DRAFT

SL = Wyman

MCP PHASE II
COMPREHENSIVE SITE ASSESSMENT REPORT

Prepared for:

207 Marston ST

FORMER JOHN C. TOMBARELLO & SONS SITE

Lawrence, Massachusetts

Release Tracking Number 3-18126

Prepared by:

WESTON SOLUTIONS, INC.
One Wall Street
Manchester, New Hampshire 03101-1501

September 2004

W.O. No. 13057.001.002.3100

MCP PHASE II

COMPREHENSIVE SITE ASSESSMENT REPORT

Prepared for:

FORMER JOHN C. TOMBARELLO & SONS SITE

Lawrence, Massachusetts

Release Tracking Number 3-18126

Prepared by:

WESTON SOLUTIONS, INC.

One Wall Street

Manchester, New Hampshire 03101-1501

Pamela G. Hoskins, P.E., LSP
Licensed Site Professional

James P. Ricker, P.G.
Project Manager

September 2004

W.O. No. 13057.001.002.3100

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS
(concluded)

LIST OF APPENDICES

LIST OF FIGURES

LIST OF ACRONYMS

"the Site"	former John C. Tombarello & Sons property
American	American Recycling of Massachusetts, Inc.
bgs	below ground surface
COCs	contaminants of concern
CSA	Comprehensive Site Assessment
EPA	U.S. Environmental Protection Agency
EPHs	Extractable Petroleum Hydrocarbons
ft	feet
ft^2	square foot
H&A	Haley & Aldrich, Inc.
HEA	Higgins Environmental Associates, Inc.
IH	Imminent Hazard
IRA	Immediate Response Action
LCS	laboratory control spike
MCP	Massachusetts Contingency Plan
MDEP	Massachusetts Department of Environmental Protection
mg/kg	milligrams per kilogram
NOAA TELs	National Ocean and Atmospheric Administration Threshold Effect Levels
NOR	*Notice of Responsibility*
NPDWSA	Non-Potential Drinking Water Source Area
NSR	No Significant Risk
OHM	oil and hazardous materials
OVM	organic vapor monitor
PAHs	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PID	photoionization detector

LIST OF ACRONYMS
(concluded)

ppm	parts per million
QC	quality control
PVC	polyvinyl chloride
RAO	Response Action Outcome
RCRA	Resource Conservation and Recovery Act
RCS-1	Reportable Concentration Standard
RTNs	Release Tracking Numbers
SVOCs	semi-volatile organic compounds
Tombarello	Tombarello Recycling, Inc.
TOC	total organic carbon
TPH	total petroleum hydrocarbon
TSCA	Toxic Substances Control Act
USGS	United States Geological Survey
VOCs	volatile organic compounds
VPH	Volatile Petroleum Hydrocarbons
WESTON®	Weston Solutions, Inc.
WZB	W.Z. Baumgartner, Inc.

SECTION 1

INTRODUCTION

1. INTRODUCTION

Weston Solutions, Inc. (WESTON®) has been retained by First Lawrence Financial, LLC on behalf of American Recycling of Massachusetts, Inc. (American), to perform a Phase II Comprehensive Site Assessment (CSA) for the former John C. Tombarello & Sons property ("the Site"), located in Lawrence, Massachusetts. Massachusetts Department of Environmental Protection (MDEP) has assigned multiple Release Tracking Numbers (RTNs) to this Site for elevated levels of oil and hazardous materials (OHM) detected in the soil; RTN 3-18126 is effective for this CSA. The Site is currently classified as a Tier 1C site under the Massachusetts Contingency Plan (MCP) - 310 CMR 40.0000.

This Phase II CSA Report has been prepared in accordance with the requirements of the MCP (310 CMR 40.0835), and includes the results of numerous field investigations and site inspections. Additional information pertinent to the Site has been obtained from the following documents previously submitted by Haley & Aldrich, Inc. (H&A):

- *Immediate Response Action (IRA) Completion Report* (May 2001)
- *Scope of Work Phase II Comprehensive Site Assessment* (April 2001)
- *Phase I Requirements/Tier Classification* (March 2000).

Because of the applicability of the Toxic Substances Control Act (TSCA) to response actions at this Site, this document has also been written to comply with the following requirements of 40 CFR 761.61 (a)(3):

> *At least 30 days prior to the date that the cleanup of a site begins, the person in charge of the cleanup or the owner of the property where the* [polychlorinated biphenyl] *PCB remediation waste is located shall notify, in writing, the* [U.S. Environmental Protection Agency] *EPA Regional Administrator, the Director of the State or Tribal environmental protection agency, and the Director of the county or local environmental protection agency where the cleanup will be conducted. The notice shall include:*
>
> (A) *The nature of the contamination, including kinds of materials contaminated.*

(B) *A summary of the procedures used to sample contaminated and adjacent areas and a table or cleanup site map showing PCB concentrations measured in all pre-cleanup characterization samples. The summary must include sample collection and analysis dates. The EPA Regional Administrator may require more detailed information including, but not limited to, additional characterization sampling or all sample identification numbers from all previous characterization activities at the cleanup site.*

(C) *The location and extent of the identified contaminated area, including topographic maps with sample collection sites cross referenced to the sample identification numbers in the data summary from paragraph (a)(3)(i)(B) of this section.*

(D) *A cleanup plan for the site, including schedule, disposal technology, and approach. This plan should contain options and contingencies to be used if unanticipated higher concentrations or wider distributions of PCB remediation waste are found or other obstacles force changes in the cleanup approach.*

(E) *A written certification, signed by the owner of the property where the cleanup site is located and the party conducting the cleanup, that all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at the cleanup site, are on file at the location designated in the certificate, and are available for EPA inspection. Persons using alternate methods for chemical extraction and chemical analysis for site characterization must include in the certificate a statement that such a method will be used and that a comparison study which meets or exceeds the requirements of Subpart Q of this part, and for which records are on file, has been completed prior to verification sampling.*

SECTION 2

DISPOSAL SITE DESCRIPTION AND HISTORY
[30 CMR 40.0835(a)-(c)]

