analysis proceeded.

#### Fixed Gas - Helium

L0809833-02: Prior to sample analysis, the canister was pressurized with UHP Nitrogen in order to facilitate

**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

**Case Narrative (continued)**

the transfer of sample to the Gas Chromatograph. The addition of Nitrogen resulted in a dilution of the sample. The reporting limits have been elevated accordingly.

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:



Title: Technical Director/Representative

Date: 07/11/08

# AIR



**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

### SAMPLE RESULTS

**Lab ID:** L0809833-01  
**Client ID:** SV-1  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/09/08 20:08  
**Analyst:** AR

**Date Collected:** 07/01/08 12:10  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	ND	2.00	ND	10.9		10
1,1,2,2-Tetrachloroethane	ND	2.00	ND	13.7		10
1,1,2-Trichloroethane	ND	2.00	ND	10.9		10
1,1-Dichloroethane	ND	2.00	ND	8.09		10
1,1-Dichloroethene	ND	2.00	ND	7.92		10
1,2,4-Trichlorbenzene	ND	2.00	ND	14.8		10
1,2,4-Trimethylbenzene	ND	2.00	ND	9.82		10
1,2-Dibromoethane	ND	2.00	ND	15.4		10
1,2-Dichlorobenzene	ND	2.00	ND	12.0		10
1,2-Dichloroethane	ND	2.00	ND	8.09		10
1,2-Dichloropropane	ND	2.00	ND	9.24		10
1,3,5-Trimethybenzene	ND	2.00	ND	9.82		10
1,3-Butadiene	ND	2.00	ND	4.42		10
1,3-Dichlorobenzene	ND	2.00	ND	12.0		10
1,4-Dichlorobenzene	ND	2.00	ND	12.0		10
1,4-Dioxane	ND	2.00	ND	7.20		10
2,2,4-Trimethylpentane	ND	2.00	ND	9.34		10
2-Butanone	18.2	2.00	53.5	5.89		10
2-Hexanone	ND	2.00	ND	8.19		10
3-Chloropropene	ND	2.00	ND	6.26		10
4-Ethyltoluene	ND	2.00	ND	9.82		10
Acetone	478	5.00	1130	11.9		10
Benzene	ND	2.00	ND	6.38		10
Benzyl chloride	ND	2.00	ND	10.3		10
Bromodichloromethane	ND	2.00	ND	13.4		10



**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

### SAMPLE RESULTS

**Lab ID:** L0809833-01  
**Client ID:** SV-1  
**Sample Location:** WAYLAND, MA

**Date Collected:** 07/01/08 12:10  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	2.00	ND	20.6		10
Bromomethane	ND	2.00	ND	7.76		10
Carbon disulfide	ND	2.00	ND	6.22		10
Carbon tetrachloride	ND	2.00	ND	12.6		10
Chlorobenzene	ND	2.00	ND	9.20		10
Chloroethane	ND	2.00	ND	5.27		10
Chloroform	ND	2.00	ND	9.76		10
Chloromethane	ND	2.00	ND	4.13		10
cis-1,2-Dichloroethene	ND	2.00	ND	7.92		10
cis-1,3-Dichloropropene	ND	2.00	ND	9.07		10
Cyclohexane	ND	2.00	ND	6.88		10
Dibromochloromethane	ND	2.00	ND	17.0		10
Dichlorodifluoromethane	ND	2.00	ND	9.88		10
Ethanol	ND	25.0	ND	47.1		10
Ethyl Acetate	ND	5.00	ND	18.0		10
Ethylbenzene	ND	2.00	ND	8.68		10
Freon-113	ND	2.00	ND	15.3		10
Freon-114	ND	2.00	ND	14.0		10
Hexachlorobutadiene	ND	2.00	ND	21.3		10
Isopropanol	26.6	5.00	65.4	12.3		10
Methylene chloride	5.00	5.00	17.4	17.4		10
4-Methyl-2-pentanone	ND	2.00	ND	8.19		10
Methyl tert butyl ether	ND	2.00	ND	7.20		10
p/m-Xylene	ND	4.00	ND	17.4		10
o-Xylene	ND	2.00	ND	8.68		10
Heptane	ND	2.00	ND	8.19		10
n-Hexane	2.75	2.00	9.67	7.04		10
Propylene	ND	2.00	ND	3.44		10



**Project Name:** PROPOSED WAYLAND TEAM CENTER**Lab Number:** L0809833**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809833-01**Date Collected:** 07/01/08 12:10**Client ID:** SV-1**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	ND	2.00	ND	8.51		10
Tetrachloroethene	6.53	2.00	44.3	13.6		10
Tetrahydrofuran	ND	2.00	ND	5.89		10
Toluene	ND	2.00	ND	7.53		10
trans-1,2-Dichloroethene	ND	2.00	ND	7.92		10
trans-1,3-Dichloropropene	ND	2.00	ND	9.07		10
Trichloroethene	3.82	2.00	20.5	10.7		10
Trichlorofluoromethane	19.7	2.00	111	11.2		10
Vinyl acetate	ND	2.00	ND	7.04		10
Vinyl bromide	ND	2.00	ND	8.74		10
Vinyl chloride	ND	2.00	ND	5.11		10



**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

### SAMPLE RESULTS

**Lab ID:** L0809833-02  
**Client ID:** SV-2  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/10/08 00:25  
**Analyst:** AR

**Date Collected:** 07/01/08 14:00  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	ND	0.400	ND	2.18		2
1,1,2,2-Tetrachloroethane	ND	0.400	ND	2.74		2
1,1,2-Trichloroethane	ND	0.400	ND	2.18		2
1,1-Dichloroethane	ND	0.400	ND	1.62		2
1,1-Dichloroethene	ND	0.400	ND	1.58		2
1,2,4-Trichlorbenzene	ND	0.400	ND	2.97		2
1,2,4-Trimethylbenzene	ND	0.400	ND	1.96		2
1,2-Dibromoethane	ND	0.400	ND	3.07		2
1,2-Dichlorobenzene	ND	0.400	ND	2.40		2
1,2-Dichloroethane	ND	0.400	ND	1.62		2
1,2-Dichloropropane	ND	0.400	ND	1.85		2
1,3,5-Trimethybenzene	ND	0.400	ND	1.96		2
1,3-Butadiene	ND	0.400	ND	0.884		2
1,3-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dioxane	ND	0.400	ND	1.44		2
2,2,4-Trimethylpentane	ND	0.400	ND	1.87		2
2-Butanone	19.8	0.400	58.2	1.18		2
2-Hexanone	2.69	0.400	11.0	1.64		2
3-Chloropropene	ND	0.400	ND	1.25		2
4-Ethyltoluene	ND	0.400	ND	1.96		2
Acetone	213	1.00	505	2.37		2
Benzene	ND	0.400	ND	1.28		2
Benzyl chloride	ND	0.400	ND	2.07		2
Bromodichloromethane	ND	0.400	ND	2.68		2



**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

### SAMPLE RESULTS

**Lab ID:** L0809833-02  
**Client ID:** SV-2  
**Sample Location:** WAYLAND, MA

**Date Collected:** 07/01/08 14:00  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	0.400	ND	4.13		2
Bromomethane	ND	0.400	ND	1.55		2
Carbon disulfide	0.515	0.400	1.60	1.24		2
Carbon tetrachloride	ND	0.400	ND	2.51		2
Chlorobenzene	ND	0.400	ND	1.84		2
Chloroethane	ND	0.400	ND	1.05		2
Chloroform	1.12	0.400	5.47	1.95		2
Chloromethane	ND	0.400	ND	0.825		2
cis-1,2-Dichloroethene	ND	0.400	ND	1.58		2
cis-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Cyclohexane	ND	0.400	ND	1.38		2
Dibromochloromethane	ND	0.400	ND	3.40		2
Dichlorodifluoromethane	0.486	0.400	2.40	1.98		2
Ethanol	16.8	5.00	31.6	9.41		2
Ethyl Acetate	ND	1.00	ND	3.60		2
Ethylbenzene	ND	0.400	ND	1.74		2
Freon-113	ND	0.400	ND	3.06		2
Freon-114	ND	0.400	ND	2.79		2
Hexachlorobutadiene	ND	0.400	ND	4.26		2
Isopropanol	17.0	1.00	41.7	2.46		2
Methylene chloride	1.31	1.00	4.54	3.47		2
4-Methyl-2-pentanone	ND	0.400	ND	1.64		2
Methyl tert butyl ether	ND	0.400	ND	1.44		2
p/m-Xylene	0.898	0.800	3.90	3.47		2
o-Xylene	ND	0.400	ND	1.74		2
Heptane	ND	0.400	ND	1.64		2
n-Hexane	2.30	0.400	8.11	1.41		2
Propylene	2.18	0.400	3.76	0.688		2



**Project Name:** PROPOSED WAYLAND TEAM CENTER**Lab Number:** L0809833**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809833-02**Date Collected:** 07/01/08 14:00**Client ID:** SV-2**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	ND	0.400	ND	1.70		2
Tetrachloroethene	4.41	0.400	29.9	2.71		2
Tetrahydrofuran	ND	0.400	ND	1.18		2
Toluene	1.68	0.400	6.31	1.51		2
trans-1,2-Dichloroethene	ND	0.400	ND	1.58		2
trans-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Trichloroethene	5.43	0.400	29.1	2.15		2
Trichlorofluoromethane	42.9	0.400	241	2.24		2
Vinyl acetate	1.23	0.400	4.32	1.41		2
Vinyl bromide	ND	0.400	ND	1.75		2
Vinyl chloride	ND	0.400	ND	1.02		2



**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

### SAMPLE RESULTS

**Lab ID:** L0809833-03  
**Client ID:** SV-3  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/10/08 01:41  
**Analyst:** AR

**Date Collected:** 07/01/08 14:45  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	ND	0.400	ND	2.18		2
1,1,2,2-Tetrachloroethane	ND	0.400	ND	2.74		2
1,1,2-Trichloroethane	ND	0.400	ND	2.18		2
1,1-Dichloroethane	ND	0.400	ND	1.62		2
1,1-Dichloroethene	ND	0.400	ND	1.58		2
1,2,4-Trichlorobenzene	1.00	0.400	7.43	2.97		2
1,2,4-Trimethylbenzene	ND	0.400	ND	1.96		2
1,2-Dibromoethane	ND	0.400	ND	3.07		2
1,2-Dichlorobenzene	ND	0.400	ND	2.40		2
1,2-Dichloroethane	ND	0.400	ND	1.62		2
1,2-Dichloropropane	ND	0.400	ND	1.85		2
1,3,5-Trimethybenzene	ND	0.400	ND	1.96		2
1,3-Butadiene	ND	0.400	ND	0.884		2
1,3-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dioxane	ND	0.400	ND	1.44		2
2,2,4-Trimethylpentane	ND	0.400	ND	1.87		2
2-Butanone	22.9	0.400	67.5	1.18		2
2-Hexanone	3.31	0.400	13.6	1.64		2
3-Chloropropene	ND	0.400	ND	1.25		2
4-Ethyltoluene	ND	0.400	ND	1.96		2
Acetone	177	1.00	419	2.37		2
Benzene	ND	0.400	ND	1.28		2
Benzyl chloride	ND	0.400	ND	2.07		2
Bromodichloromethane	ND	0.400	ND	2.68		2



**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

### SAMPLE RESULTS

**Lab ID:** L0809833-03  
**Client ID:** SV-3  
**Sample Location:** WAYLAND, MA

**Date Collected:** 07/01/08 14:45  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	0.400	ND	4.13		2
Bromomethane	ND	0.400	ND	1.55		2
Carbon disulfide	ND	0.400	ND	1.24		2
Carbon tetrachloride	ND	0.400	ND	2.51		2
Chlorobenzene	ND	0.400	ND	1.84		2
Chloroethane	ND	0.400	ND	1.05		2
Chloroform	ND	0.400	ND	1.95		2
Chloromethane	ND	0.400	ND	0.825		2
cis-1,2-Dichloroethene	ND	0.400	ND	1.58		2
cis-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Cyclohexane	ND	0.400	ND	1.38		2
Dibromochloromethane	ND	0.400	ND	3.40		2
Dichlorodifluoromethane	0.492	0.400	2.43	1.98		2
Ethanol	12.4	5.00	23.4	9.41		2
Ethyl Acetate	ND	1.00	ND	3.60		2
Ethylbenzene	ND	0.400	ND	1.74		2
Freon-113	ND	0.400	ND	3.06		2
Freon-114	ND	0.400	ND	2.79		2
Hexachlorobutadiene	ND	0.400	ND	4.26		2
Isopropanol	7.23	1.00	17.8	2.46		2
Methylene chloride	1.30	1.00	4.51	3.47		2
4-Methyl-2-pentanone	ND	0.400	ND	1.64		2
Methyl tert butyl ether	ND	0.400	ND	1.44		2
p/m-Xylene	ND	0.800	ND	3.47		2
o-Xylene	ND	0.400	ND	1.74		2
Heptane	0.438	0.400	1.80	1.64		2
n-Hexane	2.41	0.400	8.49	1.41		2
Propylene	1.96	0.400	3.37	0.688		2





**Project Name:** PROPOSED WAYLAND TEAM CENTER**Lab Number:** L0809833**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809833-03**Date Collected:** 07/01/08 14:45**Client ID:** SV-3**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	ND	0.400	ND	1.70		2
Tetrachloroethene	2.02	0.400	13.7	2.71		2
Tetrahydrofuran	ND	0.400	ND	1.18		2
Toluene	1.03	0.400	3.87	1.51		2
trans-1,2-Dichloroethene	ND	0.400	ND	1.58		2
trans-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Trichloroethene	1.72	0.400	9.24	2.15		2
Trichlorofluoromethane	26.6	0.400	149	2.24		2
Vinyl acetate	2.10	0.400	7.39	1.41		2
Vinyl bromide	ND	0.400	ND	1.75		2
Vinyl chloride	ND	0.400	ND	1.02		2



**Project Name:** PROPOSED WAYLAND TEAM CENTER**Lab Number:** L0809833**Project Number:** 12069-052**Report Date:** 07/11/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/09/08 12:53

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-03 Batch: WG328542-3						
1,1,1-Trichloroethane	ND	0.200	ND	1.09		1
1,1,2,2-Tetrachloroethane	ND	0.200	ND	1.37		1
1,1,2-Trichloroethane	ND	0.200	ND	1.09		1
1,1-Dichloroethane	ND	0.200	ND	0.809		1
1,1-Dichloroethene	ND	0.200	ND	0.792		1
1,2,4-Trichlorobenzene	ND	0.200	ND	1.48		1
1,2,4-Trimethylbenzene	ND	0.200	ND	0.982		1
1,2-Dibromoethane	ND	0.200	ND	1.54		1
1,2-Dichlorobenzene	ND	0.200	ND	1.20		1
1,2-Dichloroethane	ND	0.200	ND	0.809		1
1,2-Dichloropropane	ND	0.200	ND	0.924		1
1,3,5-Trimethybenzene	ND	0.200	ND	0.982		1
1,3-Butadiene	ND	0.200	ND	0.442		1
1,3-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dioxane	ND	0.200	ND	0.720		1
2,2,4-Trimethylpentane	ND	0.200	ND	0.934		1
2-Butanone	ND	0.200	ND	0.589		1
2-Hexanone	ND	0.200	ND	0.819		1
3-Chloropropene	ND	0.200	ND	0.626		1
4-Ethyltoluene	ND	0.200	ND	0.982		1
Acetone	ND	0.500	ND	1.19		1
Benzene	ND	0.200	ND	0.638		1
Benzyl chloride	ND	0.200	ND	1.03		1
Bromodichloromethane	ND	0.200	ND	1.34		1



**Project Name:** PROPOSED WAYLAND TEAM CENTER**Lab Number:** L0809833**Project Number:** 12069-052**Report Date:** 07/11/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/09/08 12:53

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-03 Batch: WG328542-3						
Bromoform	ND	0.200	ND	2.06		1
Bromomethane	ND	0.200	ND	0.776		1
Carbon disulfide	ND	0.200	ND	0.622		1
Carbon tetrachloride	ND	0.200	ND	1.26		1
Chlorobenzene	ND	0.200	ND	0.920		1
Chloroethane	ND	0.200	ND	0.527		1
Chloroform	ND	0.200	ND	0.976		1
Chloromethane	ND	0.200	ND	0.413		1
cis-1,2-Dichloroethene	ND	0.200	ND	0.792		1
cis-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Cyclohexane	ND	0.200	ND	0.688		1
Dibromochloromethane	ND	0.200	ND	1.70		1
Dichlorodifluoromethane	ND	0.200	ND	0.988		1
Ethanol	ND	2.50	ND	4.71		1
Ethyl Acetate	ND	0.500	ND	1.80		1
Ethylbenzene	ND	0.200	ND	0.868		1
Freon-113	ND	0.200	ND	1.53		1
Freon-114	ND	0.200	ND	1.40		1
Hexachlorobutadiene	ND	0.200	ND	2.13		1
Isopropanol	ND	0.500	ND	1.23		1
Methylene chloride	ND	0.500	ND	1.74		1
4-Methyl-2-pentanone	ND	0.200	ND	0.819		1
Methyl tert butyl ether	ND	0.200	ND	0.720		1
p/m-Xylene	ND	0.400	ND	1.74		1
o-Xylene	ND	0.200	ND	0.868		1



**Project Name:** PROPOSED WAYLAND TEAM CENTER**Lab Number:** L0809833**Project Number:** 12069-052**Report Date:** 07/11/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/09/08 12:53

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-03 Batch: WG328542-3						
Heptane	ND	0.200	ND	0.819		1
n-Hexane	ND	0.200	ND	0.704		1
Propylene	ND	0.200	ND	0.344		1
Styrene	ND	0.200	ND	0.851		1
Tetrachloroethene	ND	0.200	ND	1.36		1
Tetrahydrofuran	ND	0.200	ND	0.589		1
Toluene	ND	0.200	ND	0.753		1
trans-1,2-Dichloroethene	ND	0.200	ND	0.792		1
trans-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Trichloroethene	ND	0.200	ND	1.07		1
Trichlorofluoromethane	ND	0.200	ND	1.12		1
Vinyl acetate	ND	0.200	ND	0.704		1
Vinyl bromide	ND	0.200	ND	0.874		1
Vinyl chloride	ND	0.200	ND	0.511		1

# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PROPOSED WAYLAND TEAM CENTER

**Lab Number:** L0809833

**Project Number:** 12069-052

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 Batch: WG328542-2					
1,1,1-Trichloroethane	109	-	70-130	-	
1,1,2,2-Tetrachloroethane	123	-	70-130	-	
1,1,2-Trichloroethane	116	-	70-130	-	
1,1-Dichloroethane	112	-	70-130	-	
1,1-Dichloroethene	99	-	70-130	-	
1,2,4-Trichlorobenzene	111	-	70-130	-	
1,2,4-Trimethylbenzene	123	-	70-130	-	
1,2-Dibromoethane	106	-	70-130	-	
1,2-Dichlorobenzene	120	-	70-130	-	
1,2-Dichloroethane	118	-	70-130	-	
1,2-Dichloropropane	122	-	70-130	-	
1,3,5-Trimethylbenzene	121	-	70-130	-	
1,3-Butadiene	101	-	70-130	-	
1,3-Dichlorobenzene	120	-	70-130	-	
1,4-Dichlorobenzene	122	-	70-130	-	
1,4-Dioxane	108	-	70-130	-	
2,2,4-Trimethylpentane	124	-	70-130	-	
2-Butanone	106	-	70-130	-	
2-Hexanone	117	-	70-130	-	
3-Chloropropene	114	-	70-130	-	
4-Ethyltoluene	120	-	70-130	-	

# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PROPOSED WAYLAND TEAM CENTER

**Lab Number:** L0809833

**Project Number:** 12069-052

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 Batch: WG328542-2					
Acetone	116	-	70-130	-	
Benzene	111	-	70-130	-	
Benzyl chloride	122	-	70-130	-	
Bromodichloromethane	117	-	70-130	-	
Bromoform	112	-	70-130	-	
Bromomethane	86	-	70-130	-	
Carbon disulfide	96	-	70-130	-	
Carbon tetrachloride	104	-	70-130	-	
Chlorobenzene	111	-	70-130	-	
Chloroethane	100	-	70-130	-	
Chloroform	112	-	70-130	-	
Chloromethane	97	-	70-130	-	
cis-1,2-Dichloroethene	113	-	70-130	-	
cis-1,3-Dichloropropene	111	-	70-130	-	
Cyclohexane	103	-	70-130	-	
Dibromochloromethane	109	-	70-130	-	
Dichlorodifluoromethane	96	-	70-130	-	
Ethyl Alcohol	119	-	70-130	-	
Ethyl Acetate	125	-	70-130	-	
Ethylbenzene	124	-	70-130	-	
1,1,2-Trichloro-1,2,2-Trifluoroethane	99	-	70-130	-	

# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PROPOSED WAYLAND TEAM CENTER