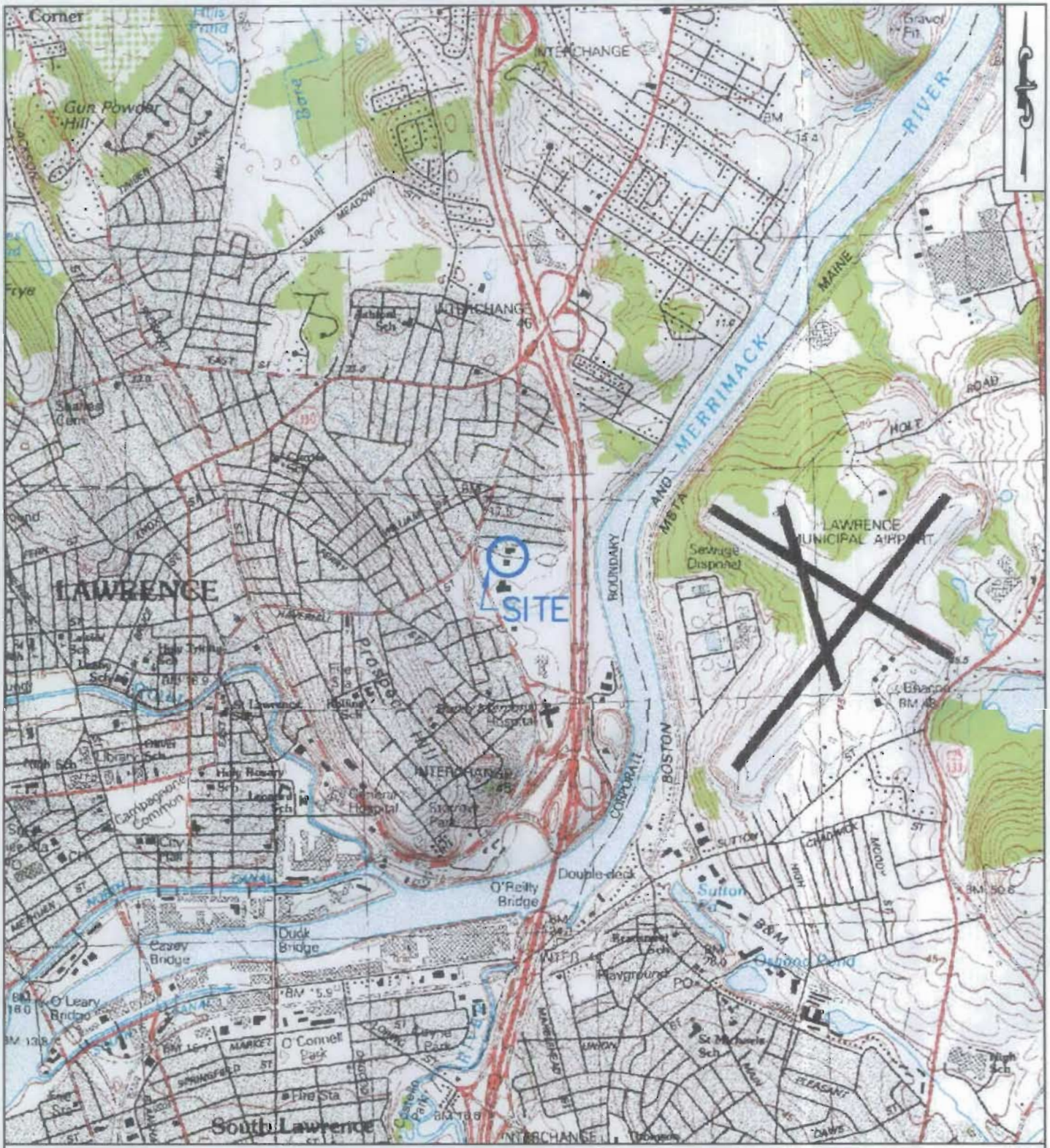
This document is intended to satisfy requirements (A), (B), and (C) above, as well as the requirements for an MCP Phase II CSA. A Remedial Action Plan, which has been submitted with this report, and a Remedy Implementation Plan, which will be submitted under separate cover, will satisfy requirements (D) and (E) above. Both of these reports will also be prepared in accordance with the MCP; specifically, 310 CMR 40.0850 and 40.0870, respectively.

2. DISPOSAL SITE DESCRIPTION AND HISTORY [30 CMR 40.0835(a)-(c)]

As previously stated, the disposal site presented in this CSA is the former John C. Tombarello & Sons scrap metal recycling property located at 207 Marston Street in Lawrence, Massachusetts. As shown on the 7.5-minute United States Geological Survey (USGS) Quadrangle Site Locus Map (Figure 2-1), the Site is bounded by Marston Street to the west, Hofmann Avenue to the north, Route 495 to the east, and the Sons of Italy Lodge, a soccer field and a high school to the south. The Merrimack River is located approximately 400 feet (ft) east of the property boundary.

The Site footprint comprises 14 acres. The northern portion of the Site was formerly used for metals recycling, while the southern portion was formerly used first for soap manufacturing, and then as a community landfill by the City of Lawrence. A paper recycling transfer station is currently operated on a 5-acre parcel to the southwest of the Site. The property is occupied by several buildings including: a 3,000 square foot (ft^2) office/scale house; a 3,000 ft^2 single family dwelling; a 24,000 ft^2 metal shop/garage; a 11,000 ft^2 furnace building; a 750 ft^2 press/baler building; and two shear buildings (2,500 ft^2 and a 6,500 ft^2, respectively). Numerous sheds and outbuildings are also located on the Site. Other site features include a soil berm adjacent to Route 495, overhead and subsurface utilities (telephone, electric, storm drains, and gas and water lines), and a sanitary sewer easement that bisects the Site from east to west. Reportedly, the soil berms were constructed from shallow site soils in conjunction with earthwork for Route 495. In addition, soil materials intermixed with metal are stockpiled adjacent the berms. These, and all pertinent site features, are shown on the Site Map (Figure 2-2).

In 1998, the John C. Tombarello & Sons metals recycling facility closed, and American bought the property. In association with the sale of the property, an environmental site assessment was conducted by W.Z. Baumgartner and Associates, Inc. (WZB). Results of the site assessment indicated that concentrations of OHM exceeding MCP Reportable Conditions existed at the Site. Consequently on 31 March 1999, MDEP assigned RTN 3-18126 to the Site and issued a *Notice of Responsibility* (*NOR*) and *Interim Deadline Letter* to both the former and new site