**Lab Number:** L0809833

**Project Number:** 12069-052

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 Batch: WG328542-2					
1,2-Dichloro-1,1,2,2-tetrafluoroethane	98	-	70-130	-	
Hexachlorobutadiene	98	-	70-130	-	
iso-Propyl Alcohol	114	-	70-130	-	
Methylene chloride	102	-	70-130	-	
4-Methyl-2-pentanone	118	-	70-130	-	
Methyl tert butyl ether	116	-	70-130	-	
p/m-Xylene	124	-	70-130	-	
o-Xylene	125	-	70-130	-	
Heptane	119	-	70-130	-	
n-Hexane	102	-	70-130	-	
Propylene	99	-	70-130	-	
Styrene	120	-	70-130	-	
Tetrachloroethene	106	-	70-130	-	
Tetrahydrofuran	115	-	70-130	-	
Toluene	117	-	70-130	-	
trans-1,2-Dichloroethene	101	-	70-130	-	
trans-1,3-Dichloropropene	104	-	70-130	-	
Trichloroethene	110	-	70-130	-	
Trichlorofluoromethane	96	-	70-130	-	
Vinyl acetate	140	-	70-130	-	
Vinyl bromide	98	-	70-130	-	

**Lab Control Sample Analysis**

Batch Quality Control

**Project Name:** PROPOSED WAYLAND TEAM CENTER**Project Number:** 12069-052**Lab Number:** L0809833**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 Batch: WG328542-2					
Vinyl chloride	98	-	70-130	-	
Naphthalene	106	-	70-130	-	



# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** PROPOSED WAYLAND TEAM CENTER

**Project Number:** 12069-052

**Lab Number:** L0809833

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: SV-2					
1,1,1-Trichloroethane	ND	ND	ppbV	NC	25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC	25
1,1,2-Trichloroethane	ND	ND	ppbV	NC	25
1,1-Dichloroethane	ND	ND	ppbV	NC	25
1,1-Dichloroethene	ND	ND	ppbV	NC	25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC	25
1,2,4-Trimethylbenzene	ND	ND	ppbV	NC	25
1,2-Dibromoethane	ND	ND	ppbV	NC	25
1,2-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2-Dichloroethane	ND	ND	ppbV	NC	25
1,2-Dichloropropane	ND	ND	ppbV	NC	25
1,3,5-Trimethylbenzene	ND	ND	ppbV	NC	25
1,3-Butadiene	ND	ND	ppbV	NC	25
1,3-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dioxane	ND	ND	ppbV	NC	25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC	25
2-Butanone	19.8	17.4	ppbV	13	25
2-Hexanone	2.69	2.72	ppbV	1	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** PROPOSED WAYLAND TEAM CENTER

**Project Number:** 12069-052

**Lab Number:** L0809833

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: SV-2					
3-Chloropropene	ND	ND	ppbV	NC	25
4-Ethyltoluene	ND	ND	ppbV	NC	25
Acetone	213	182	ppbV	16	25
Benzene	ND	ND	ppbV	NC	25
Benzyl chloride	ND	ND	ppbV	NC	25
Bromodichloromethane	ND	ND	ppbV	NC	25
Bromoform	ND	ND	ppbV	NC	25
Bromomethane	ND	ND	ppbV	NC	25
Carbon disulfide	0.515	0.497	ppbV	4	25
Carbon tetrachloride	ND	ND	ppbV	NC	25
Chlorobenzene	ND	ND	ppbV	NC	25
Chloroethane	ND	ND	ppbV	NC	25
Chloroform	1.12	1.09	ppbV	3	25
Chloromethane	ND	ND	ppbV	NC	25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC	25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Cyclohexane	ND	ND	ppbV	NC	25
Dibromochloromethane	ND	ND	ppbV	NC	25
Dichlorodifluoromethane	0.486	0.481	ppbV	1	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** PROPOSED WAYLAND TEAM CENTER

**Project Number:** 12069-052

**Lab Number:** L0809833

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: SV-2					
Ethanol	16.8	15.9	ppbV	6	25
Ethyl Acetate	ND	ND	ppbV	NC	25
Ethylbenzene	ND	ND	ppbV	NC	25
Freon-113	ND	ND	ppbV	NC	25
Freon-114	ND	ND	ppbV	NC	25
Hexachlorobutadiene	ND	ND	ppbV	NC	25
Isopropanol	17.0	16.5	ppbV	3	25
Methylene chloride	1.31	1.30	ppbV	1	25
4-Methyl-2-pentanone	ND	ND	ppbV	NC	25
Methyl tert butyl ether	ND	ND	ppbV	NC	25
p/m-Xylene	0.898	0.861	ppbV	4	25
o-Xylene	ND	ND	ppbV	NC	25
Heptane	ND	0.404	ppbV	NC	25
n-Hexane	2.30	2.26	ppbV	2	25
Propylene	2.18	2.10	ppbV	4	25
Styrene	ND	ND	ppbV	NC	25
Tetrachloroethene	4.41	4.49	ppbV	2	25
Tetrahydrofuran	ND	ND	ppbV	NC	25
Toluene	1.68	1.70	ppbV	1	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** PROPOSED WAYLAND TEAM CENTER

**Project Number:** 12069-052

**Lab Number:** L0809833

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: SV-2					
trans-1,2-Dichloroethene	ND	ND	ppbV	NC	25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Trichloroethene	5.43	5.41	ppbV	0	25
Trichlorofluoromethane	42.9	42.2	ppbV	2	25
Vinyl acetate	1.23	1.10	ppbV	11	25
Vinyl bromide	ND	ND	ppbV	NC	25
Vinyl chloride	ND	ND	ppbV	NC	25

**Project Name:** PROPOSED WAYLAND TEAM CENTER**Lab Number:** L0809833**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS**

Lab ID: L0809833-02  
Client ID: SV-2  
Sample Location: WAYLAND, MA  
Matrix: Soil\_Vapor  
Analytical Method: 51,3C(M)  
Analytical Date: 07/10/08 11:05  
Analyst: RY

Date Collected: 07/01/08 14:00  
Date Received: 07/03/08  
Field Prep: Not Specified  
Extraction Method:

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Fixed Gases by GC					
Helium	0.085		%	0.018	1.77

**Project Name:** PROPOSED WAYLAND TEAM CENTER**Lab Number:** L0809833**Project Number:** 12069-052**Report Date:** 07/11/08**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 51,3C(M)

Analytical Date: 07/10/08 10:53

Analyst: RY

Parameter	Result	Qualifier	Units	RDL
Fixed Gases by GC for sample(s): 02 Batch: WG328549-2				
Helium	ND		%	0.010

**Lab Control Sample Analysis**

Batch Quality Control

**Project Name:** PROPOSED WAYLAND TEAM CENTER**Project Number:** 12069-052**Lab Number:** L0809833**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Fixed Gases by GC Associated sample(s): 02 Batch: WG328549-1					
Helium	80	-	80-120	-	

**Project Name:** PROPOSED WAYLAND TEAM CENTER**Project Number:** 12069-052**Lab Duplicate Analysis****Batch Quality Control****Lab Number:** L0809833**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Fixed Gases by GC Associated sample(s): 02 QC Batch ID: WG328549-3 QC Sample: L0809833-02 Client ID: SV-2					
Helium	0.085	0.085	%	0	5



**Project Name:** PROPOSED WAYLAND TEAM CENTER

07110813:05

**Lab Number:** L0809833

**Project Number:** 12069-052

**Report Date:** 07/11/08

### Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Cleaning Batch ID	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Out mL/min	Flow In mL/min	% RSD
L0809833-01	SV-1	0103	#16 SV		-	-	39	36	8
L0809833-01	SV-1	381	2.7L Can	L0809159-01	-29.3	-2.3	-	-	-
L0809833-02	SV-2	0169	#30 SV		-	-	38	39	3
L0809833-02	SV-2	257	2.7L Can	L0809159-01	-29.4	-2.5	-	-	-
L0809833-03	SV-3	139	2.7L Can	L0809159-01	-29.3	-0.5	-	-	-



**Project Name:** PROPOSED WAYLAND TEAM CENTER**Lab Number:** L0809833**Project Number:** 12069-052**Report Date:** 07/11/08**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

Cooler	Custody Seal
NA	Absent

**Container Information**

Container ID	Container Type	Cooler	pH	Temp	Pres	Seal	Analysis
L0809833-01A	Canister - 2.7 Liter	NA	NA	NA	NA	Absent	-
L0809833-02A	Canister - 2.7 Liter	NA	NA	NA	NA	Absent	FIXGAS-HE,TO15-LL
L0809833-03A	Canister - 2.7 Liter	NA	NA	NA	NA	Absent	-

**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

## 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.
- 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.
- NI - Not Ignitable.
- 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.
- ND - Not detected at the reported detection limit for the sample.
- RDL - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL 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.

### **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**

The following data qualifiers have been identified for use under the CT DEP Reasonable Confidence Protocols.

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.

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

J - Estimated value. The analyte was tentatively identified; the quantitation is an estimation. (Tentatively identified compounds only.)

### **Standard Qualifiers**

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

Report Format: Not Specified



**Project Name:** PROPOSED WAYLAND TEAM CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809833  
**Report Date:** 07/11/08

## REFERENCES

- 48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.
- 51 Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from Stationary Sources. Method 3C. Appendix A, Part 60, 40 CFR (Code of Federal Regulations). June 20, 1996.

## LIMITATION OF LIABILITIES

Alpha Woods Hole Labs 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 Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Woods Hole Labs 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 Woods Hole Labs.

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.



Other Project Specific Requirements/Comments:

Date Due: \_\_\_\_\_  
Time: \_\_\_\_\_

Report to: (if different than Project Manager)

	Criteria
--	----------

**All Columns Below Must Be Filled Out**

TO-14A by TO-15  
TO-15  
TO-15 SIM  
APH  
FIXED GASES  
TO-13A  
TO-4 / TO-10  
9

Ram w/ the Tunes

Container Type

Date/Time:

Date/Time

Received By:

Date/Time:

Date/Time
7/1/02 1632
7/2/02 1632

Received By: *David C. French*

Date/Time: 7/1/08 16:30

**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.**





## ANALYTICAL REPORT

Lab Number: L0809956

Client: Haley & Aldrich, Inc.  
465 Medford Street, Suite 2200  
Charlestown, MA 02129-1400

ATTN: Kate Leblanc

Project Name: WAYLAND TOWN CENTER

Project Number: 12069-052

Report Date: 07/11/08

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809956  
**Report Date:** 07/11/08

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Sample Location</b>
L0809956-01	SV-4	WAYLAND, MA
L0809956-02	SV-5	WAYLAND, MA



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809956  
**Report Date:** 07/11/08

### 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.

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.

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.

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#### TO-15

L0809956-01 and -02 have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

The WG328542-2 LCS recovery for Vinyl Acetate is outside the 70%-130% acceptance limit. The LCS was within overall method allowances, therefore the analysis proceeded.

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:



Title: Technical Director/Representative

Date: 07/11/08

# AIR

**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0809956**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS**

**Lab ID:** L0809956-01  
**Client ID:** SV-4  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/10/08 02:18  
**Analyst:** AR

**Date Collected:** 07/02/08 10:45  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	ND	0.400	ND	2.18		2
1,1,2,2-Tetrachloroethane	ND	0.400	ND	2.74		2
1,1,2-Trichloroethane	ND	0.400	ND	2.18		2
1,1-Dichloroethane	ND	0.400	ND	1.62		2
1,1-Dichloroethene	ND	0.400	ND	1.58		2
1,2,4-Trichlorobenzene	ND	0.400	ND	2.97		2
1,2,4-Trimethylbenzene	ND	0.400	ND	1.96		2
1,2-Dibromoethane	ND	0.400	ND	3.07		2
1,2-Dichlorobenzene	ND	0.400	ND	2.40		2
1,2-Dichloroethane	ND	0.400	ND	1.62		2
1,2-Dichloropropane	ND	0.400	ND	1.85		2
1,3,5-Trimethybenzene	ND	0.400	ND	1.96		2
1,3-Butadiene	ND	0.400	ND	0.884		2
1,3-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dioxane	ND	0.400	ND	1.44		2
2,2,4-Trimethylpentane	ND	0.400	ND	1.87		2
2-Butanone	13.3	0.400	39.1	1.18		2
2-Hexanone	2.49	0.400	10.2	1.64		2
3-Chloropropene	ND	0.400	ND	1.25		2
4-Ethyltoluene	ND	0.400	ND	1.96		2
Acetone	158	1.00	374	2.37		2
Benzene	0.488	0.400	1.56	1.28		2
Benzyl chloride	ND	0.400	ND	2.07		2
Bromodichloromethane	ND	0.400	ND	2.68		2



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0809956**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809956-01**Date Collected:** 07/02/08 10:45**Client ID:** SV-4**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	0.400	ND	4.13		2
Bromomethane	ND	0.400	ND	1.55		2
Carbon disulfide	ND	0.400	ND	1.24		2
Carbon tetrachloride	ND	0.400	ND	2.51		2
Chlorobenzene	ND	0.400	ND	1.84		2
Chloroethane	ND	0.400	ND	1.05		2
Chloroform	ND	0.400	ND	1.95		2
Chloromethane	ND	0.400	ND	0.825		2
cis-1,2-Dichloroethene	ND	0.400	ND	1.58		2
cis-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Cyclohexane	ND	0.400	ND	1.38		2
Dibromochloromethane	ND	0.400	ND	3.40		2
Dichlorodifluoromethane	0.483	0.400	2.39	1.98		2
Ethanol	8.96	5.00	16.9	9.41		2
Ethyl Acetate	ND	1.00	ND	3.60		2
Ethylbenzene	ND	0.400	ND	1.74		2
Freon-113	ND	0.400	ND	3.06		2
Freon-114	ND	0.400	ND	2.79		2
Hexachlorobutadiene	ND	0.400	ND	4.26		2
Isopropanol	13.1	1.00	32.3	2.46		2
Methylene chloride	1.26	1.00	4.38	3.47		2
4-Methyl-2-pentanone	ND	0.400	ND	1.64		2
Methyl tert butyl ether	ND	0.400	ND	1.44		2
p/m-Xylene	ND	0.800	ND	3.47		2
o-Xylene	ND	0.400	ND	1.74		2
Heptane	0.636	0.400	2.60	1.64		2
n-Hexane	1.76	0.400	6.21	1.41		2
Propylene	1.32	0.400	2.26	0.688		2



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0809956**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809956-01**Date Collected:** 07/02/08 10:45**Client ID:** SV-4**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	ND	0.400	ND	1.70		2
Tetrachloroethene	ND	0.400	ND	2.71		2
Tetrahydrofuran	ND	0.400	ND	1.18		2
Toluene	0.960	0.400	3.61	1.51		2
trans-1,2-Dichloroethene	ND	0.400	ND	1.58		2
trans-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Trichloroethene	1.10	0.400	5.90	2.15		2
Trichlorofluoromethane	15.3	0.400	86.0	2.24		2
Vinyl acetate	0.657	0.400	2.31	1.41		2
Vinyl bromide	ND	0.400	ND	1.75		2
Vinyl chloride	ND	0.400	ND	1.02		2



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0809956**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS**

**Lab ID:** L0809956-02  
**Client ID:** SV-5  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/10/08 02:56  
**Analyst:** AR

**Date Collected:** 07/02/08 11:10  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	ND	0.400	ND	2.18		2
1,1,2,2-Tetrachloroethane	ND	0.400	ND	2.74		2
1,1,2-Trichloroethane	ND	0.400	ND	2.18		2
1,1-Dichloroethane	ND	0.400	ND	1.62		2
1,1-Dichloroethene	ND	0.400	ND	1.58		2
1,2,4-Trichlorbenzene	ND	0.400	ND	2.97		2
1,2,4-Trimethylbenzene	ND	0.400	ND	1.96		2
1,2-Dibromoethane	ND	0.400	ND	3.07		2
1,2-Dichlorobenzene	ND	0.400	ND	2.40		2
1,2-Dichloroethane	ND	0.400	ND	1.62		2
1,2-Dichloropropane	ND	0.400	ND	1.85		2
1,3,5-Trimethybenzene	ND	0.400	ND	1.96		2
1,3-Butadiene	ND	0.400	ND	0.884		2
1,3-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dioxane	ND	0.400	ND	1.44		2
2,2,4-Trimethylpentane	ND	0.400	ND	1.87		2
2-Butanone	18.4	0.400	54.2	1.18		2
2-Hexanone	3.05	0.400	12.5	1.64		2
3-Chloropropene	ND	0.400	ND	1.25		2
4-Ethyltoluene	ND	0.400	ND	1.96		2
Acetone	76.2	1.00	181	2.37		2
Benzene	ND	0.400	ND	1.28		2
Benzyl chloride	ND	0.400	ND	2.07		2
Bromodichloromethane	ND	0.400	ND	2.68		2



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0809956**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809956-02**Date Collected:** 07/02/08 11:10**Client ID:** SV-5**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	0.400	ND	4.13		2
Bromomethane	ND	0.400	ND	1.55		2
Carbon disulfide	ND	0.400	ND	1.24		2
Carbon tetrachloride	ND	0.400	ND	2.51		2
Chlorobenzene	ND	0.400	ND	1.84		2
Chloroethane	ND	0.400	ND	1.05		2
Chloroform	1.97	0.400	9.61	1.95		2
Chloromethane	ND	0.400	ND	0.825		2
cis-1,2-Dichloroethene	ND	0.400	ND	1.58		2
cis-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Cyclohexane	ND	0.400	ND	1.38		2
Dibromochloromethane	ND	0.400	ND	3.40		2
Dichlorodifluoromethane	0.538	0.400	2.66	1.98		2
Ethanol	7.88	5.00	14.8	9.41		2
Ethyl Acetate	ND	1.00	ND	3.60		2
Ethylbenzene	ND	0.400	ND	1.74		2
Freon-113	ND	0.400	ND	3.06		2
Freon-114	ND	0.400	ND	2.79		2
Hexachlorobutadiene	ND	0.400	ND	4.26		2
Isopropanol	5.12	1.00	12.6	2.46		2
Methylene chloride	1.24	1.00	4.29	3.47		2
4-Methyl-2-pentanone	ND	0.400	ND	1.64		2
Methyl tert butyl ether	ND	0.400	ND	1.44		2
p/m-Xylene	ND	0.800	ND	3.47		2
o-Xylene	ND	0.400	ND	1.74		2
Heptane	ND	0.400	ND	1.64		2
n-Hexane	1.88	0.400	6.64	1.41		2
Propylene	1.02	0.400	1.75	0.688		2



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0809956**Project Number:** 12069-052**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809956-02**Date Collected:** 07/02/08 11:10**Client ID:** SV-5**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	ND	0.400	ND	1.70		2
Tetrachloroethene	3.28	0.400	22.2	2.71		2
Tetrahydrofuran	ND	0.400	ND	1.18		2
Toluene	1.02	0.400	3.85	1.51		2
trans-1,2-Dichloroethene	ND	0.400	ND	1.58		2
trans-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Trichloroethene	11.0	0.400	59.0	2.15		2
Trichlorofluoromethane	77.3	0.400	434	2.24		2
Vinyl acetate	0.817	0.400	2.88	1.41		2
Vinyl bromide	ND	0.400	ND	1.75		2
Vinyl chloride	ND	0.400	ND	1.02		2



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0809956**Project Number:** 12069-052**Report Date:** 07/11/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/09/08 12:53

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-02 Batch: WG328542-3						
1,1,1-Trichloroethane	ND	0.200	ND	1.09		1
1,1,2,2-Tetrachloroethane	ND	0.200	ND	1.37		1
1,1,2-Trichloroethane	ND	0.200	ND	1.09		1
1,1-Dichloroethane	ND	0.200	ND	0.809		1
1,1-Dichloroethene	ND	0.200	ND	0.792		1
1,2,4-Trichlorobenzene	ND	0.200	ND	1.48		1
1,2,4-Trimethylbenzene	ND	0.200	ND	0.982		1
1,2-Dibromoethane	ND	0.200	ND	1.54		1
1,2-Dichlorobenzene	ND	0.200	ND	1.20		1
1,2-Dichloroethane	ND	0.200	ND	0.809		1
1,2-Dichloropropane	ND	0.200	ND	0.924		1
1,3,5-Trimethybenzene	ND	0.200	ND	0.982		1
1,3-Butadiene	ND	0.200	ND	0.442		1
1,3-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dioxane	ND	0.200	ND	0.720		1
2,2,4-Trimethylpentane	ND	0.200	ND	0.934		1
2-Butanone	ND	0.200	ND	0.589		1
2-Hexanone	ND	0.200	ND	0.819		1
3-Chloropropene	ND	0.200	ND	0.626		1
4-Ethyltoluene	ND	0.200	ND	0.982		1
Acetone	ND	0.500	ND	1.19		1
Benzene	ND	0.200	ND	0.638		1
Benzyl chloride	ND	0.200	ND	1.03		1
Bromodichloromethane	ND	0.200	ND	1.34		1