SOURCE:
DELORME 3-D TOPOQUADS SOFTWARE;
MASSACHUSETTS, CONNECTICUT, & RHODE ISLAND 3-D TOPOQUADS CD

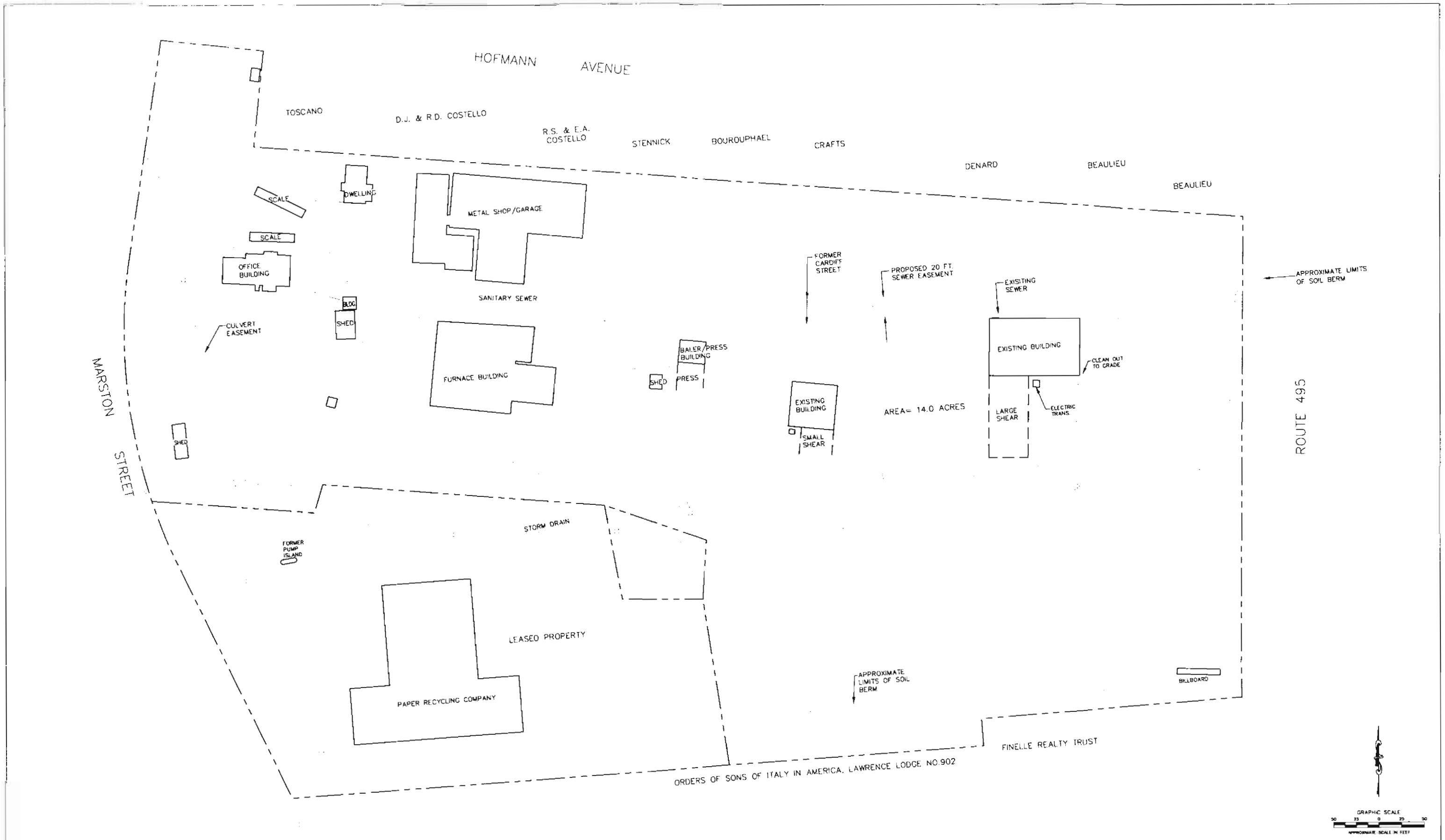
GRAPHIC SCALE
2000 1000 0 1000 2000
APPROXIMATE SCALE IN FEET

SITE LOCATION MAP

FORMER TOMBARELLO & SONS SITE
MARSTON STREET
LAWRENCE, MASSACHUSETTS

WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

DRAWN	DATE	DES. ENG.	DATE	W.O. NO.
BEG	AUG 2004			13057.001.002
CHECKED	DATE	APPROVED	DATE	FIGURE NO.
				2-1



NO	DATE	APPR	REVISION	NO	DATE	APPR	REVISION

FORMER TOMBARELLO & SONS SITE
MARSTON STREET
LAWRENCE, MASSACHUSETTS

WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

CHECKED		DATE	CLIENT APPROVALS
DES. ENG.			
PROJ. ENG.			
PROJ. MGR.			
APPROVED			
APPROVED			ISSUED FOR

DATE

SITE PLAN

DRAWN BEG	DATE AUG 2004	FIGURE NO. 2-2	REV. NO.
SCALE AS SHOWN	W.O. NO. 13057.001.002	SHT. ___ OF ___	

M:\design\DWG\TOMB\PHASE 2\fig 2-2.dwg, FIG 2-2, 8/13/2004 8:27:29 AM, girardeb, 1:2

owners. As a result of the *NOR*, both Tombarello Recycling, Inc. (Tombarello) and American were required to submit an IRA Plan and Imminent Hazard (IH) evaluation to further assess the environmental conditions at the Site. The IRA Plan was filed on 21 April 1999, by Higgins Environmental Associates, Inc. (HEA) on behalf of Tombarello and American. The IRA Plan included removal of a soil stockpile contaminated with heat transfer oil (RTN 3-16817), collection and analysis of surficial soil samples, and sampling and analysis of existing groundwater monitoring wells for the IH evaluation. The IH conditions were addressed through erection of a barbed-wire perimeter fence to eliminate site access by non-authorized personnel.

On 21 June 1999, MDEP issued another *NOR* for the Site and assigned RTN 3-18431 for oily sludge that was observed on the baler/press room floor. American contested that the sludge originated from the sewer and consequently, RTN 3-18431 was retracted pending further evaluation of the sewer as a potential migration pathway.

In April 2000, MDEP linked RTN 3-18431 with RTN 3-18126, and the property has been subsequently classified a Tier 1C Site under the MCP (310 CMR 40.0000). The Site is intended for future capping and redevelopment as a light-industrial property. A list of major reports and select relevant legal correspondences regarding the Site and associated activities at the Site is included in Appendix A.

SECTION 3

DISPOSAL SITE HYDROGEOLOGICAL CHARACTERISTICS
[30 CMR 40.0835(d)]

3. DISPOSAL SITE HYDROGEOLOGICAL CHARACTERISTICS [30 CMR 40.0835(d)]

The surficial geology of the Site has been mapped as artificial fill overlying river terrace and flood plain deposits consisting primarily of well-sorted fine sands and silts (USGS Surficial Geology Map for the Lawrence Quadrangle, 1951-1952). Bedrock outcrops were not mapped within the vicinity of the Site. Soil test borings completed by HEA in 1999 verified that site soils are comprised of very fine brown sands with minimal silt and gravel content. Test boring logs prepared by HEA are included in Appendix B.

Depth to groundwater at the Site was determined by HEA to range from approximately 5 to 11 ft below ground surface (bgs), and groundwater flows in an easterly direction towards the Merrimack River. The MDEP MASS GIS Site Scoring Map dated 29 March 2000 (refer to Figure 3-1), indicates that approximately one half the property (mainly the eastern portion) overlies a medium yield aquifer. This aquifer has been identified as a Non-Potential Drinking Water Source Area (NPDWSA).

MA DEP - Bureau of Waste Site Cleanup

Site Scoring Map: 500 feet & 0.5 Mile Radii

SITE NAME:
Tombarello & Sons, Inc.
207 Marston Street
LAWRENCE, MA
424310n 710826ew

Site Location

The information shown on this map is the best available at the date of printing. Please refer to the data source descriptions document.