Project Name: WAYLAND TOWN CENTER

Lab Number: L0809956

Project Number: 12069-052

Report Date: 07/11/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/09/08 12:53

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-02 Batch: WG328542-3						
Bromoform	ND	0.200	ND	2.06		1
Bromomethane	ND	0.200	ND	0.776		1
Carbon disulfide	ND	0.200	ND	0.622		1
Carbon tetrachloride	ND	0.200	ND	1.26		1
Chlorobenzene	ND	0.200	ND	0.920		1
Chloroethane	ND	0.200	ND	0.527		1
Chloroform	ND	0.200	ND	0.976		1
Chloromethane	ND	0.200	ND	0.413		1
cis-1,2-Dichloroethene	ND	0.200	ND	0.792		1
cis-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Cyclohexane	ND	0.200	ND	0.688		1
Dibromochloromethane	ND	0.200	ND	1.70		1
Dichlorodifluoromethane	ND	0.200	ND	0.988		1
Ethanol	ND	2.50	ND	4.71		1
Ethyl Acetate	ND	0.500	ND	1.80		1
Ethylbenzene	ND	0.200	ND	0.868		1
Freon-113	ND	0.200	ND	1.53		1
Freon-114	ND	0.200	ND	1.40		1
Hexachlorobutadiene	ND	0.200	ND	2.13		1
Isopropanol	ND	0.500	ND	1.23		1
Methylene chloride	ND	0.500	ND	1.74		1
4-Methyl-2-pentanone	ND	0.200	ND	0.819		1
Methyl tert butyl ether	ND	0.200	ND	0.720		1
p/m-Xylene	ND	0.400	ND	1.74		1
o-Xylene	ND	0.200	ND	0.868		1



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0809956**Project Number:** 12069-052**Report Date:** 07/11/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/09/08 12:53

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-02 Batch: WG328542-3						
Heptane	ND	0.200	ND	0.819		1
n-Hexane	ND	0.200	ND	0.704		1
Propylene	ND	0.200	ND	0.344		1
Styrene	ND	0.200	ND	0.851		1
Tetrachloroethene	ND	0.200	ND	1.36		1
Tetrahydrofuran	ND	0.200	ND	0.589		1
Toluene	ND	0.200	ND	0.753		1
trans-1,2-Dichloroethene	ND	0.200	ND	0.792		1
trans-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Trichloroethene	ND	0.200	ND	1.07		1
Trichlorofluoromethane	ND	0.200	ND	1.12		1
Vinyl acetate	ND	0.200	ND	0.704		1
Vinyl bromide	ND	0.200	ND	0.874		1
Vinyl chloride	ND	0.200	ND	0.511		1

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-052

**Lab Number:** L0809956

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 Batch: WG328542-2					
1,1,1-Trichloroethane	109	-	70-130	-	
1,1,2,2-Tetrachloroethane	123	-	70-130	-	
1,1,2-Trichloroethane	116	-	70-130	-	
1,1-Dichloroethane	112	-	70-130	-	
1,1-Dichloroethene	99	-	70-130	-	
1,2,4-Trichlorobenzene	111	-	70-130	-	
1,2,4-Trimethylbenzene	123	-	70-130	-	
1,2-Dibromoethane	106	-	70-130	-	
1,2-Dichlorobenzene	120	-	70-130	-	
1,2-Dichloroethane	118	-	70-130	-	
1,2-Dichloropropane	122	-	70-130	-	
1,3,5-Trimethylbenzene	121	-	70-130	-	
1,3-Butadiene	101	-	70-130	-	
1,3-Dichlorobenzene	120	-	70-130	-	
1,4-Dichlorobenzene	122	-	70-130	-	
1,4-Dioxane	108	-	70-130	-	
2,2,4-Trimethylpentane	124	-	70-130	-	
2-Butanone	106	-	70-130	-	
2-Hexanone	117	-	70-130	-	
3-Chloropropene	114	-	70-130	-	
4-Ethyltoluene	120	-	70-130	-	

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-052

**Lab Number:** L0809956

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 Batch: WG328542-2					
Acetone	116	-	70-130	-	
Benzene	111	-	70-130	-	
Benzyl chloride	122	-	70-130	-	
Bromodichloromethane	117	-	70-130	-	
Bromoform	112	-	70-130	-	
Bromomethane	86	-	70-130	-	
Carbon disulfide	96	-	70-130	-	
Carbon tetrachloride	104	-	70-130	-	
Chlorobenzene	111	-	70-130	-	
Chloroethane	100	-	70-130	-	
Chloroform	112	-	70-130	-	
Chloromethane	97	-	70-130	-	
cis-1,2-Dichloroethene	113	-	70-130	-	
cis-1,3-Dichloropropene	111	-	70-130	-	
Cyclohexane	103	-	70-130	-	
Dibromochloromethane	109	-	70-130	-	
Dichlorodifluoromethane	96	-	70-130	-	
Ethyl Alcohol	119	-	70-130	-	
Ethyl Acetate	125	-	70-130	-	
Ethylbenzene	124	-	70-130	-	
1,1,2-Trichloro-1,2,2-Trifluoroethane	99	-	70-130	-	

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-052

**Lab Number:** L0809956

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 Batch: WG328542-2					
1,2-Dichloro-1,1,2,2-tetrafluoroethane	98	-	70-130	-	
Hexachlorobutadiene	98	-	70-130	-	
iso-Propyl Alcohol	114	-	70-130	-	
Methylene chloride	102	-	70-130	-	
4-Methyl-2-pentanone	118	-	70-130	-	
Methyl tert butyl ether	116	-	70-130	-	
p/m-Xylene	124	-	70-130	-	
o-Xylene	125	-	70-130	-	
Heptane	119	-	70-130	-	
n-Hexane	102	-	70-130	-	
Propylene	99	-	70-130	-	
Styrene	120	-	70-130	-	
Tetrachloroethene	106	-	70-130	-	
Tetrahydrofuran	115	-	70-130	-	
Toluene	117	-	70-130	-	
trans-1,2-Dichloroethene	101	-	70-130	-	
trans-1,3-Dichloropropene	104	-	70-130	-	
Trichloroethene	110	-	70-130	-	
Trichlorofluoromethane	96	-	70-130	-	
Vinyl acetate	140	-	70-130	-	
Vinyl bromide	98	-	70-130	-	

# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Lab Number:** L0809956

**Project Number:** 12069-052

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 Batch: WG328542-2					
Vinyl chloride	98	-	70-130	-	
Naphthalene	106	-	70-130	-	

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-052

**Lab Number:** L0809956

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: DUP Sample					
1,1,1-Trichloroethane	ND	ND	ppbV	NC	25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC	25
1,1,2-Trichloroethane	ND	ND	ppbV	NC	25
1,1-Dichloroethane	ND	ND	ppbV	NC	25
1,1-Dichloroethene	ND	ND	ppbV	NC	25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC	25
1,2,4-Trimethylbenzene	ND	ND	ppbV	NC	25
1,2-Dibromoethane	ND	ND	ppbV	NC	25
1,2-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2-Dichloroethane	ND	ND	ppbV	NC	25
1,2-Dichloropropane	ND	ND	ppbV	NC	25
1,3,5-Trimethylbenzene	ND	ND	ppbV	NC	25
1,3-Butadiene	ND	ND	ppbV	NC	25
1,3-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dioxane	ND	ND	ppbV	NC	25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC	25
2-Butanone	19.8	17.4	ppbV	13	25
2-Hexanone	2.69	2.72	ppbV	1	25



# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-052

**Lab Number:** L0809956

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: DUP Sample					
3-Chloropropene	ND	ND	ppbV	NC	25
4-Ethyltoluene	ND	ND	ppbV	NC	25
Acetone	213	182	ppbV	16	25
Benzene	ND	ND	ppbV	NC	25
Benzyl chloride	ND	ND	ppbV	NC	25
Bromodichloromethane	ND	ND	ppbV	NC	25
Bromoform	ND	ND	ppbV	NC	25
Bromomethane	ND	ND	ppbV	NC	25
Carbon disulfide	0.515	0.497	ppbV	4	25
Carbon tetrachloride	ND	ND	ppbV	NC	25
Chlorobenzene	ND	ND	ppbV	NC	25
Chloroethane	ND	ND	ppbV	NC	25
Chloroform	1.12	1.09	ppbV	3	25
Chloromethane	ND	ND	ppbV	NC	25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC	25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Cyclohexane	ND	ND	ppbV	NC	25
Dibromochloromethane	ND	ND	ppbV	NC	25
Dichlorodifluoromethane	0.486	0.481	ppbV	1	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-052

**Lab Number:** L0809956

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: DUP Sample					
Ethanol	16.8	15.9	ppbV	6	25
Ethyl Acetate	ND	ND	ppbV	NC	25
Ethylbenzene	ND	ND	ppbV	NC	25
Freon-113	ND	ND	ppbV	NC	25
Freon-114	ND	ND	ppbV	NC	25
Hexachlorobutadiene	ND	ND	ppbV	NC	25
Isopropanol	17.0	16.5	ppbV	3	25
Methylene chloride	1.31	1.30	ppbV	1	25
4-Methyl-2-pentanone	ND	ND	ppbV	NC	25
Methyl tert butyl ether	ND	ND	ppbV	NC	25
p/m-Xylene	0.898	0.861	ppbV	4	25
o-Xylene	ND	ND	ppbV	NC	25
Heptane	ND	0.404	ppbV	NC	25
n-Hexane	2.30	2.26	ppbV	2	25
Propylene	2.18	2.10	ppbV	4	25
Styrene	ND	ND	ppbV	NC	25
Tetrachloroethene	4.41	4.49	ppbV	2	25
Tetrahydrofuran	ND	ND	ppbV	NC	25
Toluene	1.68	1.70	ppbV	1	25

# Lab Duplicate Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CENTER

**Project Number:** 12069-052

**Lab Number:** L0809956

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: DUP Sample					
trans-1,2-Dichloroethene	ND	ND	ppbV	NC	25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Trichloroethene	5.43	5.41	ppbV	0	25
Trichlorofluoromethane	42.9	42.2	ppbV	2	25
Vinyl acetate	1.23	1.10	ppbV	11	25
Vinyl bromide	ND	ND	ppbV	NC	25
Vinyl chloride	ND	ND	ppbV	NC	25

**Project Name:** WAYLAND TOWN CENTER

07110813:07

**Lab Number:** L0809956

**Project Number:** 12069-052

**Report Date:** 07/11/08

### Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Cleaning Batch ID	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Out mL/min	Flow In mL/min	% RSD
L0809956-01	SV-4	0021	#30 SV		-	-	39	39	0
L0809956-01	SV-4	384	2.7L Can	L0809159-01	-29.4	0	-	-	-
L0809956-02	SV-5	0194	#30 SV		-	-	39	40	3
L0809956-02	SV-5	459	2.7L Can	L0809159-01	-29.4	-0.4	-	-	-



**Project Name:** WAYLAND TOWN CENTER**Lab Number:** L0809956**Project Number:** 12069-052**Report Date:** 07/11/08**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

Cooler	Custody Seal
N/A	Absent

**Container Information**

Container ID	Container Type	Cooler	pH	Temp	Pres	Seal	Analysis
L0809956-01A	Canister - 2.7 Liter	N/A	NA	N/A	NA	Absent	TO15-LL
L0809956-02A	Canister - 2.7 Liter	N/A	NA	N/A	NA	Absent	TO15-LL

**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809956  
**Report Date:** 07/11/08

## 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.
- 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.
- NI - Not Ignitable.
- 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.
- ND - Not detected at the reported detection limit for the sample.
- RDL - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL 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.

### **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**

The following data qualifiers have been identified for use under the CT DEP Reasonable Confidence Protocols.

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.

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

J - Estimated value. The analyte was tentatively identified; the quantitation is an estimation. (Tentatively identified compounds only.)

### **Standard Qualifiers**

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

Report Format: Not Specified



**Project Name:** WAYLAND TOWN CENTER  
**Project Number:** 12069-052

**Lab Number:** L0809956  
**Report Date:** 07/11/08

## REFERENCES

- 48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

## LIMITATION OF LIABILITIES

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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.



\_\_\_\_\_

Sample Comments (i.e. PID)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1

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**Please print clearly, legibly and completely. Samples can not be**

clock will not start until any ambi-

clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions.

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## ANALYTICAL REPORT

Lab Number: L0809898

Client: Haley & Aldrich, Inc.  
465 Medford Street, Suite 2200  
Charlestown, MA 02129-1400

ATTN: Kate Leblanc

Project Name: WAYLAND TOWN CNT.

Project Number: 12069-054

Report Date: 07/11/08

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** WAYLAND TOWN CNT.  
**Project Number:** 12069-054

**Lab Number:** L0809898  
**Report Date:** 07/11/08

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Sample Location</b>
L0809898-01	SV-14	WAYLAND, MA
L0809898-02	SVE-2	WAYLAND, MA

**Project Name:** WAYLAND TOWN CNT.  
**Project Number:** 12069-054

**Lab Number:** L0809898  
**Report Date:** 07/11/08

### 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.

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.

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.

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#### TO-15

L0809898-01 has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L0809898-02 required re-analysis on a dilution in order to quantitate the sample within the calibration range. The result is reported as a "greater than" value for the compound that exceeded the calibration on the initial analysis. The re-analysis was performed only for the compound which exceeded the calibration range. The WG328542-2 LCS recovery for Vinyl Acetate is outside the 70%-130% acceptance limit. The LCS was within overall method allowances, therefore the analysis proceeded.

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:



Title: Technical Director/Representative

Date: 07/11/08

# AIR

**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08**SAMPLE RESULTS**

**Lab ID:** L0809898-01  
**Client ID:** SV-14  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/09/08 23:10  
**Analyst:** AR

**Date Collected:** 07/03/08 15:00  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	7.80	5.00	42.6	27.2		25
1,1,2,2-Tetrachloroethane	ND	5.00	ND	34.3		25
1,1,2-Trichloroethane	ND	5.00	ND	27.2		25
1,1-Dichloroethane	ND	5.00	ND	20.2		25
1,1-Dichloroethene	ND	5.00	ND	19.8		25
1,2,4-Trichlorbenzene	ND	5.00	ND	37.1		25
1,2,4-Trimethylbenzene	ND	5.00	ND	24.6		25
1,2-Dibromoethane	ND	5.00	ND	38.4		25
1,2-Dichlorobenzene	ND	5.00	ND	30.0		25
1,2-Dichloroethane	ND	5.00	ND	20.2		25
1,2-Dichloropropane	ND	5.00	ND	23.1		25
1,3,5-Trimethybenzene	ND	5.00	ND	24.6		25
1,3-Butadiene	ND	5.00	ND	11.0		25
1,3-Dichlorobenzene	ND	5.00	ND	30.0		25
1,4-Dichlorobenzene	ND	5.00	ND	30.0		25
1,4-Dioxane	ND	5.00	ND	18.0		25
2,2,4-Trimethylpentane	ND	5.00	ND	23.3		25
2-Butanone	10.2	5.00	29.9	14.7		25
2-Hexanone	ND	5.00	ND	20.5		25
3-Chloropropene	ND	5.00	ND	15.6		25
4-Ethyltoluene	ND	5.00	ND	24.6		25
Acetone	76.7	12.5	182	29.7		25
Benzene	ND	5.00	ND	16.0		25
Benzyl chloride	ND	5.00	ND	25.9		25
Bromodichloromethane	ND	5.00	ND	33.5		25



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809898-01**Date Collected:** 07/03/08 15:00**Client ID:** SV-14**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	5.00	ND	51.6		25
Bromomethane	ND	5.00	ND	19.4		25
Carbon disulfide	ND	5.00	ND	15.6		25
Carbon tetrachloride	ND	5.00	ND	31.4		25
Chlorobenzene	ND	5.00	ND	23.0		25
Chloroethane	ND	5.00	ND	13.2		25
Chloroform	5.24	5.00	25.6	24.4		25
Chloromethane	ND	5.00	ND	10.3		25
cis-1,2-Dichloroethene	ND	5.00	ND	19.8		25
cis-1,3-Dichloropropene	ND	5.00	ND	22.7		25
Cyclohexane	ND	5.00	ND	17.2		25
Dibromochloromethane	ND	5.00	ND	42.6		25
Dichlorodifluoromethane	173	5.00	856	24.7		25
Ethanol	ND	62.5	ND	118.		25
Ethyl Acetate	ND	12.5	ND	45.0		25
Ethylbenzene	ND	5.00	ND	21.7		25
Freon-113	ND	5.00	ND	38.3		25
Freon-114	ND	5.00	ND	34.9		25
Hexachlorobutadiene	ND	5.00	ND	53.3		25
Isopropanol	ND	12.5	ND	30.7		25
Methylene chloride	ND	12.5	ND	43.4		25
4-Methyl-2-pentanone	ND	5.00	ND	20.5		25
Methyl tert butyl ether	ND	5.00	ND	18.0		25
p/m-Xylene	ND	10.0	ND	43.4		25
o-Xylene	ND	5.00	ND	21.7		25
Heptane	ND	5.00	ND	20.5		25
n-Hexane	ND	5.00	ND	17.6		25
Propylene	ND	5.00	ND	8.60		25



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809898-01**Date Collected:** 07/03/08 15:00**Client ID:** SV-14**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	ND	5.00	ND	21.3		25
Tetrachloroethene	33.4	5.00	226	33.9		25
Tetrahydrofuran	ND	5.00	ND	14.7		25
Toluene	ND	5.00	ND	18.8		25
trans-1,2-Dichloroethene	ND	5.00	ND	19.8		25
trans-1,3-Dichloropropene	ND	5.00	ND	22.7		25
Trichloroethene	2370	5.00	12700	26.8		25
Trichlorofluoromethane	66.9	5.00	376	28.1		25
Vinyl acetate	ND	5.00	ND	17.6		25
Vinyl bromide	ND	5.00	ND	21.8		25
Vinyl chloride	ND	5.00	ND	12.8		25



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08**SAMPLE RESULTS**

**Lab ID:** L0809898-02  
**Client ID:** SVE-2  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/09/08 23:47  
**Analyst:** AR

**Date Collected:** 07/03/08 14:35  
**Date Received:** 07/03/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	1.45	0.200	7.93	1.09		1
1,1,2,2-Tetrachloroethane	ND	0.200	ND	1.37		1
1,1,2-Trichloroethane	ND	0.200	ND	1.09		1
1,1-Dichloroethane	ND	0.200	ND	0.809		1
1,1-Dichloroethene	ND	0.200	ND	0.792		1
1,2,4-Trichlorobenzene	ND	0.200	ND	1.48		1
1,2,4-Trimethylbenzene	1.04	0.200	5.12	0.982		1
1,2-Dibromoethane	ND	0.200	ND	1.54		1
1,2-Dichlorobenzene	ND	0.200	ND	1.20		1
1,2-Dichloroethane	ND	0.200	ND	0.809		1
1,2-Dichloropropane	ND	0.200	ND	0.924		1
1,3,5-Trimethybenzene	0.383	0.200	1.88	0.982		1
1,3-Butadiene	ND	0.200	ND	0.442		1
1,3-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dichlorobenzene	0.336	0.200	2.02	1.20		1
1,4-Dioxane	ND	0.200	ND	0.720		1
2,2,4-Trimethylpentane	ND	0.200	ND	0.934		1
2-Butanone	>100	0.2	>295	0.589		1
2-Hexanone	16.3	0.200	66.8	0.819		1
3-Chloropropene	ND	0.200	ND	0.626		1
4-Ethyltoluene	0.300	0.200	1.47	0.982		1
Acetone	>100	0.5	>238	1.19		1
Benzene	3.61	0.200	11.5	0.638		1
Benzyl chloride	ND	0.200	ND	1.03		1
Bromodichloromethane	ND	0.200	ND	1.34		1



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08**SAMPLE RESULTS**

Lab ID: L0809898-02

Date Collected: 07/03/08 14:35

Client ID: SVE-2

Date Received: 07/03/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	0.200	ND	2.06		1
Bromomethane	ND	0.200	ND	0.776		1
Carbon disulfide	4.96	0.200	15.4	0.622		1
Carbon tetrachloride	ND	0.200	ND	1.26		1
Chlorobenzene	ND	0.200	ND	0.920		1
Chloroethane	0.275	0.200	0.725	0.527		1
Chloroform	0.302	0.200	1.47	0.976		1
Chloromethane	0.861	0.200	1.78	0.413		1
cis-1,2-Dichloroethene	ND	0.200	ND	0.792		1
cis-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Cyclohexane	0.486	0.200	1.67	0.688		1
Dibromochloromethane	ND	0.200	ND	1.70		1
Dichlorodifluoromethane	0.482	0.200	2.38	0.988		1
Ethanol	77.3	2.50	146	4.71		1
Ethyl Acetate	ND	0.500	ND	1.80		1
Ethylbenzene	1.02	0.200	4.41	0.868		1
Freon-113	0.206	0.200	1.57	1.53		1
Freon-114	ND	0.200	ND	1.40		1
Hexachlorobutadiene	ND	0.200	ND	2.13		1
Isopropanol	6.95	0.500	17.1	1.23		1
Methylene chloride	1.13	0.500	3.91	1.74		1
4-Methyl-2-pentanone	2.42	0.200	9.89	0.819		1
Methyl tert butyl ether	ND	0.200	ND	0.720		1
p/m-Xylene	2.55	0.400	11.0	1.74		1
o-Xylene	1.12	0.200	4.88	0.868		1
Heptane	3.02	0.200	12.4	0.819		1
n-Hexane	3.77	0.200	13.3	0.704		1
Propylene	28.7	0.200	49.4	0.344		1



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08**SAMPLE RESULTS****Lab ID:** L0809898-02**Date Collected:** 07/03/08 14:35**Client ID:** SVE-2**Date Received:** 07/03/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	0.388	0.200	1.65	0.851		1
Tetrachloroethene	15.8	0.200	107	1.36		1
Tetrahydrofuran	ND	0.200	ND	0.589		1
Toluene	5.04	0.200	19.0	0.753		1
trans-1,2-Dichloroethene	ND	0.200	ND	0.792		1
trans-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Trichloroethene	18.5	0.200	99.4	1.07		1
Trichlorofluoromethane	2.97	0.200	16.7	1.12		1
Vinyl acetate	13.6	0.200	47.7	0.704		1
Vinyl bromide	ND	0.200	ND	0.874		1
Vinyl chloride	ND	0.200	ND	0.511		1

**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08**SAMPLE RESULTS**

Lab ID: L0809898-02 R

Date Collected: 07/03/08 14:35

Client ID: SVE-2

Date Received: 07/03/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Matrix: Soil\_Vapor

Analytical Method: 48,TO-15

Analytical Date: 07/10/08 07:04

Analyst: AR

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
2-Butanone	86.5	2.00	255	5.89		10
Acetone	779	5.00	1850	11.9		10

**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/09/08 12:53

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-02 Batch: WG328542-3						
1,1,1-Trichloroethane	ND	0.200	ND	1.09		1
1,1,2,2-Tetrachloroethane	ND	0.200	ND	1.37		1
1,1,2-Trichloroethane	ND	0.200	ND	1.09		1
1,1-Dichloroethane	ND	0.200	ND	0.809		1
1,1-Dichloroethene	ND	0.200	ND	0.792		1
1,2,4-Trichlorobenzene	ND	0.200	ND	1.48		1
1,2,4-Trimethylbenzene	ND	0.200	ND	0.982		1
1,2-Dibromoethane	ND	0.200	ND	1.54		1
1,2-Dichlorobenzene	ND	0.200	ND	1.20		1
1,2-Dichloroethane	ND	0.200	ND	0.809		1
1,2-Dichloropropane	ND	0.200	ND	0.924		1
1,3,5-Trimethybenzene	ND	0.200	ND	0.982		1
1,3-Butadiene	ND	0.200	ND	0.442		1
1,3-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dioxane	ND	0.200	ND	0.720		1
2,2,4-Trimethylpentane	ND	0.200	ND	0.934		1
2-Butanone	ND	0.200	ND	0.589		1
2-Hexanone	ND	0.200	ND	0.819		1
3-Chloropropene	ND	0.200	ND	0.626		1
4-Ethyltoluene	ND	0.200	ND	0.982		1
Acetone	ND	0.500	ND	1.19		1
Benzene	ND	0.200	ND	0.638		1
Benzyl chloride	ND	0.200	ND	1.03		1
Bromodichloromethane	ND	0.200	ND	1.34		1



Project Name: WAYLAND TOWN CNT.

Lab Number: L0809898

Project Number: 12069-054

Report Date: 07/11/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/09/08 12:53

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-02 Batch: WG328542-3						
Bromoform	ND	0.200	ND	2.06		1
Bromomethane	ND	0.200	ND	0.776		1
Carbon disulfide	ND	0.200	ND	0.622		1
Carbon tetrachloride	ND	0.200	ND	1.26		1
Chlorobenzene	ND	0.200	ND	0.920		1
Chloroethane	ND	0.200	ND	0.527		1
Chloroform	ND	0.200	ND	0.976		1
Chloromethane	ND	0.200	ND	0.413		1
cis-1,2-Dichloroethene	ND	0.200	ND	0.792		1
cis-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Cyclohexane	ND	0.200	ND	0.688		1
Dibromochloromethane	ND	0.200	ND	1.70		1
Dichlorodifluoromethane	ND	0.200	ND	0.988		1
Ethanol	ND	2.50	ND	4.71		1
Ethyl Acetate	ND	0.500	ND	1.80		1
Ethylbenzene	ND	0.200	ND	0.868		1
Freon-113	ND	0.200	ND	1.53		1
Freon-114	ND	0.200	ND	1.40		1
Hexachlorobutadiene	ND	0.200	ND	2.13		1
Isopropanol	ND	0.500	ND	1.23		1
Methylene chloride	ND	0.500	ND	1.74		1
4-Methyl-2-pentanone	ND	0.200	ND	0.819		1
Methyl tert butyl ether	ND	0.200	ND	0.720		1
p/m-Xylene	ND	0.400	ND	1.74		1
o-Xylene	ND	0.200	ND	0.868		1



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/09/08 12:53

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-02 Batch: WG328542-3						
Heptane	ND	0.200	ND	0.819		1
n-Hexane	ND	0.200	ND	0.704		1
Propylene	ND	0.200	ND	0.344		1
Styrene	ND	0.200	ND	0.851		1
Tetrachloroethene	ND	0.200	ND	1.36		1
Tetrahydrofuran	ND	0.200	ND	0.589		1
Toluene	ND	0.200	ND	0.753		1
trans-1,2-Dichloroethene	ND	0.200	ND	0.792		1
trans-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Trichloroethene	ND	0.200	ND	1.07		1
Trichlorofluoromethane	ND	0.200	ND	1.12		1
Vinyl acetate	ND	0.200	ND	0.704		1
Vinyl bromide	ND	0.200	ND	0.874		1
Vinyl chloride	ND	0.200	ND	0.511		1



# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809898

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 Batch: WG328542-2					
1,1,1-Trichloroethane	109	-	70-130	-	
1,1,2,2-Tetrachloroethane	123	-	70-130	-	
1,1,2-Trichloroethane	116	-	70-130	-	
1,1-Dichloroethane	112	-	70-130	-	
1,1-Dichloroethene	99	-	70-130	-	
1,2,4-Trichlorobenzene	111	-	70-130	-	
1,2,4-Trimethylbenzene	123	-	70-130	-	
1,2-Dibromoethane	106	-	70-130	-	
1,2-Dichlorobenzene	120	-	70-130	-	
1,2-Dichloroethane	118	-	70-130	-	
1,2-Dichloropropane	122	-	70-130	-	
1,3,5-Trimethylbenzene	121	-	70-130	-	
1,3-Butadiene	101	-	70-130	-	
1,3-Dichlorobenzene	120	-	70-130	-	
1,4-Dichlorobenzene	122	-	70-130	-	
1,4-Dioxane	108	-	70-130	-	
2,2,4-Trimethylpentane	124	-	70-130	-	
2-Butanone	106	-	70-130	-	
2-Hexanone	117	-	70-130	-	
3-Chloropropene	114	-	70-130	-	
4-Ethyltoluene	120	-	70-130	-	



# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809898

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 Batch: WG328542-2					
Acetone	116	-	70-130	-	
Benzene	111	-	70-130	-	
Benzyl chloride	122	-	70-130	-	
Bromodichloromethane	117	-	70-130	-	
Bromoform	112	-	70-130	-	
Bromomethane	86	-	70-130	-	
Carbon disulfide	96	-	70-130	-	
Carbon tetrachloride	104	-	70-130	-	
Chlorobenzene	111	-	70-130	-	
Chloroethane	100	-	70-130	-	
Chloroform	112	-	70-130	-	
Chloromethane	97	-	70-130	-	
cis-1,2-Dichloroethene	113	-	70-130	-	
cis-1,3-Dichloropropene	111	-	70-130	-	
Cyclohexane	103	-	70-130	-	
Dibromochloromethane	109	-	70-130	-	
Dichlorodifluoromethane	96	-	70-130	-	
Ethyl Alcohol	119	-	70-130	-	
Ethyl Acetate	125	-	70-130	-	
Ethylbenzene	124	-	70-130	-	
1,1,2-Trichloro-1,2,2-Trifluoroethane	99	-	70-130	-	

# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809898

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 Batch: WG328542-2					
1,2-Dichloro-1,1,2,2-tetrafluoroethane	98	-	70-130	-	
Hexachlorobutadiene	98	-	70-130	-	
iso-Propyl Alcohol	114	-	70-130	-	
Methylene chloride	102	-	70-130	-	
4-Methyl-2-pentanone	118	-	70-130	-	
Methyl tert butyl ether	116	-	70-130	-	
p/m-Xylene	124	-	70-130	-	
o-Xylene	125	-	70-130	-	
Heptane	119	-	70-130	-	
n-Hexane	102	-	70-130	-	
Propylene	99	-	70-130	-	
Styrene	120	-	70-130	-	
Tetrachloroethene	106	-	70-130	-	
Tetrahydrofuran	115	-	70-130	-	
Toluene	117	-	70-130	-	
trans-1,2-Dichloroethene	101	-	70-130	-	
trans-1,3-Dichloropropene	104	-	70-130	-	
Trichloroethene	110	-	70-130	-	
Trichlorofluoromethane	96	-	70-130	-	
Vinyl acetate	140	-	70-130	-	
Vinyl bromide	98	-	70-130	-	

# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Lab Number:** L0809898

**Project Number:** 12069-054

**Report Date:** 07/11/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 Batch: WG328542-2					
Vinyl chloride	98	-	70-130	-	
Naphthalene	106	-	70-130	-	

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809898

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: DUP Sample					
1,1,1-Trichloroethane	ND	ND	ppbV	NC	25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC	25
1,1,2-Trichloroethane	ND	ND	ppbV	NC	25
1,1-Dichloroethane	ND	ND	ppbV	NC	25
1,1-Dichloroethene	ND	ND	ppbV	NC	25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC	25
1,2,4-Trimethylbenzene	ND	ND	ppbV	NC	25
1,2-Dibromoethane	ND	ND	ppbV	NC	25
1,2-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2-Dichloroethane	ND	ND	ppbV	NC	25
1,2-Dichloropropane	ND	ND	ppbV	NC	25
1,3,5-Trimethylbenzene	ND	ND	ppbV	NC	25
1,3-Butadiene	ND	ND	ppbV	NC	25
1,3-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dioxane	ND	ND	ppbV	NC	25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC	25
2-Butanone	19.8	17.4	ppbV	13	25
2-Hexanone	2.69	2.72	ppbV	1	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809898

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: DUP Sample					
3-Chloropropene	ND	ND	ppbV	NC	25
4-Ethyltoluene	ND	ND	ppbV	NC	25
Acetone	213	182	ppbV	16	25
Benzene	ND	ND	ppbV	NC	25
Benzyl chloride	ND	ND	ppbV	NC	25
Bromodichloromethane	ND	ND	ppbV	NC	25
Bromoform	ND	ND	ppbV	NC	25
Bromomethane	ND	ND	ppbV	NC	25
Carbon disulfide	0.515	0.497	ppbV	4	25
Carbon tetrachloride	ND	ND	ppbV	NC	25
Chlorobenzene	ND	ND	ppbV	NC	25
Chloroethane	ND	ND	ppbV	NC	25
Chloroform	1.12	1.09	ppbV	3	25
Chloromethane	ND	ND	ppbV	NC	25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC	25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Cyclohexane	ND	ND	ppbV	NC	25
Dibromochloromethane	ND	ND	ppbV	NC	25
Dichlorodifluoromethane	0.486	0.481	ppbV	1	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809898

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: DUP Sample					
Ethanol	16.8	15.9	ppbV	6	25
Ethyl Acetate	ND	ND	ppbV	NC	25
Ethylbenzene	ND	ND	ppbV	NC	25
Freon-113	ND	ND	ppbV	NC	25
Freon-114	ND	ND	ppbV	NC	25
Hexachlorobutadiene	ND	ND	ppbV	NC	25
Isopropanol	17.0	16.5	ppbV	3	25
Methylene chloride	1.31	1.30	ppbV	1	25
4-Methyl-2-pentanone	ND	ND	ppbV	NC	25
Methyl tert butyl ether	ND	ND	ppbV	NC	25
p/m-Xylene	0.898	0.861	ppbV	4	25
o-Xylene	ND	ND	ppbV	NC	25
Heptane	ND	0.404	ppbV	NC	25
n-Hexane	2.30	2.26	ppbV	2	25
Propylene	2.18	2.10	ppbV	4	25
Styrene	ND	ND	ppbV	NC	25
Tetrachloroethene	4.41	4.49	ppbV	2	25
Tetrahydrofuran	ND	ND	ppbV	NC	25
Toluene	1.68	1.70	ppbV	1	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809898

**Report Date:** 07/11/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-02 QC Batch ID: WG328542-4 QC Sample: L0809833-02 Client ID: DUP Sample					
trans-1,2-Dichloroethene	ND	ND	ppbV	NC	25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Trichloroethene	5.43	5.41	ppbV	0	25
Trichlorofluoromethane	42.9	42.2	ppbV	2	25
Vinyl acetate	1.23	1.10	ppbV	11	25
Vinyl bromide	ND	ND	ppbV	NC	25
Vinyl chloride	ND	ND	ppbV	NC	25

**Project Name:** WAYLAND TOWN CNT.

07110813:02

**Lab Number:** L0809898

**Project Number:** 12069-054

**Report Date:** 07/11/08

### Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Cleaning Batch ID	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Out mL/min	Flow In mL/min	% RSD
L0809898-01	SV-14	0016	#30 SV		-	-	32	31	3
L0809898-01	SV-14	379	2.7L Can	I0808739	-29.3	-2.5	-	-	-
L0809898-02	SVE-2	0339	#30 SV		-	-	37	38	3
L0809898-02	SVE-2	499	2.7L Can	L0809159-01	-29.4	-3.6	-	-	-





**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809898**Project Number:** 12069-054**Report Date:** 07/11/08**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

Cooler	Custody Seal
N/A	Absent

**Container Information**

Container ID	Container Type	Cooler	pH	Temp	Pres	Seal	Analysis
L0809898-01A	Canister - 2.7 Liter	N/A	NA	N/A	NA	Absent	TO15-LL
L0809898-02A	Canister - 2.7 Liter	N/A	NA	N/A	NA	Absent	TO15-LL

**Project Name:** WAYLAND TOWN CNT.  
**Project Number:** 12069-054

**Lab Number:** L0809898  
**Report Date:** 07/11/08

## 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.
- 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.
- NI - Not Ignitable.
- 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.
- ND - Not detected at the reported detection limit for the sample.
- RDL - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL 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.

### **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**

The following data qualifiers have been identified for use under the CT DEP Reasonable Confidence Protocols.

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.

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

J - Estimated value. The analyte was tentatively identified; the quantitation is an estimation. (Tentatively identified compounds only.)

### **Standard Qualifiers**

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

Report Format: Not Specified



**Project Name:** WAYLAND TOWN CNT.  
**Project Number:** 12069-054

**Lab Number:** L0809898  
**Report Date:** 07/11/08

## REFERENCES

- 48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

## LIMITATION OF LIABILITIES

Alpha Woods Hole Labs 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 Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Woods Hole Labs 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 Woods Hole Labs.

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.



320 Forbes Blvd, Mansfield, MA 02048  
TEL: 508-822-9300 FAX: 508-822-3288

Project Name: WAVY AND TOWN COUNTRY

## Client Information

Project Location: *Walla Wall, WA*

Client: H/A/E & Associates, LLC

Project #: 12069-054

Address: 465 Main St.

Project Manager: K. /e S/H/NC

Boston, MA

ALPHA Quote #:

Phone: 612 386-7900

## Turn-Around Time

**Fax:**

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

Email:

☐ These samples have been previously analyzed by Alpha

Date Due: 8 DAY Time:

Other Project Specific Requirements/Comments:

**All Columns Below Must Be Filled Out**

[illegible]

**\*SAMPLE MATRIX CODES**

AA = Ambient Air (Indoor/Outdoor),  
SV = Soil Vapor/Landfill Gas/SVE  
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Wendy Jones</i>	7/3/08 6:00 PM	<i>James Taylor</i>	7/3/08 8:00
<i>Wendy Jones</i>	7/3/08	<i>Paul Elliott</i>	7/3/08 17:50
<i>Paul Elliott</i>	7/3/08 18:35	<i>Paul Elliott</i>	7/3/08 18:35

**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.





## ANALYTICAL REPORT

Lab Number: L0809960

Client: Haley & Aldrich, Inc.  
465 Medford Street, Suite 2200  
Charlestown, MA 02129-1400

ATTN: Kate Leblanc

Project Name: WAYLAND TOWN CNT.

Project Number: 12069-054

Report Date: 07/14/08

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** WAYLAND TOWN CNT.  
**Project Number:** 12069-054

**Lab Number:** L0809960  
**Report Date:** 07/14/08

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Sample Location</b>
L0809960-01	SV-11	WAYLAND, MA
L0809960-02	SV-12	WAYLAND, MA
L0809960-03	SV-13	WAYLAND, MA

**Project Name:** WAYLAND TOWN CNT.  
**Project Number:** 12069-054

**Lab Number:** L0809960  
**Report Date:** 07/14/08

### 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.

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.

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.

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#### TO-15

L0809960-01 required re-analysis on a 5x dilution in order to quantitate the sample within the calibration range. The result is reported as a "greater than" value for the compound that exceeded the calibration on the initial analysis. The re-analysis was performed only for the compound which exceeded the calibration range. L0809960-03 and WG328755-4 Duplicate have elevated detection limits due to the 2x dilution required by the elevated concentrations of target compounds in the sample.

#### Fixed Gas - Helium

L0809960-03: Prior to sample analysis, the canisters were pressurized with UHP Nitrogen in order to facilitate the transfer of sample to the Gas Chromatograph. The addition of Nitrogen resulted in a dilution of the sample. The reporting limits have been elevated accordingly.