MASS GIS — Massachusetts Geographic Information System
Massachusetts Executive Office of Environmental Affairs - 2003

Roads: Limited Access, Divided, Major Road, Connector, Street, Track, Trail
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct
Basins: Major, Sub; Streams: Perennial, Intermittent, Man Made Shore, Dams
Potentially Productive Aquifers: Medium,High Yield
Non-Potential Drinking Water Source Area: Medium,High Yield
EPA Sole Source Aquifer; FEMA 100-year floodplain
Public Water Supplies: Ground,Surface,Non Community
Approved Zone2; IWPA; Surface Water Supply Zone A
Hydrography: Water Features,Public Surface Water Supply
Wetlands: Fresh,Salt,NHESP Wetlands Habitat
Protected Open Space; ACEC
DEP Permitted Solid Waste Facilities; Certified Vernal Pools

N W E S

SCALE 1:15000

0 1/2 0 1/2 MILES
KILOMETERS

December 19, 2003

SECTION 4

NATURE AND EXTENT OF CONTAMINATION
[30 CMR 40.0835(f)]

4. NATURE AND EXTENT OF CONTAMINATION [30 CMR 40.0835(f)]

The Site has undergone several phases of investigation and assessment since its closure in 1998. The nature and extent of contamination is based on both historic and WESTON sampling and analytical results acquired in support of these investigations/assessments. In July 1998, Sprague Energy excavated soils contaminated with heat transfer oil (RTN 3-16817). In August 1998, WZB conducted a Phase I Site Assessment, which included: researching the history of the Site and surrounding area; collection and analysis of surface and subsurface soil samples; and installation and sampling of groundwater monitoring wells. In 1999, HEA conducted the IRA previously described in Section 2. In 2003, WESTON was retained by First Lawrence Financial, LLC to conduct additional site characterization activities to delineate the nature and extent of contamination (specifically PCBs in soil, groundwater, and river sediment) at the Site. This included sampling and analysis of surface and subsurface soil, groundwater, catch basin sediment, outfall sediment, and river sediment. A summary and discussion of sample results obtained during the investigations and assessments described above is presented in the following subsections.

4.1 SAMPLE COLLECTION PROCEDURES AND ANALYTICAL METHODS

4.1.1 Historic data

Prior to performance of the nature and extent of contamination at the Site, WESTON conducted a review of sample data collection and analysis procedures with respect to currently approved practices. The following historic data were evaluated:

- Soil:

  1998 - WZB (Table 1, Appendix C)
  1999 - HEA (Table 2, Appendix C)
  2001 - H&A (Table 3, Appendix C)

- Groundwater (Table 7, Appendix C):

  1998 - WZB
  1999 – HEA

- Sediment (Table 8, Appendix C):

  2001 – H&A

WZB Data

The WZB data, which are the oldest data used, were evaluated via review of the WZB Phase 1 *Environmental Site Assessment* (WZB, 1998). Appendix G of the WZB report provides groundwater sampling summary sheets indicating well depths, elevations, purging methods and purge times, pumping volumes, and field measurements of temperature, conductivity, pH, and turbidity. In addition remarks on the general appearance, odor, and other physical characteristics of note pertaining to the groundwater are included. The summary sheets indicate the wells were purged via submersible pump. No unusual circumstances or breach of accepted protocols were indicated on the sheets, which would compromise the accuracy or integrity of the data. It is unclear from the summary sheets whether low flow sampling methods were used.

In addition, Appendix G of the WZB document provides boring logs and well completion information for the wells installed and sampled, as well as elevation information for select samples. Laboratory data packages were not supplied with the WZB report. Rather, tabulated data indicating detection limits for each sample were provided, along with some limited Chain-of-Custody information. Neither Appendix G. nor Section 9 (Intrusive Investigation) of the report indicated analytical methods used or sampling procedures adhered to. However, Subsection 2.3 – Limitations and Exceptions to Investigation – indicates that the site investigation was conducted in full compliance with Standard *Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process* (ASTM E-1527). Therefore, the data were deemed acceptable for inclusion in this Phase II CSA, and to form part of the basis for future response action decisions at the Site.

HEA Data

Details of HEA data collection and analysis sample collection and analytical methods were not included in their *Modified Immediate Response Action (IRA) Plan* (HEA, June 1999). However, the results of their work and a brief description of sampling methods and laboratory analytical procedures were provided in the Final IRA Completion Report submitted by Haley and Aldrich, Inc. (H&A, 15 May 2001). The following paragraphs present the description, as included in the IRA Completion Report:

> *HEA collected discrete surficial soil samples on a grid pattern on 26 April 1999. Focused collection of surficial soil samples was conducted at previous soil sampling locations and at ten-foot distances to the north, south, east and west of previous sampling locations.*
>
> *A total of forty-five discrete grid samples of soil were collected from depths of zero to six inches as outlined in the Modified IRA Plan dated 1 June 1999 prepared by HEA.* [Photoionization detector] *PID headspace screening for* [volatile organic compounds] *[VOCs was conducted on all samples and results were all less than 0.5 parts per million.*
>
> *HEA collected an additional nineteen discrete soil samples for laboratory analysis on 28 April 1999. The sampling locations were determined based on visual classification of soil and previous sampling locations where potential Imminent Hazard Conditions might be present.*
>
> *Laboratory analysis included the following:*
>
> - *Polychlorinated biphenyls (PCBs) by U.S. EPA Method 8082;*
> - [Extractable Petroleum Hydrocarbons] *EPHs by MA DEP-specified methods;*
> - *Lead and cadmium by U.S. EPA Method 6010;*

- *Volatile organic compounds by U.S. EPA Method 8021B (Halogenated) and U.S. EPA Method 5035; and*
- *Volatile petroleum hydrocarbons by MA DEP-specified methods.*

All soil samples were analyzed for PCBs, lead and cadmium. The remaining parameters were analyzed for select samples chosen by HEA based on previous laboratory results from the Site.

An additional five surficial soil samples were collected by HEA on 2 June 1999 as planned in the Modified IRA Plan dated 1 June 1999 prepared by HEA and outlined in the IRA Status Report dated 28 July 1999 prepared by HEA. The samples were collected in the proximate location of the previous sample location SB6-SS1. One sample (SB6-SS2) was collected at the same location as SB6-SS 1 and four additional samples were collected at a distance of ten feet to the north, south, east, and west of SB6-SS1.

Four groundwater monitoring wells (MW-1, MW-2, MW-3, and MW-4) were to be re-sampled based on laboratory results of groundwater sampling documented in the *Environmental Site Assessment Report* dated August 1998 prepared by Baumgartner & Associates, Inc. During a site inspection conducted on 23 May 1999, only one well (MW-l) was located and developed. Three additional monitoring wells (MW-5, MW-6, and MW-7) were installed 2 June 1999 in approximate locations of the previously existing wells. (*Note:* Monitoring well installation logs were provided in Appendix C of the IRA Completion Report).

The three new wells were developed 3 June 1999. Groundwater sampling was conducted 10 June 1999 by HEA using low flow sampling techniques. Samples from each well were analyzed for VOCs by EPA Method 8260B.