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:



Title: Technical Director/Representative

Date: 07/14/08



# AIR

**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS**

**Lab ID:** L0809960-01  
**Client ID:** SV-11  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/10/08 21:03  
**Analyst:** AR

**Date Collected:** 07/03/08 10:55  
**Date Received:** 07/07/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	4.63	0.200	25.2	1.09		1
1,1,2,2-Tetrachloroethane	ND	0.200	ND	1.37		1
1,1,2-Trichloroethane	ND	0.200	ND	1.09		1
1,1-Dichloroethane	ND	0.200	ND	0.809		1
1,1-Dichloroethene	ND	0.200	ND	0.792		1
1,2,4-Trichlorbenzene	ND	0.200	ND	1.48		1
1,2,4-Trimethylbenzene	0.214	0.200	1.05	0.982		1
1,2-Dibromoethane	ND	0.200	ND	1.54		1
1,2-Dichlorobenzene	ND	0.200	ND	1.20		1
1,2-Dichloroethane	ND	0.200	ND	0.809		1
1,2-Dichloropropane	ND	0.200	ND	0.924		1
1,3,5-Trimethybenzene	ND	0.200	ND	0.982		1
1,3-Butadiene	ND	0.200	ND	0.442		1
1,3-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dioxane	ND	0.200	ND	0.720		1
2,2,4-Trimethylpentane	ND	0.200	ND	0.934		1
2-Butanone	5.11	0.200	15.0	0.589		1
2-Hexanone	1.28	0.200	5.24	0.819		1
3-Chloropropene	ND	0.200	ND	0.626		1
4-Ethyltoluene	ND	0.200	ND	0.982		1
Acetone	18.4	0.500	43.6	1.19		1
Benzene	ND	0.200	ND	0.638		1
Benzyl chloride	ND	0.200	ND	1.03		1
Bromodichloromethane	ND	0.200	ND	1.34		1



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS****Lab ID:** L0809960-01**Date Collected:** 07/03/08 10:55**Client ID:** SV-11**Date Received:** 07/07/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	0.200	ND	2.06		1
Bromomethane	ND	0.200	ND	0.776		1
Carbon disulfide	ND	0.200	ND	0.622		1
Carbon tetrachloride	ND	0.200	ND	1.26		1
Chlorobenzene	ND	0.200	ND	0.920		1
Chloroethane	ND	0.200	ND	0.527		1
Chloroform	1.05	0.200	5.11	0.976		1
Chloromethane	ND	0.200	ND	0.413		1
cis-1,2-Dichloroethene	ND	0.200	ND	0.792		1
cis-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Cyclohexane	ND	0.200	ND	0.688		1
Dibromochloromethane	ND	0.200	ND	1.70		1
Dichlorodifluoromethane	0.962	0.200	4.75	0.988		1
Ethanol	8.26	2.50	15.6	4.71		1
Ethyl Acetate	ND	0.500	ND	1.80		1
Ethylbenzene	ND	0.200	ND	0.868		1
Freon-113	0.252	0.200	1.93	1.53		1
Freon-114	ND	0.200	ND	1.40		1
Hexachlorobutadiene	ND	0.200	ND	2.13		1
Isopropanol	1.48	0.500	3.64	1.23		1
Methylene chloride	0.943	0.500	3.27	1.74		1
4-Methyl-2-pentanone	0.240	0.200	0.982	0.819		1
Methyl tert butyl ether	ND	0.200	ND	0.720		1
p/m-Xylene	0.680	0.400	2.95	1.74		1
o-Xylene	0.240	0.200	1.04	0.868		1
Heptane	ND	0.200	ND	0.819		1
n-Hexane	0.558	0.200	1.97	0.704		1
Propylene	ND	0.200	ND	0.344		1



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS****Lab ID:** L0809960-01**Date Collected:** 07/03/08 10:55**Client ID:** SV-11**Date Received:** 07/07/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	ND	0.200	ND	0.851		1
Tetrachloroethene	4.79	0.200	32.5	1.36		1
Tetrahydrofuran	0.813	0.200	2.39	0.589		1
Toluene	0.888	0.200	3.34	0.753		1
trans-1,2-Dichloroethene	ND	0.200	ND	0.792		1
trans-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Trichloroethene	1.64	0.200	8.83	1.07		1
Trichlorofluoromethane	>100	0.2	>561	1.12		1
Vinyl acetate	ND	0.200	ND	0.704		1
Vinyl bromide	ND	0.200	ND	0.874		1
Vinyl chloride	ND	0.200	ND	0.511		1

**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS**

Lab ID: L0809960-01 R

Date Collected: 07/03/08 10:55

Client ID: SV-11

Date Received: 07/07/08

Sample Location: WAYLAND, MA

Field Prep: Not Specified

Matrix: Soil\_Vapor

Analytical Method: 48,TO-15

Analytical Date: 07/11/08 05:01

Analyst: AR

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Trichlorofluoromethane	151	1.00	847	5.61		5

**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS**

**Lab ID:** L0809960-02  
**Client ID:** SV-12  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/10/08 21:39  
**Analyst:** AR

**Date Collected:** 07/03/08 11:20  
**Date Received:** 07/07/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	0.426	0.200	2.32	1.09		1
1,1,2,2-Tetrachloroethane	ND	0.200	ND	1.37		1
1,1,2-Trichloroethane	ND	0.200	ND	1.09		1
1,1-Dichloroethane	ND	0.200	ND	0.809		1
1,1-Dichloroethene	ND	0.200	ND	0.792		1
1,2,4-Trichlorbenzene	ND	0.200	ND	1.48		1
1,2,4-Trimethylbenzene	0.267	0.200	1.31	0.982		1
1,2-Dibromoethane	ND	0.200	ND	1.54		1
1,2-Dichlorobenzene	ND	0.200	ND	1.20		1
1,2-Dichloroethane	ND	0.200	ND	0.809		1
1,2-Dichloropropane	ND	0.200	ND	0.924		1
1,3,5-Trimethybenzene	ND	0.200	ND	0.982		1
1,3-Butadiene	ND	0.200	ND	0.442		1
1,3-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dioxane	ND	0.200	ND	0.720		1
2,2,4-Trimethylpentane	ND	0.200	ND	0.934		1
2-Butanone	5.44	0.200	16.0	0.589		1
2-Hexanone	1.44	0.200	5.88	0.819		1
3-Chloropropene	ND	0.200	ND	0.626		1
4-Ethyltoluene	ND	0.200	ND	0.982		1
Acetone	21.6	0.500	51.3	1.19		1
Benzene	0.310	0.200	0.990	0.638		1
Benzyl chloride	ND	0.200	ND	1.03		1
Bromodichloromethane	ND	0.200	ND	1.34		1



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS****Lab ID:** L0809960-02**Date Collected:** 07/03/08 11:20**Client ID:** SV-12**Date Received:** 07/07/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	0.200	ND	2.06		1
Bromomethane	ND	0.200	ND	0.776		1
Carbon disulfide	0.208	0.200	0.648	0.622		1
Carbon tetrachloride	ND	0.200	ND	1.26		1
Chlorobenzene	ND	0.200	ND	0.920		1
Chloroethane	ND	0.200	ND	0.527		1
Chloroform	0.938	0.200	4.57	0.976		1
Chloromethane	0.203	0.200	0.418	0.413		1
cis-1,2-Dichloroethene	ND	0.200	ND	0.792		1
cis-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Cyclohexane	ND	0.200	ND	0.688		1
Dibromochloromethane	ND	0.200	ND	1.70		1
Dichlorodifluoromethane	1.90	0.200	9.42	0.988		1
Ethanol	10.6	2.50	20.0	4.71		1
Ethyl Acetate	ND	0.500	ND	1.80		1
Ethylbenzene	0.274	0.200	1.19	0.868		1
Freon-113	ND	0.200	ND	1.53		1
Freon-114	ND	0.200	ND	1.40		1
Hexachlorobutadiene	ND	0.200	ND	2.13		1
Isopropanol	2.03	0.500	4.98	1.23		1
Methylene chloride	1.31	0.500	4.54	1.74		1
4-Methyl-2-pentanone	0.320	0.200	1.31	0.819		1
Methyl tert butyl ether	ND	0.200	ND	0.720		1
p/m-Xylene	0.918	0.400	3.98	1.74		1
o-Xylene	0.357	0.200	1.55	0.868		1
Heptane	0.213	0.200	0.874	0.819		1
n-Hexane	1.32	0.200	4.66	0.704		1
Propylene	ND	0.200	ND	0.344		1



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS****Lab ID:** L0809960-02**Date Collected:** 07/03/08 11:20**Client ID:** SV-12**Date Received:** 07/07/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	ND	0.200	ND	0.851		1
Tetrachloroethene	1.97	0.200	13.3	1.36		1
Tetrahydrofuran	0.859	0.200	2.53	0.589		1
Toluene	1.84	0.200	6.94	0.753		1
trans-1,2-Dichloroethene	ND	0.200	ND	0.792		1
trans-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Trichloroethene	17.9	0.200	96.4	1.07		1
Trichlorofluoromethane	71.0	0.200	398	1.12		1
Vinyl acetate	ND	0.200	ND	0.704		1
Vinyl bromide	ND	0.200	ND	0.874		1
Vinyl chloride	ND	0.200	ND	0.511		1



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS**

**Lab ID:** L0809960-03  
**Client ID:** SV-13  
**Sample Location:** WAYLAND, MA  
**Matrix:** Soil\_Vapor  
**Analytical Method:** 48,TO-15  
**Analytical Date:** 07/10/08 22:15  
**Analyst:** AR

**Date Collected:** 07/03/08 10:42  
**Date Received:** 07/07/08  
**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
1,1,1-Trichloroethane	0.803	0.400	4.38	2.18		2
1,1,2,2-Tetrachloroethane	ND	0.400	ND	2.74		2
1,1,2-Trichloroethane	ND	0.400	ND	2.18		2
1,1-Dichloroethane	ND	0.400	ND	1.62		2
1,1-Dichloroethene	ND	0.400	ND	1.58		2
1,2,4-Trichlorbenzene	ND	0.400	ND	2.97		2
1,2,4-Trimethylbenzene	ND	0.400	ND	1.96		2
1,2-Dibromoethane	ND	0.400	ND	3.07		2
1,2-Dichlorobenzene	ND	0.400	ND	2.40		2
1,2-Dichloroethane	ND	0.400	ND	1.62		2
1,2-Dichloropropane	ND	0.400	ND	1.85		2
1,3,5-Trimethybenzene	ND	0.400	ND	1.96		2
1,3-Butadiene	ND	0.400	ND	0.884		2
1,3-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dichlorobenzene	ND	0.400	ND	2.40		2
1,4-Dioxane	ND	0.400	ND	1.44		2
2,2,4-Trimethylpentane	ND	0.400	ND	1.87		2
2-Butanone	3.16	0.400	9.31	1.18		2
2-Hexanone	0.649	0.400	2.66	1.64		2
3-Chloropropene	ND	0.400	ND	1.25		2
4-Ethyltoluene	ND	0.400	ND	1.96		2
Acetone	31.3	1.00	74.4	2.37		2
Benzene	ND	0.400	ND	1.28		2
Benzyl chloride	ND	0.400	ND	2.07		2
Bromodichloromethane	ND	0.400	ND	2.68		2



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS****Lab ID:** L0809960-03**Date Collected:** 07/03/08 10:42**Client ID:** SV-13**Date Received:** 07/07/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Bromoform	ND	0.400	ND	4.13		2
Bromomethane	ND	0.400	ND	1.55		2
Carbon disulfide	ND	0.400	ND	1.24		2
Carbon tetrachloride	ND	0.400	ND	2.51		2
Chlorobenzene	ND	0.400	ND	1.84		2
Chloroethane	ND	0.400	ND	1.05		2
Chloroform	1.77	0.400	8.62	1.95		2
Chloromethane	ND	0.400	ND	0.825		2
cis-1,2-Dichloroethene	ND	0.400	ND	1.58		2
cis-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Cyclohexane	ND	0.400	ND	1.38		2
Dibromochloromethane	ND	0.400	ND	3.40		2
Dichlorodifluoromethane	2.90	0.400	14.3	1.98		2
Ethanol	7.29	5.00	13.7	9.41		2
Ethyl Acetate	ND	1.00	ND	3.60		2
Ethylbenzene	ND	0.400	ND	1.74		2
Freon-113	ND	0.400	ND	3.06		2
Freon-114	ND	0.400	ND	2.79		2
Hexachlorobutadiene	ND	0.400	ND	4.26		2
Isopropanol	1.55	1.00	3.81	2.46		2
Methylene chloride	1.17	1.00	4.07	3.47		2
4-Methyl-2-pentanone	ND	0.400	ND	1.64		2
Methyl tert butyl ether	ND	0.400	ND	1.44		2
p/m-Xylene	ND	0.800	ND	3.47		2
o-Xylene	ND	0.400	ND	1.74		2
Heptane	ND	0.400	ND	1.64		2
n-Hexane	ND	0.400	ND	1.41		2
Propylene	ND	0.400	ND	0.688		2



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS****Lab ID:** L0809960-03**Date Collected:** 07/03/08 10:42**Client ID:** SV-13**Date Received:** 07/07/08**Sample Location:** WAYLAND, MA**Field Prep:** Not Specified

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air						
Styrene	ND	0.400	ND	1.70		2
Tetrachloroethene	8.74	0.400	59.3	2.71		2
Tetrahydrofuran	0.551	0.400	1.62	1.18		2
Toluene	0.856	0.400	3.22	1.51		2
trans-1,2-Dichloroethene	ND	0.400	ND	1.58		2
trans-1,3-Dichloropropene	ND	0.400	ND	1.81		2
Trichloroethene	14.8	0.400	79.7	2.15		2
Trichlorofluoromethane	61.5	0.400	345	2.24		2
Vinyl acetate	ND	0.400	ND	1.41		2
Vinyl bromide	ND	0.400	ND	1.75		2
Vinyl chloride	ND	0.400	ND	1.02		2

**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/10/08 16:45

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-03 Batch: WG328755-3						
1,1,1-Trichloroethane	ND	0.200	ND	1.09		1
1,1,2,2-Tetrachloroethane	ND	0.200	ND	1.37		1
1,1,2-Trichloroethane	ND	0.200	ND	1.09		1
1,1-Dichloroethane	ND	0.200	ND	0.809		1
1,1-Dichloroethene	ND	0.200	ND	0.792		1
1,2,4-Trichlorobenzene	ND	0.200	ND	1.48		1
1,2,4-Trimethylbenzene	ND	0.200	ND	0.982		1
1,2-Dibromoethane	ND	0.200	ND	1.54		1
1,2-Dichlorobenzene	ND	0.200	ND	1.20		1
1,2-Dichloroethane	ND	0.200	ND	0.809		1
1,2-Dichloropropane	ND	0.200	ND	0.924		1
1,3,5-Trimethybenzene	ND	0.200	ND	0.982		1
1,3-Butadiene	ND	0.200	ND	0.442		1
1,3-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dichlorobenzene	ND	0.200	ND	1.20		1
1,4-Dioxane	ND	0.200	ND	0.720		1
2,2,4-Trimethylpentane	ND	0.200	ND	0.934		1
2-Butanone	ND	0.200	ND	0.589		1
2-Hexanone	ND	0.200	ND	0.819		1
3-Chloropropene	ND	0.200	ND	0.626		1
4-Ethyltoluene	ND	0.200	ND	0.982		1
Acetone	ND	0.500	ND	1.19		1
Benzene	ND	0.200	ND	0.638		1
Benzyl chloride	ND	0.200	ND	1.03		1
Bromodichloromethane	ND	0.200	ND	1.34		1



Project Name: WAYLAND TOWN CNT.

Lab Number: L0809960

Project Number: 12069-054

Report Date: 07/14/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/10/08 16:45

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-03 Batch: WG328755-3						
Bromoform	ND	0.200	ND	2.06		1
Bromomethane	ND	0.200	ND	0.776		1
Carbon disulfide	ND	0.200	ND	0.622		1
Carbon tetrachloride	ND	0.200	ND	1.26		1
Chlorobenzene	ND	0.200	ND	0.920		1
Chloroethane	ND	0.200	ND	0.527		1
Chloroform	ND	0.200	ND	0.976		1
Chloromethane	ND	0.200	ND	0.413		1
cis-1,2-Dichloroethene	ND	0.200	ND	0.792		1
cis-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Cyclohexane	ND	0.200	ND	0.688		1
Dibromochloromethane	ND	0.200	ND	1.70		1
Dichlorodifluoromethane	ND	0.200	ND	0.988		1
Ethanol	ND	2.50	ND	4.71		1
Ethyl Acetate	ND	0.500	ND	1.80		1
Ethylbenzene	ND	0.200	ND	0.868		1
Freon-113	ND	0.200	ND	1.53		1
Freon-114	ND	0.200	ND	1.40		1
Hexachlorobutadiene	ND	0.200	ND	2.13		1
Isopropanol	ND	0.500	ND	1.23		1
Methylene chloride	ND	0.500	ND	1.74		1
4-Methyl-2-pentanone	ND	0.200	ND	0.819		1
Methyl tert butyl ether	ND	0.200	ND	0.720		1
p/m-Xylene	ND	0.400	ND	1.74		1
o-Xylene	ND	0.200	ND	0.868		1



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08

### Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15

Analytical Date: 07/10/08 16:45

Parameter	ppbV		ug/m3		Qualifier	Dilution Factor
	Results	RDL	Results	RDL		
Low Level Volatile Organic Compounds in Air for sample(s): 01-03 Batch: WG328755-3						
Heptane	ND	0.200	ND	0.819		1
n-Hexane	ND	0.200	ND	0.704		1
Propylene	ND	0.200	ND	0.344		1
Styrene	ND	0.200	ND	0.851		1
Tetrachloroethene	ND	0.200	ND	1.36		1
Tetrahydrofuran	ND	0.200	ND	0.589		1
Toluene	ND	0.200	ND	0.753		1
trans-1,2-Dichloroethene	ND	0.200	ND	0.792		1
trans-1,3-Dichloropropene	ND	0.200	ND	0.907		1
Trichloroethene	ND	0.200	ND	1.07		1
Trichlorofluoromethane	ND	0.200	ND	1.12		1
Vinyl acetate	ND	0.200	ND	0.704		1
Vinyl bromide	ND	0.200	ND	0.874		1
Vinyl chloride	ND	0.200	ND	0.511		1

# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809960

**Report Date:** 07/14/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 Batch: WG328755-2					
1,1,1-Trichloroethane	104	-	70-130	-	
1,1,2,2-Tetrachloroethane	113	-	70-130	-	
1,1,2-Trichloroethane	111	-	70-130	-	
1,1-Dichloroethane	103	-	70-130	-	
1,1-Dichloroethene	90	-	70-130	-	
1,2,4-Trichlorobenzene	117	-	70-130	-	
1,2,4-Trimethylbenzene	110	-	70-130	-	
1,2-Dibromoethane	105	-	70-130	-	
1,2-Dichlorobenzene	106	-	70-130	-	
1,2-Dichloroethane	109	-	70-130	-	
1,2-Dichloropropane	116	-	70-130	-	
1,3,5-Trimethylbenzene	108	-	70-130	-	
1,3-Butadiene	94	-	70-130	-	
1,3-Dichlorobenzene	107	-	70-130	-	
1,4-Dichlorobenzene	109	-	70-130	-	
1,4-Dioxane	105	-	70-130	-	
2,2,4-Trimethylpentane	115	-	70-130	-	
2-Butanone	99	-	70-130	-	
2-Hexanone	122	-	70-130	-	
3-Chloropropene	108	-	70-130	-	
4-Ethyltoluene	106	-	70-130	-	

# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809960

**Report Date:** 07/14/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 Batch: WG328755-2					
Acetone	100	-	70-130	-	
Benzene	107	-	70-130	-	
Benzyl chloride	108	-	70-130	-	
Bromodichloromethane	112	-	70-130	-	
Bromoform	106	-	70-130	-	
Bromomethane	79	-	70-130	-	
Carbon disulfide	89	-	70-130	-	
Carbon tetrachloride	99	-	70-130	-	
Chlorobenzene	115	-	70-130	-	
Chloroethane	90	-	70-130	-	
Chloroform	102	-	70-130	-	
Chloromethane	90	-	70-130	-	
cis-1,2-Dichloroethene	103	-	70-130	-	
cis-1,3-Dichloropropene	109	-	70-130	-	
Cyclohexane	100	-	70-130	-	
Dibromochloromethane	106	-	70-130	-	
Dichlorodifluoromethane	88	-	70-130	-	
Ethyl Alcohol	111	-	70-130	-	
Ethyl Acetate	114	-	70-130	-	
Ethylbenzene	112	-	70-130	-	
1,1,2-Trichloro-1,2,2-Trifluoroethane	89	-	70-130	-	



# Lab Control Sample Analysis

## Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809960

**Report Date:** 07/14/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 Batch: WG328755-2					
1,2-Dichloro-1,1,2,2-tetrafluoroethane	92	-	70-130	-	
Hexachlorobutadiene	101	-	70-130	-	
iso-Propyl Alcohol	108	-	70-130	-	
Methylene chloride	94	-	70-130	-	
4-Methyl-2-pentanone	118	-	70-130	-	
Methyl tert butyl ether	101	-	70-130	-	
p/m-Xylene	110	-	70-130	-	
o-Xylene	113	-	70-130	-	
Heptane	110	-	70-130	-	
n-Hexane	103	-	70-130	-	
Propylene	92	-	70-130	-	
Styrene	109	-	70-130	-	
Tetrachloroethene	106	-	70-130	-	
Tetrahydrofuran	119	-	70-130	-	
Toluene	117	-	70-130	-	
trans-1,2-Dichloroethene	94	-	70-130	-	
trans-1,3-Dichloropropene	101	-	70-130	-	
Trichloroethene	106	-	70-130	-	
Trichlorofluoromethane	87	-	70-130	-	
Vinyl acetate	120	-	70-130	-	
Vinyl bromide	89	-	70-130	-	

# Lab Control Sample Analysis

Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809960

**Report Date:** 07/14/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 Batch: WG328755-2					
Vinyl chloride	92	-	70-130	-	
2,4,4-Trimethyl-2-Pentene	115	-	70-130	-	
2,4,4-Trimethyl-1-Pentene	115	-	70-130	-	

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809960

**Report Date:** 07/14/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 QC Batch ID: WG328755-4 QC Sample: L0809960-03 Client ID: SV-13					
1,1,1-Trichloroethane	0.803	0.830	ppbV	3	25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC	25
1,1,2-Trichloroethane	ND	ND	ppbV	NC	25
1,1-Dichloroethane	ND	ND	ppbV	NC	25
1,1-Dichloroethene	ND	ND	ppbV	NC	25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC	25
1,2,4-Trimethylbenzene	ND	ND	ppbV	NC	25
1,2-Dibromoethane	ND	ND	ppbV	NC	25
1,2-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2-Dichloroethane	ND	ND	ppbV	NC	25
1,2-Dichloropropane	ND	ND	ppbV	NC	25
1,3,5-Trimethylbenzene	ND	ND	ppbV	NC	25
1,3-Butadiene	ND	ND	ppbV	NC	25
1,3-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dioxane	ND	ND	ppbV	NC	25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC	25
2-Butanone	3.16	3.16	ppbV	0	25
2-Hexanone	0.649	0.725	ppbV	11	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809960

**Report Date:** 07/14/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 QC Batch ID: WG328755-4 QC Sample: L0809960-03 Client ID: SV-13					
3-Chloropropene	ND	ND	ppbV	NC	25
4-Ethyltoluene	ND	ND	ppbV	NC	25
Acetone	31.3	31.6	ppbV	1	25
Benzene	ND	ND	ppbV	NC	25
Benzyl chloride	ND	ND	ppbV	NC	25
Bromodichloromethane	ND	ND	ppbV	NC	25
Bromoform	ND	ND	ppbV	NC	25
Bromomethane	ND	ND	ppbV	NC	25
Carbon disulfide	ND	ND	ppbV	NC	25
Carbon tetrachloride	ND	ND	ppbV	NC	25
Chlorobenzene	ND	ND	ppbV	NC	25
Chloroethane	ND	ND	ppbV	NC	25
Chloroform	1.77	1.80	ppbV	2	25
Chloromethane	ND	ND	ppbV	NC	25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC	25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Cyclohexane	ND	ND	ppbV	NC	25
Dibromochloromethane	ND	ND	ppbV	NC	25
Dichlorodifluoromethane	2.90	2.96	ppbV	2	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809960

**Report Date:** 07/14/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 QC Batch ID: WG328755-4 QC Sample: L0809960-03 Client ID: SV-13					
Ethanol	7.29	7.86	ppbV	8	25
Ethyl Acetate	ND	ND	ppbV	NC	25
Ethylbenzene	ND	ND	ppbV	NC	25
Freon-113	ND	ND	ppbV	NC	25
Freon-114	ND	ND	ppbV	NC	25
Hexachlorobutadiene	ND	ND	ppbV	NC	25
Isopropanol	1.55	1.54	ppbV	1	25
Methylene chloride	1.17	1.15	ppbV	2	25
4-Methyl-2-pentanone	ND	ND	ppbV	NC	25
Methyl tert butyl ether	ND	ND	ppbV	NC	25
p/m-Xylene	ND	ND	ppbV	NC	25
o-Xylene	ND	ND	ppbV	NC	25
Heptane	ND	ND	ppbV	NC	25
n-Hexane	ND	ND	ppbV	NC	25
Propylene	ND	ND	ppbV	NC	25
Styrene	ND	ND	ppbV	NC	25
Tetrachloroethene	8.74	8.68	ppbV	1	25
Tetrahydrofuran	0.551	0.663	ppbV	18	25
Toluene	0.856	0.759	ppbV	12	25

# **Lab Duplicate Analysis** Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Number:** L0809960

**Report Date:** 07/14/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Low Level Volatile Organic Compounds in Air Associated sample(s): 01-03 QC Batch ID: WG328755-4 QC Sample: L0809960-03 Client ID: SV-13					
trans-1,2-Dichloroethene	ND	ND	ppbV	NC	25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Trichloroethene	14.8	14.7	ppbV	1	25
Trichlorofluoromethane	61.5	62.0	ppbV	1	25
Vinyl acetate	ND	ND	ppbV	NC	25
Vinyl bromide	ND	ND	ppbV	NC	25
Vinyl chloride	ND	ND	ppbV	NC	25

**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**SAMPLE RESULTS**

Lab ID: L0809960-03  
Client ID: SV-13  
Sample Location: WAYLAND, MA  
Matrix: Soil\_Vapor  
Analytical Method: 51,3C(M)  
Analytical Date: 07/11/08 17:20  
Analyst: RY

Date Collected: 07/03/08 10:42  
Date Received: 07/07/08  
Field Prep: Not Specified  
Extraction Method:

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
Fixed Gases by GC					
Helium	0.019		%	0.016	1.575

**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 51,3C(M)

Analytical Date: 07/11/08 17:00

Analyst: RY

Parameter	Result	Qualifier	Units	RDL
Fixed Gases by GC for sample(s): 03 Batch: WG328810-2				
Helium	ND		%	0.010



**Lab Control Sample Analysis**

Batch Quality Control

**Project Name:** WAYLAND TOWN CNT.**Project Number:** 12069-054**Lab Number:** L0809960**Report Date:** 07/14/08

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Fixed Gases by GC Associated sample(s): 03 Batch: WG328810-1					
Helium	93	-	80-120	-	

**Project Name:** WAYLAND TOWN CNT.

**Project Number:** 12069-054

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Lab Number:** L0809960

**Report Date:** 07/14/08

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Fixed Gases by GC Associated sample(s): 03 QC Batch ID: WG328810-3 QC Sample: L0809960-03 Client ID: SV-13					
Helium	0.019	0.019	%	0	5

**Project Name:** WAYLAND TOWN CNT.

07140808:22

**Lab Number:** L0809960

**Project Number:** 12069-054

**Report Date:** 07/14/08

### Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Cleaning Batch ID	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Out mL/min	Flow In mL/min	% RSD
L0809960-01	SV-11	0098	#16 SV		-	-	40	42	5
L0809960-01	SV-11	490	2.7L Can	L0809159-01	-29.4	-0.9	-	-	-
L0809960-02	SV-12	0336	#30 SV		-	-	37	38	3
L0809960-02	SV-12	184	2.7L Can	L0809159-01	-29.4	0.1	-	-	-
L0809960-03	SV-13	0243	#30 SV		-	-	33	36	9
L0809960-03	SV-13	136	2.7L Can	L0809159-01	-29.4	-0.1	-	-	-



**Project Name:** WAYLAND TOWN CNT.**Lab Number:** L0809960**Project Number:** 12069-054**Report Date:** 07/14/08**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
N/A	Absent

**Container Information**

Container ID	Container Type	Cooler	pH	Temp	Pres	Seal	Analysis
L0809960-01A	Canister - 2.7 Liter	N/A	NA	N/A	NA	Absent	TO15-LL
L0809960-02A	Canister - 2.7 Liter	N/A	NA	N/A	NA	Absent	TO15-LL
L0809960-03A	Canister - 2.7 Liter	N/A	NA	N/A	NA	Absent	FIXGAS-HE,TO15-LL

**Project Name:** WAYLAND TOWN CNT.  
**Project Number:** 12069-054

**Lab Number:** L0809960  
**Report Date:** 07/14/08

## 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.
- 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.
- NI - Not Ignitable.
- 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.
- ND - Not detected at the reported detection limit for the sample.
- RDL - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL 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.

### **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**

The following data qualifiers have been identified for use under the CT DEP Reasonable Confidence Protocols.

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.

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

J - Estimated value. The analyte was tentatively identified; the quantitation is an estimation. (Tentatively identified compounds only.)

### **Standard Qualifiers**

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

Report Format: Not Specified



**Project Name:** WAYLAND TOWN CNT.  
**Project Number:** 12069-054

**Lab Number:** L0809960  
**Report Date:** 07/14/08

## REFERENCES

- 48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.
- 51 Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from Stationary Sources. Method 3C. Appendix A, Part 60, 40 CFR (Code of Federal Regulations). June 20, 1996.

## LIMITATION OF LIABILITIES

Alpha Woods Hole Labs 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 Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Woods Hole Labs 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 Woods Hole Labs.

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.





## CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048  
TEL: 508-822-9300 FAX: 508-822-3288

**Project Name:** *1/1/20*

Project Name: Weyland-Yanai Cut

Project Location: Waverland Ave

Project #: 12063-054

Project Manager: K. Keelanc

ALPHA Quote #:

## Turn-Around Time

☐ Standard

☐ BLSH  
(only confirmed if not answered)

10 DAYS	NOOT (only confirmed if)

<input type="checkbox"/> These samples have been previously analyzed by Alpha	Date
Other Project Specific Requirements/Comments:	

Date Rec'd in Lab: 7/7/23

## Report Information - Data Deliverables

☐ FAX  
☐ ADEX

**Criteria Checker:**

(Default based on Regulatory Criteria Indicated)

**Other Formats:**

☐ EMAIL (standard pdf report)

☐ Additional Deliverables:

Report to: (if different than Project Manager)

ALPHA Job #: 150661

### Billing Information

<input type="checkbox"/> Same as Client info	PO #:
--	-------

00#

## Regulatory Requirements/Report Limits

State/Fed	Program
-----------	---------

Criteria

## ANALYSIS

Run Helium by Method 3A  
(Tracer Gas)

Italian

**All Columns Below Must Be Filled Out**

[illegible]

**\*SAMPLE MATRIX CODES**

AA = Ambient Air (Indoor/Outdoor)  
SV = Soil Vapor/Landfill Gas/SVE  
Other = ~~Please Specify~~

Container Type

55

Reinquished By:

Date/Time

Received By:

Date/Time:

Reinquished  
Paul Williams

Date/Time
7-7-09
7/7/08 18:10

Received By  
Paul Wilk

Date/Time: 7/28 15:35

**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.**





DRAFT

**APPENDIX B**  
**ERM WELL LOCATION PLAN**



Environmental



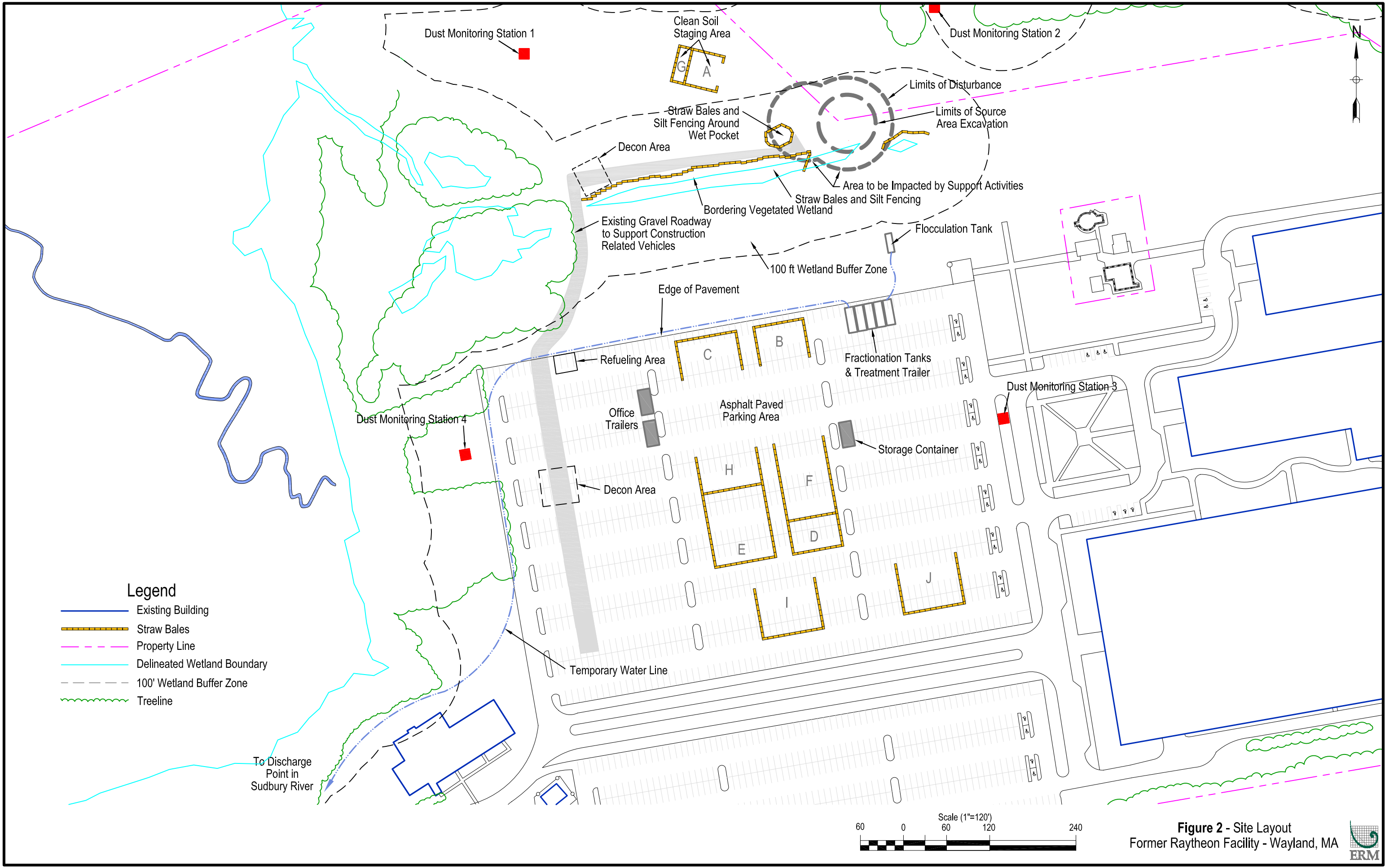
Construction

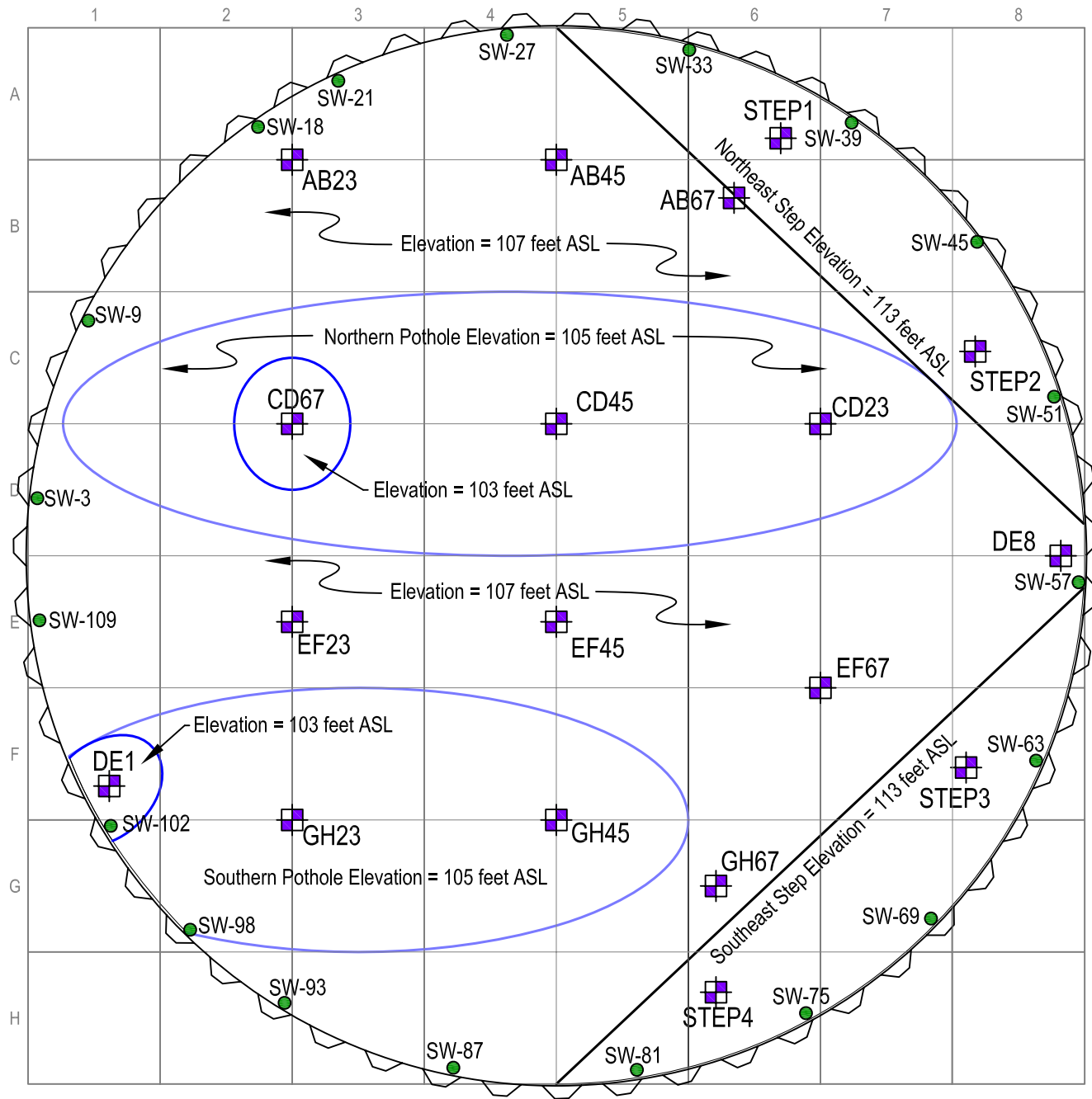


Air Quality



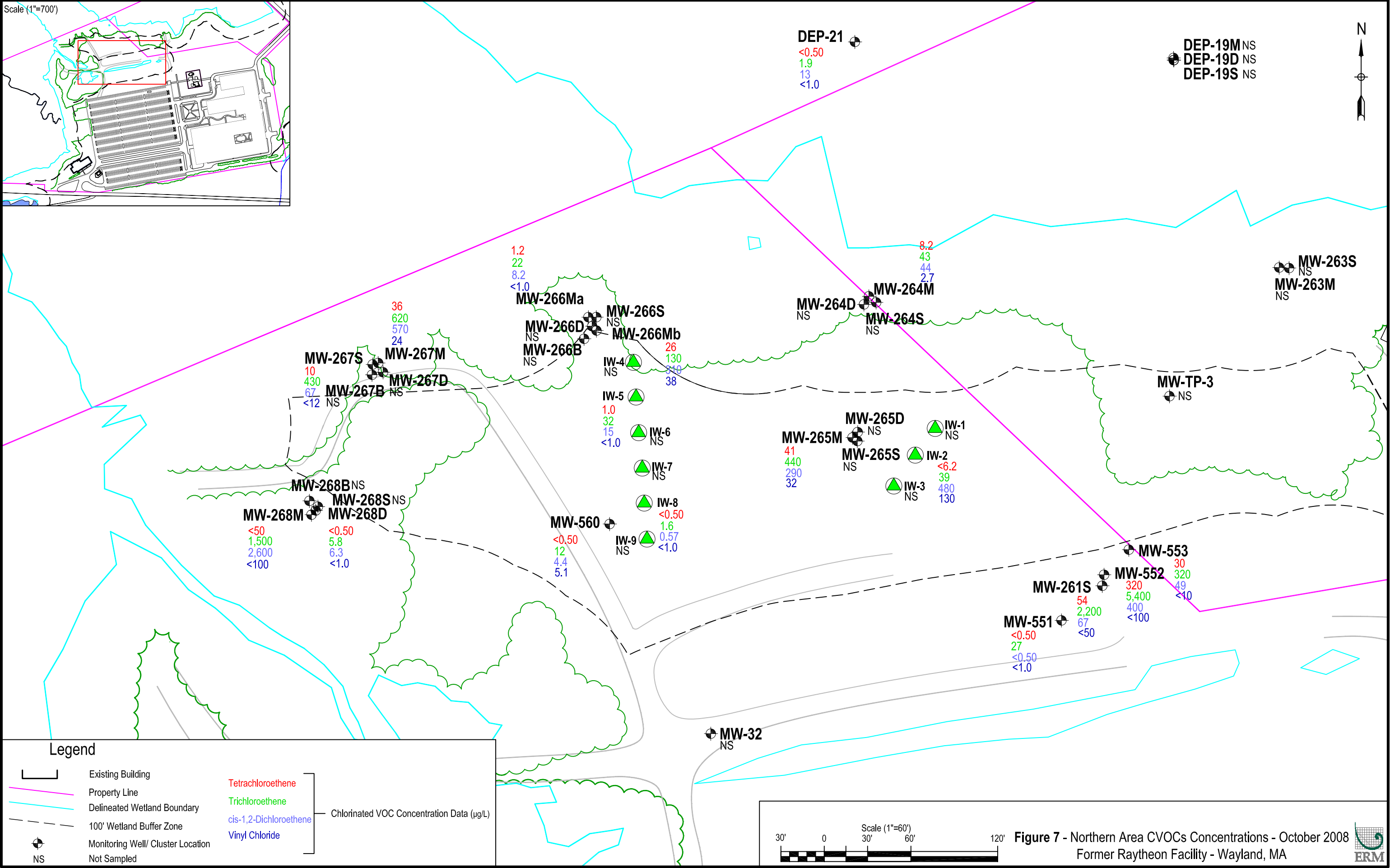
Energy



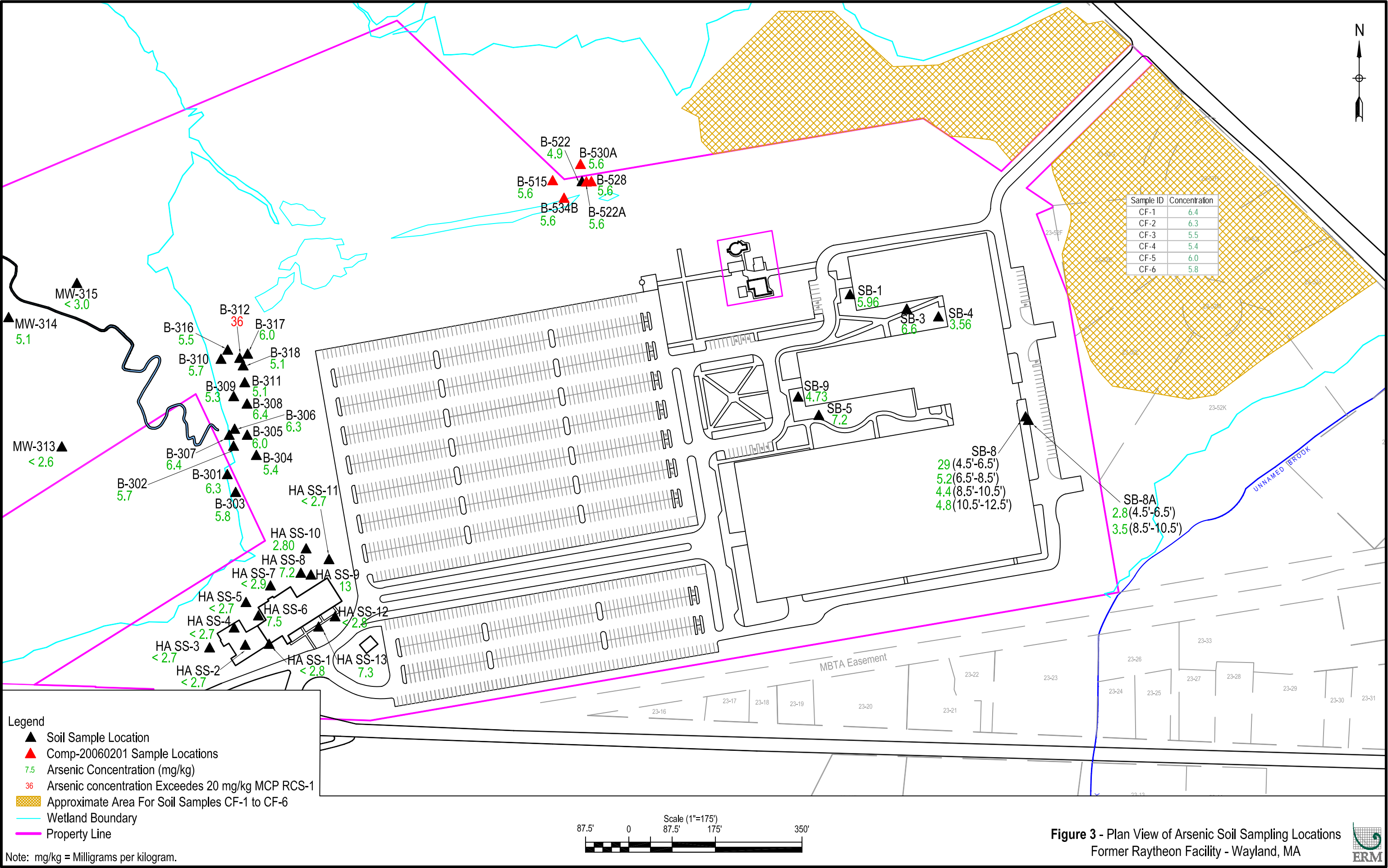


**Figure 4 - Confirmation Sampling and Limits of Excavation**  
Former Raytheon Facility - Wayland, MA









DRAFT

**APPENDIX C**  
**METHOD 3 RISK CHARACTERIZATION**



Environmental



Construction



Air Quality



Energy

**Construction Worker - Soil: Table CW-1**  
**Exposure Point Concentration (EPC) and Risk**  
**Based on Construction Worker 18-25 years of age**