H&A Data

Laboratory data packages for the 35 soil samples collected by H&A in 2001 are presented in Appendix C. Soil samples were analyzed for PCBs via EPA Method 8082. However, due to contractual issues between H&A and American Recycling, formal, tabulated sediment data and laboratory packages were not provided by H&A to WESTON. Rather, the data were transmitted

by H&A via telephone and placed on a map in locations previously designated by H&A. It is assumed based on knowledge of H&A procedures and historical familiarity with their previous work that sample collection and analytical procedures were rigorous enough to ensure the level of data quality required by Comprehensive Environmental Response, Compensation, and Liability Act and the MCP.

4.1.2 WESTON Data

4.1.2.1 Data Collection Handling, and Shipment Procedures

12 and 13 February 2003

Under WESTON supervision, ADH of Fitchburg, Massachusetts advanced 13 soil borings to a depth of 7 ft. Each boring was advanced, by a track-mounted GeoProbe unit with direct-push technology and 4-foot dedicated lexane sleeves. At each soil boring location, a WESTON geologist collected soil samples from discreet intervals between 0 and 7 ft bgs based on visual and olfactory observations. The samples were screened in the field using an organic vapor monitor (OVM) equipped with a PID. All volatile samples were collected directly from the lexane sleeves as to minimize soil disturbance. The remaining volume of soil from the sampled interval was transferred to a dedicated aluminum mixing vessel. After homogenization was completed, the sample was transferred to the appropriate sample containers and immediately placed on ice. Under chain-of-custody procedures the soil samples were submitted via courier to ESS Laboratory, Inc. in Cranston, Rhode Island. The samples were analyzed EPH (Commonwealth of Massachusetts method), volatile petroleum hydrocarbons (VPH) (Commonwealth of Massachusetts method), Resource Conservation and Recovery Act (RCRA)-8 metals (EPA Methods 6010A and 7471A), and PCBs (EPA SW-846 Method 8082). Upon completion, each boring was backfilled to the surface with a combination of soil cuttings and clean filter sand.

Upon completion of the soil boring program, four locations were completed as microwells. At four of the locations, the borings were continued to a depth of approximately 16 ft bgs and the wells were constructed with ten feet of 1.25-inch diameter, 10-slot polyvinyl chloride (PVC) well screen and 6 ft of flush-jointed PVC riser. The annular space around the well material was

backfilled with clean filter sand to a depth of 4 ft bgs and a 2-foot thick bentonite seal was installed above the sand pack. The wellhead was completed at the surface with a 4-inch-diameter, flush-mounted steel road box set in concrete.

Following installation of the microwells, ADH developed the wells by purging water from them with a peristaltic pump and dedicated polyethylene tubing. Once the purge water was free of silt and sand to the unaided eye, a WESTON geologist collected groundwater samples from each well directly into pre-preserved sample containers and immediately placed them on ice. Following chain of custody procedures, the samples were submitted to ESS Laboratory in Cranston, Rhode Island for analysis of VOCs and dissolved RCRA-8 metals, by EPA Methods 8260B, and 6010A and 7471A, respectively. The dissolved metals samples were field filtered into a pre-preserved sample container using a 0.45 micron in-line filter.

WESTON personnel collected three sediment samples, from the Merrimack River, which flows past the Site. The sediment samples were collected using a stainless steel bucket auger, which was decontaminated with alconox and water wash and a deionized water rinse in between each sample collection. The sediment was transferred from the auger to stainless steel mixing bowls and homogenized with a dedicated stainless steel scoop. The samples were screened in the field using an OVM equipped with a PID. The homogenized sediment was transferred from the bowls to the appropriate sample containers and placed on ice. Following chain-of-custody procedures, the samples were couriered to ESS Laboratory in Cranston, Rhode Island. The sediment samples were analyzed for EPH (Commonwealth of Massachusetts Method), PCBs (EPA SW-846 Method 8082), RCRA-8 metals (EPA Methods 6010A and 7471A), and total organic carbon (TOC) (Method 415.1 or 9060).

14 and 15 July 2003

Under WESTON supervision, ADH of Fitchburg, Massachusetts advanced 22 soil borings to a depth of 4 ft bgs. The soil borings were laid out over the 14-acre property with 100-ft by 100-ft grid spacing. At each boring location a soil sample was collected from depth intervals of 0–0.5 ft bgs and 1–3 ft bgs. Samples from two adjacent grids were then composited into one sample for each depth interval. A more detailed description of direct-push and soil sampling methodology is described in the paragraphs above, which detail sampling and analysis activities

for 12 and 13 February 2003. Following collection, the samples were packed in ice and under chain-of-custody procedures were submitted via courier to Resource Laboratory, Inc. in Portsmouth, New Hampshire. The soil samples were analyzed for total PCBs by EPA Method 8082 using Soxhlet (Method 3540) extraction and acid/florisil cleanup.

In addition, WESTON personnel also collected discrete samples from two previously identified PCB "hot spots": WSB-6 (WESTON, February 2003) and SB-6 (HEA, June 1999). Samples were collected at depth intervals of 0-6 inches, 1-2 ft, and 2–3 ft bgs. A second round of samples was collected at the same depth intervals at locations that were a distance of 10 ft north, south, east, and west from each "hot spot". A total of 33 discrete samples were analyzed from 11 sample locations surrounding the two "hot spots". A more detailed description of direct-push and soil sampling methodology is described above in the paragraphs above, which detail sampling and analysis activities for 12 and 13 February 2003. Following collection, the samples were packed in ice and under chain-of-custody procedures were submitted via courier to Resource Laboratory, Inc. in Portsmouth, New Hampshire. The soil samples were analyzed for total PCBs by EPA Method 8082 using Soxhlet extraction and acid/florisil instrument decontamination procedures.

2 September 2003

In September 2003 under WESTON supervision, ADH advanced 47 soil borings from the five composite sample locations where elevated concentrations of PCBs were detected in July 2003. All procedures and methodology implemented for soil sample collection of the "hot spots" during the July 2003 sampling effort are described above in the section detailing characterization activities occurring on 14 and 15 July 2003. Following collection, the samples were packed in ice and under chain-of-custody procedures were submitted via courier to Resource Laboratory, Inc. in Portsmouth, New Hampshire. The soil samples were analyzed for total PCBs by EPA Method 8082 using Soxhlet extraction and acid/florisil instrument decontamination procedures.

4.1.2.2 Laboratory Quality Assurance/Quality Control and Data Validation

Volatile organic compounds, semi-volatile organic compounds (SVOCs), total metals, PCBs, EPH, and TOC data generated for the Tombarello Site project by the off-site laboratories, ESS of Cranston Rhode Island, and Resource Laboratories, Inc. of Portsmouth, New Hampshire (performed PCB analysis only) were analyzed by EPA SW-846 Methods and EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR 136. Data was reviewed in accordance with the *U.S. EPA New England Region I Data Validation Functional Guidelines for Evaluating Environmental Analyses* (EPA, December 1996). The following QC indicators were reviewed; holding times, sample preparation, method blanks, surrogate recoveries, matrix spike recoveries, field duplicate results, laboratory control spike (LCS) recoveries, and laboratory duplicates (metals only) A modified Tier II data review utilizing a Data Review Checklist was performed.

In some instances, matrix spike recoveries did not meet quality control (QC) criteria stated in the laboratory QC plan or standard operating procedure. No qualifications were added to data results if these compounds met recovery limits in the LCS sample. In the February 2003 ESS data package, several surrogates in the EPH and PCB analyses could not be quantitated due to matrix interferences or high dilutions. Blank spike and LCS spike results were within QC limits; therefore, data quality was not compromised. Field duplicate samples were analyzed at a rate of one per ten and results were acceptable. As stated in the 12 April memo, the laboratory was unaware of the need for presumptive certainty for the September 2003 data deliverable; therefore, some QC requirements were not met. However, none of the discrepancies noted neither in that April memo, nor in the previous review of the analytical results would cause the quality of data to be compromised.

4.2 ANALYTICAL RESULTS

The following analytical data have been used to assess the nature and extent of contamination at the Site:

- Soil:

  1998 - WZB (Table 1, Appendix C)
  1999 - HEA (Table 2, Appendix C)

2001 - H&A (Table 3, Appendix C)
2003 - WESTON (Table 4, 5, and 6, Appendix C)

- Groundwater (Table 7, Appendix C):

  1998 - WZB
  1999 – HEA
  2003 - WESTON

- Sediment (Table 8, Appendix C):

  2001 – H&A
  2003 – WESTON

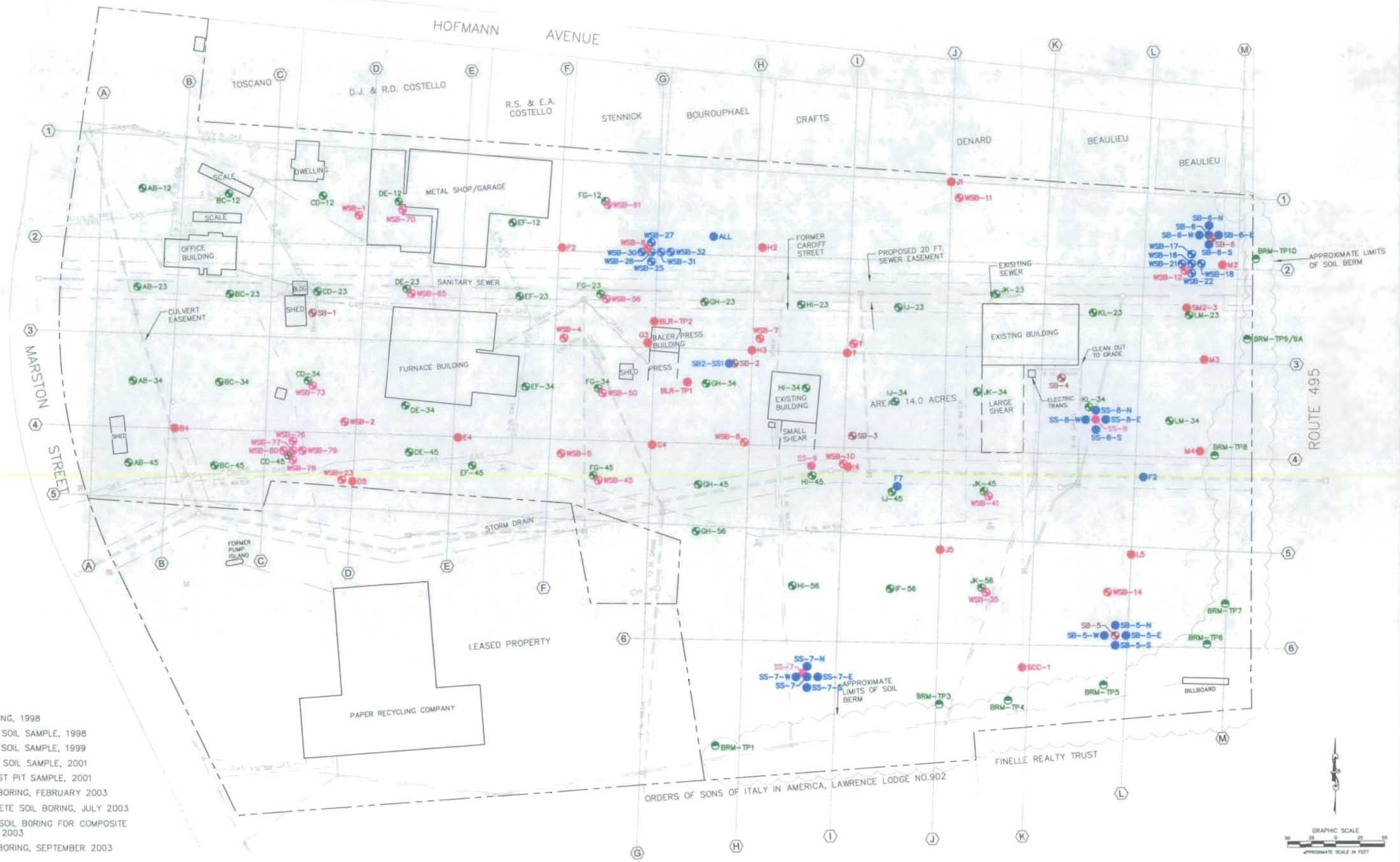
All soil sample locations are shown on Figure 4-1, groundwater sample locations are shown on Figure 4-2, and raw laboratory data packages are provided in Appendix D. Sample procedures, results, and action levels are summarized in Subsections 4.2.1 through 4.2.3, and discussed in detail in the following documents:

- 8 August 2003: WESTON letter to the EPA (Ms. Kimberly Tisa)
- 15 May 2001: *IRA Completion Report* (H&A)
- 1 June 1999: *Modified IRA Plan* (HEA)
- August 1998: *Environmental Site Assessment* (WZB)

As indicated above, all WESTON data have undergone EPA Tier II validation. Historic data collected by subcontractors other than WESTON have not been validated; however, these data have been checked for quality and reasonableness, and have been found of sufficient quality to support comprehensive response actions under the MCP. The following should also be noted with regards to available site data:

- Raw laboratory data packages for samples collected by H&A in Year 2001 were not made available to WESTON due to contractual difficulties between H&A and American. The H&A data, which are presented in tabular format only (Tables 3 and 7, Appendix C), were collected recently enough and show good comparability to other data collected for the Site, to be deemed acceptable for use as historic data in support of CSA activities.