430 Boston Post Road, Wayland, MA  
RTN 3-13302

ShortForm Version 08-08  
Vlookup Version v0808

ELCR (all chemicals) = 2E-07  
HI (all chemicals) = 1E-01

Oil or Hazardous Material (OHM)	EPC (mg/kg)	ELCR Ingestion	ELCR Dermal	ELCR Inhalation GI	ELCR Inhalation Pulmonary	ELCR <sub>total</sub>	Subchronic				HQ <sub>total</sub>
							HQ <sub>ing</sub>	HQ <sub>derm</sub>	HQ <sub>inh-GI</sub>	HQ <sub>inh-P</sub>	
Tetrachloroethylene	3.2E-02	1.4E-11	1.4E-11	3.7E-13	8.5E-14	2.9E-11	3.9E-07	4.0E-07	1.0E-08	2.6E-10	8.0E-07
Trichloroethylene	6.2E-02	6.0E-12	6.0E-12	1.5E-13	2.8E-14	1.2E-11	3.8E-06	3.8E-06	9.9E-08	1.3E-08	7.7E-06
Dichloroethylene, cis-1,2-	3.8E-02						4.7E-07	4.8E-07	1.2E-08	4.1E-08	1.0E-06
Dichloroethylene, trans-1,2-	1.2E-03						7.4E-09	7.4E-09	1.9E-10	6.4E-11	1.5E-08
Toluene	1.2E-03						1.8E-09	2.2E-09	4.8E-11	8.9E-12	4.1E-09
Acetone	2.7E-02						1.2E-08	1.2E-08	3.2E-10	1.2E-09	2.6E-08
Chlorobenzene	5.6E-03						3.4E-08	3.5E-08	8.9E-10	1.0E-08	8.1E-08
Dichlorobenzene, 1,4- (p-DCB)	7.8E-03	1.6E-12	1.7E-12	4.2566E-14	1.419E-14	3.4E-12	1.1E-08	1.1E-08	2.8E-10	1.2E-10	2.2E-08
Aliphatics C19 to C36	3.3E+01						6.7E-06	6.7E-06	1.7E-07		1.4E-05
Aromatics C11 to C22	1.4E+01						2.1E-05	5.8E-05	5.4E-07	1.1E-06	8.1E-05
Arsenic	6.6E+00	8.7E-08	2.6E-08	2.3E-09	7.5E-09	1.2E-07	2.7E-02	8.2E-03	7.0E-04	9.8E-02	1.3E-01
Barium	2.8E+01						5.0E-04	2.5E-04	1.3E-05	2.1E-04	9.7E-04
Chromium (total)	1.15E+01				3.7E-08	3.7E-08	7.1E-04	6.4E-04	1.8E-05	1.4E-03	2.8E-03
Lead	5.90E+00						4.8E-03	5.9E-04	1.3E-04	2.2E-04	5.8E-03

## Construction Worker - Soil: Table CW-2

### Equations to Calculate Cancer Risk for Construction Worker

#### Cancer Risk from Ingestion

$$ELCR_{ing} = LADD_{ing} * CSF_{oral}$$

$$LADD_{ing} = \frac{EPC * IR * RAF_{c-ing} * EF * ED_{ing} * EP * C1}{BW * AP_{lifetime}}$$

#### Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm} * CSF_{oral}$$

$$LADD_{derm} = \frac{EPC * SA * AF * RAF_{c-derm} * EF * ED_{derm} * EP * C1}{BW * AP_{lifetime}}$$

#### Cancer Risk from Particulate Inhalation - Gastrointestinal Absorption

$$ELCR_{inh-GI} = LADD_{inh-GI} * CSF_{oral}$$

$$LADD_{inh-GI} = \frac{EPC * RCAF_{inh-gi} * PM_{10} * VR_{work} * RAF_{c-ing} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{lifetime}}$$

#### Cancer Risk from Particulate Inhalation - Pulmonary Absorption

$$ELCR_{inh} = LADD_{inh} * CSF_{inhalation}$$

$$LADD_{inh} = \frac{EPC * RCAF_{inh} * PM_{10} * VR_{work} * RAF_{c-inh} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{lifetime}}$$

Vlookup Version v0808

Parameter	Value	Units
CSF	OHM-specific	(mg/kg-day) <sup>-1</sup>
LADD	age/OHM-specific	mg/kg-day
EPC	OHM-specific	mg/kg
IR	100	mg/day
RAF <sub>c-ing</sub>	OHM-specific	dimensionless
RAF <sub>c-derm</sub>	OHM-specific	dimensionless
RAF <sub>c-inh</sub>	OHM-specific	dimensionless
EF	0.714	event/day
ED <sub>ing &amp; derm</sub>	1	day/event
ED <sub>inh</sub>	0.333	day/event
EP	182	days
C1	1.0E-06	kg/mg
C2	1.0E-09	kg/μg
C3	1440	min/days
C4	1.0E-03	m <sup>3</sup> /L
BW	58.0	kg
AP <sub>(lifetime)</sub>	25,550	days
VR <sub>work</sub>	60	L/min
AF	0.29	mg/cm <sup>2</sup>
SA	3473	cm <sup>2</sup> /day
RCAF <sub>inh-gi</sub>	1.5	dimensionless
RCAF <sub>inh</sub>	0.5	dimensionless
PM <sub>10</sub>	60	μg/m <sup>3</sup>



## Construction Worker - Soil: Table CW-3

### Equations to Calculate Noncancer Risk for Construction Worker

Vlookup Version v0808

#### Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD_{oral-subchronic}}$$

$$ADD_{ing} = \frac{EPC * IR * RAF_{nc-ing} * EF * ED_{ing} * EP * C1}{BW * AP_{noncancer}}$$

#### Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{derm}}{RfD_{oral-subchronic}}$$

$$ADD_{derm} = \frac{EPC * SA * AF * RAF_{nc-derm} * EF * ED_{dermal} * EP * C1}{BW * AP_{noncancer}}$$

#### Noncancer Risk from Particulate Inhalation - Gastrointestinal Absorption

$$HQ_{inh-GI} = \frac{ADD_{inh-GI}}{RfD_{oral-subchronic}}$$

$$ADD_{inh-GI} = \frac{EPC * RCAF_{inh-gi} * PM_{10} * VR_{work} * RAF_{nc-ing} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{noncancer}}$$

#### Noncancer Risk from Particulate Inhalation - Pulmonary Absorption

$$HQ_{inh} = \frac{ADD}{RfD_{inhalation-subchronic}}$$

$$ADD_{inh} = \frac{EPC_{soil} * RCAF_{inh} * PM_{10} * VR_{work} * RAF_{nc-inh} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{noncancer}}$$

Parameter	Value	Units
RfD	OHM-specific	mg/kg-day
ADD	OHM-specific	mg/kg-day
EPC	OHM-specific	mg/kg
IR	100	mg/day
RAF <sub>nc-ing</sub>	OHM-specific	dimensionless
RAF <sub>nc-derm</sub>	OHM-specific	dimensionless
RAF <sub>nc-inh</sub>	OHM-specific	dimensionless
EF	0.714	event/day
EF <sub>cyanide</sub>	1	event/day
ED <sub>ing &amp; derm</sub>	1	day/event
ED <sub>inh</sub>	0.333	day/event
EP	182	days
EP <sub>cyanide</sub>	1.00	day
C1	1.0E-06	kg/mg
C2	1.0E-09	kg/μg
C3	1440	min/days
C4	1.0E-03	m <sup>3</sup> /L
BW	58.0	kg
AP <sub>noncancer</sub>	182	days
AP <sub>cyanide</sub>	1	day
VR <sub>work</sub>	60	L/min
AF	0.29	mg/cm <sup>2</sup>
SA	3473	cm <sup>2</sup> /day
RCAF <sub>inh-gi</sub>	1.5	dimensionless
RCAF <sub>inh</sub>	0.5	dimensionless
PM10	60	μg/m <sup>3</sup>

**Construction Worker - Soil: Table CW-4**  
**Definitions and Exposure Factors**

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Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
HI - Hazard Index	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
CSF - Cancer Slope Factor	chemical specific	(mg/kg-day) <sup>-1</sup>	see Table CW-5.
RfD - Reference Dose	chemical specific	mg/kg-day	see Table CW-5.
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Table CW-2.
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Table CW-3.
EPC - Exposure Point Concentration	chemical specific	µg/L	see Table CW-1.
IR - Soil Ingestion Rate	100	mg/day	MADEP. 2002. Technical Update: Calculation of an Enhanced Soil Ingestion Rate. ( <a href="http://www.mass.gov/dep/ors/orspubs.htm">http://www.mass.gov/dep/ors/orspubs.htm</a> ).
RAF <sub>c</sub> - Relative Absorption Factor for Cancer Effects	chemical specific	dimensionless	Pathway specific - see Table CW-5.
RAF <sub>nc</sub> - Relative Absorption Factor for Noncancer Effects	chemical specific	dimensionless	Pathway specific - see Table CW-5.
EF - Exposure Frequency	0.714	event/day	5 events (days) / 7 events (days) in a week; MADEP 1995 Guidance for Disposal Site Risk Characterization pg B-38.
EF <sub>cyanide</sub> - Exposure Frequency for Cyanide Exposures	1.00	event/day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. Page 5-5.
ED <sub>ing,derm</sub> - Exposure Duration for ingestion or dermal exposure	1	day/event	
ED <sub>inh</sub> - Exposure Duration for inhalation exposure	0.333	day/event	Represents 8 hours / event.
EP - Exposure Period	182	days	6 months; MADEP 1995 Guidance for Disposal Site Risk Characterization.
EP <sub>cyanide</sub> - Exposure period for cyanide exposure	1	day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. Page 5-5.
BW - Body Weight	58.0	kg	U.S. EPA. 1997. Exposure Factors Handbook. Table 7-7, Females, ages 18 - 25.
AP <sub>(lifetime)</sub> - Averaging Period for lifetime	25,550	days	Represents 70 years
AP <sub>(noncancer)</sub> - Averaging Period for noncancer	182	days	6 months; MADEP 1995 Guidance for Disposal Site Risk Characterization.
AP <sub>cyanide</sub> - Averaging period for assessing cyanide exposure	1	day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. Page 5-5.
AF - Adherence Factor	0.29	mg/cm <sup>2</sup>	MA DEP. 2002 Technical Update: Weighted Skin-Soil Adherence Factors. ( <a href="http://www.mass.gov/dep/ors/orspubs.htm">http://www.mass.gov/dep/ors/orspubs.htm</a> )
VR <sub>work</sub> - Ventilation Rate during work (heavy exertion)	60	L/min	Table B-4 MADEP 1995 Guidance for Disposal Site Risk Characterization.
SA - Surface Area	3473	cm <sup>2</sup> /day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. 50th percentile for females. Appendix Table B-2.
RCAF <sub>inh-gi</sub> - Relative Concentration Adjustment Factor, gastrointestinal	1.5	dimensionless	MADEP 2007. Characterization of Risks Due to Inhalation of Particulates by Construction Workers
RCAF <sub>inh</sub> - Relative Concentration Adjustment Factor, inhalation	0.5	dimensionless	MADEP 2002. Characterization of Risks Due to Inhalation of Particulates by Construction Workers
PM10 - Concentration of PM <sub>10</sub>	60	µg/m <sup>3</sup>	MADEP 1995 Guidance for Disposal Site Risk Characterization pg B-11

**Construction Worker - Soil: Table CW-5**  
**Chemical-Specific Data**

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Oil or Hazardous Material	Oral CSF (mg/kg-day) <sup>-1</sup>	RAF <sub>o-ing</sub>	RAF <sub>o-derm</sub>	RAF <sub>o-inh</sub>	Inhalation CSF (mg/kg-day) <sup>-1</sup>	Subchronic Oral RfD mg/kg-day	Subchronic RAF <sub>no-ing</sub>	Subchronic RAF <sub>no-derm</sub>	Subchronic RAF <sub>no-inh</sub>	Subchronic Inhalation RfD
Tetrachloroethylene	5.1E-02	1	0.1	1	3.5E-02	1.0E-01	1	0.1	1	1.3E+00
Trichloroethylene	1.1E-02	1	0.1	1	6.0E-03	2.0E-02	1	0.1	1	5.1E-02
Dichloroethylene, cis-1,2-						1.0E-01	1	0.1	1	1.0E-02
Dichloroethylene, trans-1,2-						2.0E-01	1	0.1	1	2.0E-01
Toluene						8.0E-01	1	0.12	1	1.4E+00
Acetone						2.7E+00	1	0.1	1	2.3E-01
Chlorobenzene						2.0E-01	1	0.1	1	5.7E-03
Dichlorobenzene, 1,4- (p-DCB)	2.400E-02	1	0.1	1.00	2.4E-02	9.0E-01	1	0.1	1	6.9E-01
Aliphatics C19 to C36						6.0E+00	1	0.1		
Aromatics C11 to C22						3.0E-01	0.36	0.1	1	1.4E-01
Arsenic	1.5E+00	1	0.03	1	1.5E+01	3.0E-04	1	0.03	1	7.1E-07
Barium						7.0E-02	1	0.05	1	1.4E-03
Chromium (total)					4.2E+01	2.0E-02	1	0.09	1	8.6E-05
Lead						7.5E-04	0.5	0.006	1	2.9E-04

**Trespasser - Soil: Table TS-1**
**Exposure Point Concentration (EPC)**
**Based on Trespasser Ages 11-18 (Cancer and Non-Cancer)**
**430 Boston Post Road, Wayland, MA**
**RTN 3-13302**

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ELCR (all chemicals) = 2E-07

Chronic HI (all chemicals) = 6E-03

Subchronic HI (all chemicals) = 1E-02

Oil or Hazardous Material	EPC (mg/kg)	ELCR <sub>ingestion</sub>	ELCR <sub>dermal</sub>	ELCR <sub>total</sub>	Chronic		HQ <sub>total</sub>	Subchronic		
					HQ <sub>ing</sub>	HQ <sub>derm</sub>		HQ <sub>ing</sub>	HQ <sub>derm</sub>	HQ <sub>total</sub>
Tetrachloroethylene	3.2E-02	2.6E-11	2.2E-11	4.8E-11	5.2E-07	4.3E-07	9.5E-07	1.1E-07	7.9E-08	1.9E-07
Trichloroethylene	6.2E-02	1.1E-11	9.1E-12	2.0E-11	5.0E-06	4.1E-06	9.1E-06	1.1E-06	7.6E-07	1.9E-06
Dichloroethylene, cis-1,2-	3.8E-02				6.2E-07	5.1E-07	1.1E-06	1.4E-07	9.4E-08	2.3E-07
Dichloroethylene, trans-1,2-	1.2E-03				9.7E-09	8.0E-09	1.8E-08	2.1E-09	1.5E-09	3.6E-09
Toluene	1.2E-03				2.4E-09	2.4E-09	4.8E-09	5.3E-10	4.4E-10	9.7E-10
Acetone	2.7E-02				4.8E-09	4.0E-09	8.8E-09	3.5E-09	2.4E-09	5.9E-09
Chlorobenzene	5.6E-03				4.5E-08	3.7E-08	8.3E-08	9.9E-09	6.9E-09	1.7E-08
Dichlorobenzene, 1,4- (p-DCB)	7.8E-03	3.0E-12	2.5E-12	5.5E-12	1.4E-08	1.2E-08	2.6E-08	3.1E-09	2.1E-09	5.2E-09
Aliphatics C19 to C36	3.3E+01				2.6E-06	2.2E-06	4.8E-06	1.9E-06	1.3E-06	3.3E-06
Aromatics C11 to C22	1.4E+01				2.7E-05	6.3E-05	9.0E-05	6.0E-06	1.2E-05	1.8E-05
Arsenic	6.6E+00	1.6E-07	4.0E-08	2.0E-07	3.6E-03	8.8E-04	4.4E-03	7.8E-03	1.6E-03	9.4E-03
Barium	2.8E+01				2.3E-05	9.4E-06	3.2E-05	1.4E-04	5.0E-05	1.9E-04
Chromium (total)	1.15E+01				6.2E-04	4.6E-04	1.1E-03	2.0E-04	1.3E-04	3.3E-04
Lead	5.90E+00				6.4E-04	6.3E-05	7.0E-04	1.4E-03	1.2E-04	1.5E-03

**Trespasser - Soil: Table TS-2**  
**Equations to Calculate Cancer Risk for a Trespasser (Age 11-18 years)**

**Cancer Risk from Ingestion**

$$ELCR_{ing} = LADD_{ing} * CSF$$

$$LADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{c-ing} * EF_{ing} * ED * EP * C}{BW * AP_{lifetime}}$$

**Cancer Risk from Dermal Absorption**

$$ELCR_{derm} = LADD_{derm} * CSF$$

$$LADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{c-derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP_{lifetime}}$$

Vlookup Version v0808

Parameter	Value	Units
CSF	OHM specific	(mg/kg-day) <sup>-1</sup>
LADD	age/OHM specific	mg/kg-day
[OHM] <sub>soil</sub>	OHM specific	mg/kg
IR	50	mg/day
RAF <sub>c-ing</sub>	OHM specific	dimensionless
RAF <sub>c-derm</sub>	OHM specific	dimensionless
EF <sub>mg,derm</sub>	0.164	event/day
ED	1	day/event
EP	7	years
C	0.000001	kg/mg
BW	50.7	kg
AP <sub>(lifetime)</sub>	70	years
SA	2940	cm <sup>2</sup> / day
SAF	0.14	mg/cm <sup>2</sup>

# **Trespasser - Soil: Table TS-3**

## **Equations to Calculate Chronic Noncancer Risk for a Trespasser (Age 11-18 years)**

### **Chronic Noncancer Risk from Ingestion**

$$HQ_{ing} = \frac{ADD_{ing}}{RfD}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{nc-ing} * EF_{ing} * ED * EP * C}{BW * AP}$$