- Data collected by WESTON in September 2003 were not analyzed in strict accordance with the newly promulgated Data Enhancement/Presumptive Certainty requirements for data collection/analysis under the MCP (i.e., no presumptive certainty checklist was provided by the laboratory). However, as allowed for under the MCP, data review and validation have resulted in the determination that the data are of sufficient quality to support comprehensive response actions and decisions



LEGEND

SB-1	WZB SOIL BORING, 1998
SS-8	WZB SURFACE SOIL SAMPLE, 1998
F7	H&A SURFACE SOIL SAMPLE, 1999
E4	H&A SURFACE SOIL SAMPLE, 2001
BRM-TP1	H&A BERM TEST PIT SAMPLE, 2001
WSB-4	WESTON SOIL BORING, FEBRUARY 2003
WSB-17	WESTON DISCRETE SOIL BORING, JULY 2003
AB-45	WESTON GRID SOIL BORING FOR COMPOSITE SAMPLE, JULY 2003
WSB-79	WESTON SOIL BORING, SEPTEMBER 2003

NO.	DATE	APPR.	REVISION

FORMER TOMBARELLO & SONS SITE
MARSTON STREET
LAWRENCE, MASSACHUSETTS

WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

CHECKED	DATE	CLIENT APPROVALS	DATE
DES. ENG.			
PROJ. ENG.			
PROJ. MGR.			
APPROVED			
APPROVED		ISSUED FOR	DATE

SOIL SAMPLE LOCATION MAP

DRAWN BEG	DATE AUG 2004	FIGURE NO. 4-1	REV. NO.
SCALE AS SHOWN	W.O. NO. 13057.001.002	SHT. ___ OF ___	

LEGEND

- MW-6 HEA MONITORING WELLS, JUNE 1999
- MW-1 WESTON MONITORING WELLS, FEBRUARY 2003
- MW-2 WZB MONITORING WELLS, JULY 2003

NO.	DATE	APPR.	REVISION

FORMER TOMBARELLO & SONS SITE
MARSTON STREET
LAWRENCE, MASSACHUSETTS

WESTON SOLUTIONS — MANCHESTER, NEW HAMPSHIRE

		CLIENT APPROVALS	DATE
CHECKED	DATE		
DES. ENG.			
PROJ. ENG.			
PROJ. MGR.			
APPROVED			
APPROVED		ISSUED FOR	DATE

MONITORING WELL SAMPLE LOCATION MAP

DRAWN	DATE	FIGURE NO.	REV. NO.
BEG	AUG 2004	4-2	
SCALE	W.O. NO.		
AS SHOWN	13057.001.002	SHT. ___ OF ___	

M:\Design\DWG\TOMB\PHASE 2\Fig 4-2.dwg; Fig 4-2, 8/13/2004 9:11:03 AM, girardeo, 1:2

under the MCP. A chemist's memorandum documenting this determination is provided in Appendix E.

4.2.1 Soil

In July 1998, WZB collected 15 soil samples between 0-11 ft bgs from nine soil boring locations. The samples were analyzed for SVOCs, metals, VOCs, PCBs, and total petroleum hydrocarbon (TPH). As shown in Table 1 (Appendix C), results indicated exceedances above the MCP Reportable Concentration Standard (RCS-1) criteria for the following analytes: SVOCs (Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Indeno(1,2,3-cd)Pyrene, 2-Methylnaphthalene, Naphthalene, and Phenanthrene); TPH (diesel range); PCBs (Aroclor 1221, Aroclor 1260, and Aroclor 1248); and metals (lead).

On 26 April 1999, HEA collected a total of 45 discreet soil samples from depths of 0-6 inches at previous WZB sample locations and at 10-ft distances to the north, south, east and west of those locations (sample results are not included in this Phase II CSA Report). The samples were analyzed for the following analytes using the laboratory methods indicated:

- **PCBs:** EPA Method 8082
- **EPHs:** MDEP-specified methods
- **Lead and Cadmium:** EPA Method 6010
- **VOCs:** EPA Method 8021B (halogenated) and EPA Method 5035
- **VPH**: MDEP-specified methods

Based on the results of the 26 April 1999 sampling event [refer to the *Modified IRA Plan* (H&A, 1999)], HEA collected an additional 19 discreet soil samples on 28 April 1999, to better define locations where potential IH conditions might be present. These locations included: SB-5; SB-6; SB-7; and SB-8. The samples were analyzed for the analytes listed above using the laboratory methods indicated. Sample results, which are presented in Table 2 (Appendix C), identified exceedances above the MCP RCS-1 criteria for the following analytes: EPHs (C9-C18 aliphatics, C19-C36 aliphatics, C11-C22 aromatics, Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, and Indeno(1,2,3-cd)Pyrene); metals (lead); VOCs (methyl tertiary butyl ether, Trichlorofluoromethane); and PCBs (Aroclor 1254 and Aroclor 1260). Detection of Aroclor 1260 at a concentration of 57 milligrams per kilogram (mg/kg) at sample location SB6-SS1 resulted in identifying this location as a potential IH.

To further delineate the potential IH condition, HEA collected an additional five discrete soil samples on 2 June 1999, in the proximate location of the previous SB6-SS1 sample. One sample (SB6-SS2) was collected at the same location as SB6-SS1 and four additional samples were collected at a distance of 10 ft to the north, south, east, and west of this location. The samples were analyzed for the same analytes using the same laboratory methods as previously described for the April 1999 sampling events. The sample results, which are presented in Table 2 (Appendix C), showed an elevated concentration of Aroclor 1260 (92 mg/kg) detectable at sample location SB6-N1.

In September 2001, H&A collected 35 soil samples between 0-15 ft bgs for laboratory analysis. Twelve of these samples were collected from the soil berm and three were collected from the vicinity of the Baler Press Building (refer to figure 4-1). The samples were analyzed for PCBs only using EPA Method 8082. Sample results indicated exceedances above the MCP RCS-1 criteria of 2 mg/kg for the following PCBs: Aroclor 1016 (average = 4.9 mg/kg; max = 11 mg/kg); Aroclor 1242 (average = 65 mg/kg; max = 66 mg/kg); Aroclor 1254 (average = 5.4 mg/kg; max = 11 mg/kg); and Aroclor 1260 (average = 16.9 mg/kg; 78 mg/kg).

In February 2003, WESTON collected 28 soil samples between 0-7 ft bgs from 13 boring locations (refer to Figure 4-1). The samples were analyzed for EPH, metals, and total PCBs. Sample results indicated exceedances above the RCS-1 criteria for all analytes tested, with the exception of selenium and silver. A total of 12 samples had detectable PCB concentrations greater than the RCS-1 criteria of 2 parts per million (ppm), but less than the site-specific criteria of 75 ppm. Only one sample, which was collected at WSB-6 between 0-1 ft bgs, exceeded 75 ppm. The February 2003 sample results are presented in Table 4, Appendix C.