### **Chronic Noncancer Risk from Dermal Absorption**

$$HQ_{derm} = \frac{ADD_{ing,derm}}{RfD}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{nc-derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP}$$

Vlookup Version v0808

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
[OHM] <sub>soil</sub>	OHM specific	mg/kg
IR	50	mg/day
RAF <sub>nc-ing</sub>	OHM specific	dimensionless
RAF <sub>nc-derm</sub>	OHM specific	dimensionless
EF <sub>ing,derm</sub>	0.164	event/day
EF <sub>cyanide</sub>	1.00	event/day
ED	1	day/event
EP	7	years
EP <sub>cyanide</sub>	1	day
C	0.000001	kg/mg
BW	50.7	kg
AP	7	year
AP <sub>cyanide</sub>	1	day
SA	2940	cm <sup>2</sup> / day
SAF	0.14	mg/cm <sup>2</sup>

# Trespasser - Soil: Table TS-4

## Equations to Calculate Subchronic Noncancer Risk for a Trespasser (Age 11-12 years)

### Subchronic Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD_{subchronic}}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{no-ing} * EF_{ing} * ED * EP * C}{BW * AP}$$

### Subchronic Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{derm}}{RfD_{subchronic}}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{no-derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP}$$

Vlookup Version v0808

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
[OHM] <sub>soil</sub>	OHM specific	mg/kg
IR	50	mg/day
RAF <sub>no-ing</sub>	OHM specific	dimensionless
RAF <sub>no-derm</sub>	OHM specific	dimensionless
EF <sub>ing,derm</sub>	0.286	event/day
EF <sub>cyanide</sub>	1.00	event/day
ED	1	day/event
EP <sub>cyanide</sub>	1	day
EP	0.577	years
C	0.000001	kg/mg
BW	40.3	kg
AP	0.577	year
AP <sub>cyanide</sub>	1	day
SA	2477	cm <sup>2</sup> / day
SAF	0.14	mg/cm <sup>2</sup>

**Trespasser - Soil: Table TS-5**  
**Definitions and Exposure Factors**

Vlookup Version v0808

Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
CSF - Cancer Slope Factor	chemical specific	(mg/kg-day) <sup>-1</sup>	see Table RS-7
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
HQ - Hazard Quotient	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
RfD - Reference Dose	chemical specific	mg/kg-day	see Table RS-7
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
EPC - Exposure Point Concentration	chemical specific	mg/kg	
IR - Soil Ingestion Rate	50	mg/day	MADEP. 2002. Technical Update: Calculation of an Enhanced Soil Ingestion Rate. ( <a href="http://www.mass.gov/dep/ors/orspubs.htm">http://www.mass.gov/dep/ors/orspubs.htm</a> )
RAF <sub>c</sub> - Relative Absorption Factor for Cancer Effects	chemical specific	dimensionless	
EF <sub>subchronic</sub> - Exposure Frequency for subchronic ingestion or dermal exposure	0.286	event/day	2 days/week
EF <sub>chronic</sub> - Exposure Frequency for chronic ingestion or dermal exposure	0.164	event/day	2 days/week, 30 weeks/year
EF <sub>cancer</sub> - Exposure Frequency for cancer, ingestion or dermal exposure	0.164	event/day	2 days/week, 30 weeks/year
EF <sub>cyanide</sub> - Exposure Frequency for cyanide exposure	1.00	event/day	
ED - Exposure Duration	1	day/event	
EP <sub>(11-12)</sub> - Exposure Period for age group 11-12	0.577	years	30 weeks
EP <sub>(11-18)</sub> - Exposure Period for age group 11-18	7	years	
EP <sub>cyanide</sub> - Exposure period for cyanide exposure	1	day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. Page 5-5.
BW <sub>(11-12)</sub> - Body Weight for age group 11-12	40.3	kg	U.S. EPA. 1997. Exposure Factors Handbook. Table 7-7
BW <sub>(11-18)</sub> - Body Weight for age group 11-18	50.7	kg	Ibid
AP <sub>subchronic</sub> - Averaging Period for subchronic noncancer	0.577	years	30 weeks
AP <sub>chronic</sub> - Averaging Period for chronic noncancer	7	years	
AP <sub>cancer</sub> - Averaging Period for lifetime	70	years	
AP <sub>cyanide</sub> - Averaging period for assessing cyanide exposure	1	day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. Page 5-5.
SA <sub>(11-12)</sub> - Surface Area for age group 11-12	2477	cm <sup>2</sup> / day	50th percentile of forearms, hands, and feet for females. MADEP 1995 Guidance for Disposal Site Risk Characterization, Table B-2.
SA <sub>(11-18)</sub> - Surface Area for age group 11-18	2940	cm <sup>2</sup> / day	Ibid
SAF - Surface Adherence Factor, Trespasser	0.14	mg/cm <sup>2</sup>	SAF developed for ShortForm according to procedure outlined in MA DEP Technical Update: Weighted Skin-Soil Adherence Factors, April 2002.



**Trespasser - Soil: Table TS-6**  
**Chemical-Specific Data**

Vlookup Version v0808

Oil or Hazardous Material	CSF (mg/kg-day) <sup>-1</sup>	IRAF <sub>o-ing</sub>	RAF <sub>o-derm</sub>	Chronic RfD mg/kg-day	Subchronic RfD mg/kg-day	Chronic RAF <sub>nc-ing</sub>	Chronic RAF <sub>nc-derm</sub>	Subchronic RAF <sub>nc-ing</sub>	Subchronic RAF <sub>nc-derm</sub>
Tetrachloroethylene	5.1E-02	1.00	0.10	1.0E-02	1.0E-01	1	0.1	1	0.1
Trichloroethylene	1.1E-02	1.00	0.10	2.0E-03	2.0E-02	1	0.1	1	0.1
Dichloroethylene, cis-1,2-				1.0E-02	1.0E-01	1	0.1	1	0.1
Dichloroethylene, trans-1,2-				2.0E-02	2.0E-01	1	0.1	1	0.1
Toluene				8.0E-02	8.0E-01	1	0.12	1	0.12
Acetone				9.0E-01	2.7E+00	1	0.1	1	0.1
Chlorobenzene				2.0E-02	2.0E-01	1	0.1	1	0.1
Dichlorobenzene, 1,4- (p-C)	2.4E-02	1.00	0.10	9.0E-02	9.0E-01	1	0.1	1	0.1
Aliphatics C19 to C36				2.0E+00	6.0E+00	1	0.1	1	0.1
Aromatics C11 to C22				3.0E-02	3.0E-01	0.36	0.1	0.36	0.1
Arsenic	1.5E+00	1.00	0.03	3.0E-04	3.0E-04	1	0.03	1	0.03
Barium				2.0E-01	7.0E-02	1	0.05	1	0.05
Chromium (total)				3.0E-03	2.0E-02	1	0.09	1	0.09
Lead				7.5E-04	7.5E-04	0.5	0.006	0.5	0.006

**Park Visitor - Soil: Table PS-1**  
**Exposure Point Concentration (EPC)**  
**Based on Visitor Ages 1-31 (Cancer), 1-8 (Chronic Noncancer), and 1-2 (Subchronic Noncancer)**

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ELCR (all chemicals) = 3E-06

Chronic HI (all chemicals) = 6E-02

Subchronic HI (all chemicals) = 1E-01

Oil or Hazardous Material	EPC (mg/kg)	ELCR <sub>ingestion</sub>	ELCR <sub>dermal</sub>	ELCR <sub>total</sub>	Chronic			Subchronic		
					HQ <sub>ing</sub>	HQ <sub>derm</sub>	HQ <sub>total</sub>	HQ <sub>ing</sub>	HQ <sub>derm</sub>	HQ <sub>total</sub>
Tetrachloroethylene	3.2E-02	3.7E-10	3.8E-10	7.5E-10	4.6E-06	4.0E-06	8.6E-06	1.3E-06	7.5E-07	2.0E-06
Trichloroethylene	6.2E-02	1.5E-10	1.6E-10	3.1E-10	4.5E-05	3.8E-05	8.3E-05	1.2E-05	7.2E-06	2.0E-05
Dichloroethylene, cis-1,2-	3.8E-02				5.6E-06	4.7E-06	1.0E-05	1.5E-06	9.0E-07	2.4E-06
Dichloroethylene, trans-1,2-	1.2E-03				8.7E-08	7.4E-08	1.6E-07	2.4E-08	1.4E-08	3.8E-08
Toluene	1.2E-03				2.2E-08	2.2E-08	4.4E-08	6.0E-09	4.2E-09	1.0E-08
Acetone	2.7E-02				4.3E-08	3.7E-08	8.0E-08	4.0E-08	2.3E-08	6.3E-08
Chlorobenzene	5.6E-03				4.1E-07	3.5E-07	7.5E-07	1.1E-07	6.5E-08	1.8E-07
Dichlorobenzene, 1,4- (p-DCB)	7.8E-03	4.2E-11	4.4E-11	8.6E-11	1.3E-07	1.1E-07	2.3E-07	3.5E-08	2.0E-08	5.5E-08
Aliphatics C19 to C36	3.3E+01				2.4E-05	2.0E-05	4.4E-05	2.2E-05	1.3E-05	3.4E-05
Aromatics C11 to C22	1.4E+01				2.5E-04	5.8E-04	8.3E-04	6.8E-05	1.1E-04	1.8E-04
Arsenic	6.6E+00	2.2E-06	6.9E-07	2.9E-06	3.2E-02	8.2E-03	4.0E-02	8.8E-02	1.5E-02	1.0E-01
Barium	2.8E+01				2.0E-04	8.7E-05	2.9E-04	1.6E-03	4.7E-04	2.1E-03
Chromium (total)	1.15E+01				5.6E-03	4.3E-03	9.8E-03	2.3E-03	1.2E-03	3.5E-03
Lead	5.90E+00				5.7E-03	5.8E-04	6.3E-03	1.6E-02	1.1E-03	1.7E-02

## Park Visitor - Soil: Table PS-2

### Equations to Calculate Cancer Risk for Visitor (Age 1-31 years)

#### Cancer Risk from Ingestion

$$ELCR_{ing} = LADD_{ing(1-31)} * CSF$$

$$LADD_{ing(1-31)} = LADD_{ing(1-8)} + LADD_{ing(8-15)} + LADD_{ing(15-31)}$$

$$LADD_{ing(age\ group\ x)} = \frac{[OHM]_{soil} * IR_x * RAF_{c-ing} * EF_{ing} * ED * EP_x * C}{BW_x * AP_{lifetime}}$$

#### Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm} * CSF$$

$$LADD_{derm(1-31)} = LADD_{derm(1-8)} + LADD_{derm(8-15)} + LADD_{derm(15-31)}$$

$$LADD_{derm(age\ group\ x)} = \frac{[OHM]_{soil} * SA_x * RAF_{c-derm} * SAF_x * EF_{derm} * ED * EP_x * C}{BW_x * AP_{lifetime}}$$

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Parameter	Value	Units
CSF	OHM specific	(mg/kg-day) <sup>-1</sup>
LADD	age/OHM specific	mg/kg-day
[OHM] <sub>soil</sub>	OHM specific	mg/kg
IR <sub>(1-8)</sub>	100	mg/day
IR <sub>(8-15)</sub>	50	mg/day
IR <sub>(15-31)</sub>	50	mg/day
RAF <sub>c-ing</sub>	OHM specific	dimensionless
RAF <sub>c-derm</sub>	OHM specific	dimensionless
EF <sub>ing,derm</sub>	0.247	event/day
ED	1	day/event
EP <sub>(1-8)</sub>	7	years
EP <sub>(8-15)</sub>	7	years
EP <sub>(15-31)</sub>	16	years
C	0.000001	kg/mg
BW <sub>(1-8)</sub>	17.0	kg
BW <sub>(8-15)</sub>	39.9	kg
BW <sub>(15-31)</sub>	58.7	kg
AP <sub>(lifetime)</sub>	70	years
SA <sub>(1-8)</sub>	2431	cm <sup>2</sup> /day
SA <sub>(8-15)</sub>	4427	cm <sup>2</sup> /day
SA <sub>(15-31)</sub>	5653	cm <sup>2</sup> /day
SAF <sub>(1-8)</sub>	0.35	mg/cm <sup>2</sup>
SAF <sub>(8-15)</sub>	0.14	mg/cm <sup>2</sup>
SAF <sub>(15-31)</sub>	0.13	mg/cm <sup>2</sup>

# Park Visitor - Soil: Table PS-3

## Equations to Calculate Chronic Noncancer Risk for Visitor (Age 1-8 years)

Vlookup Version v0808

### Chronic Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{nc-ing} * EF_{ing} * ED * EP * C}{BW * AP}$$

### Chronic Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{ing,derm}}{RfD}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{nc-derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP}$$

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
[OHM] <sub>soil</sub>	OHM specific	mg/kg
IR	100	mg/day
RAF <sub>nc-ing</sub>	OHM specific	dimensionless
RAF <sub>nc-derm</sub>	OHM specific	dimensionless
EF <sub>ing,derm</sub>	0.247	event/day
EF <sub>cyanide</sub>	1.00	event/day
ED	1	day/event
EP	7	years
EP <sub>cyanide</sub>	1	day
C	0.000001	kg/mg
BW	17.0	kg
AP	7	year
AP <sub>cyanide</sub>	1	day
SA	2431	cm <sup>2</sup> /day
SAF	0.35	mg/cm <sup>2</sup>

**Park Visitor - Soil: Table PS-4**

**Equations to Calculate Subchronic Noncancer Risk for Visitor (Age 1-2 years)**

Vlookup Version v0808

**Subchronic Noncancer Risk from Ingestion**

$$HQ_{ing} = \frac{ADD_{ing}}{RfD_{subchronic}}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{no-ing} * EF_{ing} * ED * EP * C}{BW * AP}$$

**Subchronic Noncancer Risk from Dermal Absorption**

$$HQ_{derm} = \frac{ADD_{derm}}{RfD_{subchronic}}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{no-derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP}$$

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
[OHM] <sub>soil</sub>	OHM specific	mg/kg
IR	100	mg/day
RAF <sub>no-ing</sub>	OHM specific	dimensionless
RAF <sub>no-derm</sub>	OHM specific	dimensionless
EF <sub>ing,derm</sub>	0.428	event/day
EF <sub>cyanide</sub>	1.00	event/day
ED	1	day/event
EP	0.577	years
EP <sub>cyanide</sub>	1	day
C	0.000001	kg/mg
BW	10.7	kg
AP	0.577	year
AP <sub>cyanide</sub>	1	day
SA	1670	cm <sup>2</sup> /day
SAF	0.35	mg/cm <sup>2</sup>

**Park Visitor - Soil: Table PS-5**  
**Definitions and Exposure Factors**

Vlookup Version v0808

Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal)
CSF - Cancer Slope Factor	chemical specific	(mg/kg-day) <sup>-1</sup>	see Table PS-6
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
HQ - Hazard Quotient	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal)
RfD - Reference Dose	chemical specific	mg/kg-day	see Table PS-6
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
EPC - Exposure Point Concentration	chemical specific	mg/kg	
IR <sub>(1-2)</sub> - Soil Ingestion Rate for age group 1-2	100	mg/day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. Appendix Table B-3.
IR <sub>(1-8)</sub> - Soil Ingestion Rate for age group 1-8	100	mg/day	Ibid
IR <sub>(8-15)</sub> - Soil Ingestion Rate for age group 8-15	50	mg/day	Ibid
IR <sub>(15-31)</sub> - Soil Ingestion Rate for age group 15-31	50	mg/day	Ibid
RAF <sub>c</sub> - Relative Absorption Factor for Cancer Effects	chemical specific	dimensionless	Adjusts estimated dose to conform to the relevant CSF. See Table PS-6
RAF <sub>NC</sub> - Relative Absorption Factor for non-Cancer Effects	chemical specific	dimensionless	Adjusts estimated dose to conform to the relevant RfD. See Table PS-6
EF <sub>subchronic</sub> - Exposure Frequency for subchronic exposure	0.428	event/day	3 events/week
EF <sub>chronic,lifetime</sub> - Exposure Frequency for chronic or lifetime exposure	0.247	event/day	3 events/week, 30 weeks/year
EF <sub>cyanide</sub> - Exposure Frequency for cyanide exposure	1.00	event/day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. Page 5-5.
ED - Exposure Duration	1	day/event	
EP <sub>(1-2)</sub> - Exposure Period for age group 1-2	0.577	years	30 weeks
EP <sub>(1-8)</sub> - Exposure Period for age group 1-8	7	years	
EP <sub>(8-15)</sub> - Exposure Period for age group 8-15	7	years	
EP <sub>(15-31)</sub> - Exposure Period for age group 15-31	16	years	
EP <sub>cyanide</sub> - Exposure period for cyanide exposure	1	day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. Page 5-5.
BW <sub>(1-2)</sub> - Body Weight for age group 1-2	10.7	kg	U.S. EPA. 1997. Exposure Factors Handbook. Table 7-7, females.
BW <sub>(1-8)</sub> - Body Weight for age group 1-8	17.0	kg	Ibid
BW <sub>(8-15)</sub> - Body Weight for age group 8-15	39.9	kg	Ibid
BW <sub>(15-31)</sub> - Body Weight for age group 15-31	58.7	kg	Ibid
AP <sub>subchronic</sub> - Averaging Period for subchronic noncancer	0.577	years	30 weeks
AP <sub>chronic</sub> - Averaging Period for chronic noncancer	7	years	
AP <sub>lifetime</sub> - Averaging Period for cancer/lifetime	70	years	
AP <sub>cyanide</sub> - Averaging period for assessing cyanide exposure	1	day	MADEP. 1995. Guidance for Disposal Site Risk Characterization. Page 5-5.
SA <sub>(1-2)</sub> - Surface Area for age group 1-2	1670	cm <sup>2</sup> /day	50th percentile of face (1/3 head), forearms, hands, lower legs, and feet for females. MADEP 1995 Guidance for Disposal Site Risk Characterization, Appendix Table B-2.
SA <sub>(1-8)</sub> - Surface Area for age group 1-8	2431	cm <sup>2</sup> / day	Ibid
SA <sub>(8-15)</sub> - Surface Area for age group 8-15	4427	cm <sup>2</sup> / day	Ibid
SA <sub>(15-31)</sub> - Surface Area for age group 15-31	5653	cm <sup>2</sup> / day	Ibid
SAF <sub>(1-2)</sub> - Surface Adherence Factor for age group 1-2	0.35	mg <sub>soil</sub> / cm <sup>2</sup>	All SAFs developed for ShortForm according to procedure outlined in MADEP Technical Update:
SAF <sub>(1-8)</sub> - Surface Adherence Factor for age group 1-8	0.35	mg <sub>soil</sub> / cm <sup>2</sup>	Weighted Skin-Soil Adherence Factors, April 2002
SAF <sub>(8-15)</sub> - Surface Adherence Factor for age group 8-15	0.14	mg <sub>soil</sub> / cm <sup>2</sup>	
SAF <sub>(15-31)</sub> - Surface Adherence Factor for age group 15-31	0.13	mg <sub>soil</sub> / cm <sup>2</sup>	

**Park Visitor - Soil: Table PS-6**  
**Chemical-Specific Data**

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Oil or Hazardous Material	CSF (mg/kg-day) <sup>-1</sup>	RAF <sub>c-ing</sub>	RAF <sub>c-derm</sub>	Chronic RfD mg/kg-day	Subchronic RfD mg/kg-day	Chronic RAF <sub>nc-ing</sub>	Chronic RAF <sub>nc-derm</sub>	Subchronic RAF <sub>nc-ing</sub>	Subchronic RAF <sub>nc-derm</sub>
Tetrachloroethylene	5.1E-02	1	0.1	1.0E-02	1.0E-01	1	0.1	1	0.1
Trichloroethylene	1.1E-02	1	0.1	2.0E-03	2.0E-02	1	0.1	1	0.1
Dichloroethylene, cis-1,2-				1.0E-02	1.0E-01	1	0.1	1	0.1
Dichloroethylene, trans-1,2-				2.0E-02	2.0E-01	1	0.1	1	0.1
Toluene				8.0E-02	8.0E-01	1	0.12	1	0.12
Acetone				9.0E-01	2.7E+00	1	0.1	1	0.1
Chlorobenzene				2.0E-02	2.0E-01	1	0.1	1	0.1
Dichlorobenzene, 1,4- (p-)	2.4E-02	1	0.1	9.0E-02	9.0E-01	1	0.1	1	0.1
Aliphatics C19 to C36				2.0E+00	6.0E+00	1	0.1	1	0.1
Aromatics C11 to C22				3.0E-02	3.0E-01	0.36	0.1	0.36	0.1
Arsenic	1.5E+00	1	0.03	3.0E-04	3.0E-04	1	0.03	1	0.03
Barium				2.0E-01	7.0E-02	1	0.05	1	0.05
Chromium (total)				3.0E-03	2.0E-02	1	0.09	1	0.09
Lead				7.5E-04	7.5E-04	0.5	0.006	0.5	0.006