Additional site characterization sampling was conducted by WESTON in July 2003 to further delineate previously identified PCB-contaminated areas. Samples were collected from the center of each 100-ft by 100-ft grid (refer to Figure 4-1) at depth intervals of 0–1 ft bgs and 1–3 ft bgs. Samples from two adjacent grids were then composited into one sample for each depth interval. All samples were analyzed for total PCBs by EPA Method 8082 using Soxhlet extraction and acid/florisil instrument decontamination procedures. A total of 44 composite samples (22 samples from 0-6 inches, and 22 samples from 6-12 inches) were analyzed for total PCBs. The analytical results, which are presented in Table 5 (Appendix C), indicated the presence of

PCBs at concentrations of 37.5 ppm or greater at 5 of the 22 boring locations where samples were analyzed. These locations included: CD-35; DE-13; FG-13; FG-35; and JK-46. A threshold of 37.5 ppm was used to evaluate the data because when multiplied by a factor of two to account for the number of grab samples per composite sample, it equals EPA's recommended site-specific action limit of 75 ppm. The concentration of PCBs detected at these five locations ranged from 37.8 ppm in composite sample JK-46 to 200 ppm in composite sample CD-35. At four of the five locations, the vertical extent of PCB contamination was delineated by the sample collected from the interval below it, where the concentration was less than 37.5 ppm. At the fifth location (CD-35), the elevated concentration was detected in the 1 to 3-ft interval; however, in accordance with WESTON's proposed sampling plan, no samples were collected beyond a depth of 3 ft bgs.

During the July 2003 sampling event, WESTON also collected discrete samples from two previously identified PCB "hot spots": WSB-6 (WESTON, February 2003) and SB-6 (HEA, June 1999). Samples were collected at depth intervals of 0-6 inches, 1-2 ft, and 2–3 ft bgs. A second round of samples was collected at the same depth intervals at locations that were a distance of 10 ft north, south, east, and west from each "hot spot". A total of 33 discrete samples were analyzed from 11 sample locations surrounding the two "hot spots" (refer to Figure 4-1). Sample results indicated PCB concentrations in exceedance of the 75 ppm action level in two samples around the former "hot spot" WSB-6: WSB-26 at 510 ppm (1-2 ft bgs) and WSB-31 at 13,000 ppm (0-1 ft bgs). Boring WSB-26 was advanced immediately next to former boring location WSB-6 to confirm the concentration of PCBs (2,700 ppm) previously detected during the February 2003 sampling event. Boring WSB-31 was advanced 10 ft to the east of boring location WSB-6/WSB-26. Due to the elevated level of PCBs detected at this location, WESTON instructed the laboratory to also analyze samples collected at WSB-32, which was located an additional 10 ft to the east of WSB-31. The analytical results of the samples collected at WSB-32 indicated no detections of PCBs above 75 ppm; therefore, it was concluded that the horizontal extent of PCB contamination at sample location WSB-31 had been delineated. There were also no detections of PCBs at depths greater than 1-2 ft bgs and 0-1 ft bgs at sample locations WSB-26 and WSB-31, respectively; therefore, it was concluded that the vertical extent of PCB contamination had also been delineated in this area.

There were no detections of PCBs above the site-specific criteria of 75 ppm in any samples collected at or around former "hot spot" location SB-6; therefore, it was concluded that PCB levels in soils within this area were sufficiently delineated.

Although both "hot spot" locations were satisfactorily delineated by the 75 ppm site-specific criteria, a total of 15 sample results indicated elevated levels of PCBs above the 2 ppm MCP RCS-1 criteria within the vicinity of both "hot spot" sample locations. Sample results for the July 2003 sampling event are presented in Table 5, Appendix C.

In September 2003, WESTON collected a total of 44 discrete soil samples from the five composite sample locations where concentrations of PCBs were detected in July 2003 above the 75 ppm site-specific criteria (refer to Table 5, Appendix C). The September 2003 samples were collected from ten boring locations that comprised the five composite samples. These locations included borings DE-12, DE-23, CD-34, CD-45, FG-12, FG-23, FG-34, FG-45, JK-45, and JK-56. Refer to Figure 4-1 for sample locations. With the exception of locations CD-34 and CD-45, the proposed sampling intervals for the borings was the same as those collected from the two "hot spot" locations during the July 2003 investigation (i.e., 0-6 inches bgs, 1-2 ft bgs, and 2-3 ft bgs). At boring locations CD-34 and CD-45, samples were also collected at a depth interval of 3-4 ft bgs. Samples were analyzed for total PCBs only using EPA Method 8082 with Soxhlet extraction and acid/florisil instrument decontamination procedures. Sample results, which are presented in Table 6 (Appendix C) showed detectable concentrations of PCBs above the 75 ppm action level in four samples: WSB-76 (1-2 ft bgs); WSB-77 (2-3 ft bgs); WSB-78 (1-2 ft bgs); and WSB-79 (1-2 ft bgs). Additional samples collected at greater depths resulted in vertical delineation of the PCB concentrations to levels less than 75 ppm as follows:

- WSB-76 = 0.7 ppm (2-3 ft bgs)
- WSB-77 = 8.4 ppm (3-4 ft bgs)
- WSB-78 = 14 ppm (2-3 ft bgs)
- WSB-79 = 22 ppm (2-3 ft bgs)

Although all September 2003 sample locations were satisfactorily delineated by the 75 ppm site-specific criteria, a total of 22 sample results indicated elevated levels of PCBs above the 2 ppm MCP RCS-1 criteria. Sample results for the September 2003 sampling event are presented in Table 6, Appendix C.

Based on analysis of the sample results obtained by WZB, HEA, H&A, and WESTON between July 1998 and September 2003, a risk assessment was conducted to determine the contaminants of concern (COCs) in soil for the Site. The risk assessment concluded the following COCs exist in soil at the Site: PCBs; carcinogenic polycyclic aromatic hydrocarbons (PAHs); metals (arsenic, lead, and cadmium), VPHs and EPHs. Detailed results of the risk assessment are presented in the *Human Health Risk Assessment* (Sundstrom, 2004) report, which is included in Appendix F of this document. A discussion of these results are presented in Section 6 of this CSA.

4.2.2 Groundwater

In July 1998, WZB installed and sampled five groundwater monitoring wells. The samples were analyzed for VOCs, pesticides, metals, SVOCs, VPHs, EPHs, and PCBs. Sample results indicated no exceedance above the RCGW-2 criteria for the parameters analyzed. The WZB monitoring well locations (MW-2, MW-2A, MW-3, MW-3A, and MW-4) are shown in Figure 4-2, sample results are presented in Table 7, and raw laboratory data are included in Appendix D.

In May 1999, HEA planned to resample the monitoring wells previously installed by WZB. Upon mobilizing the Site on 23 May 1999, HEA was only able to locate and develop one well (MW-1). On 2 June 1999, HEA returned to the Site, and installed three additional monitoring wells (MW-5, MW-6, and MW-7) within the vicinity of the former WZB monitoring wells (refer to Figure 4-2). Monitoring well installation logs are included in Appendix B. Groundwater sampling was conducted by HEA on 10 June 1999 using low-flow sampling techniques. Samples from each well were analyzed for VOCs by EPA Method 8260B and metals (arsenic, total chromium, and lead) by EPA Method 6010A. Samples collected from MW-1 and MW-4 were also analyzed for VPHs and EPHs by MDEP-specified methods. Sample results, which are included in Appendix D, indicated no exceedances above the RCGW-2 criteria for any of the parameters analyzed. Raw laboratory data are included in Appendix D.

In February 2003, WESTON planned to redevelop and sample the seven existing monitoring wells previously installed by WZB and HEA. None of the existing wells could be located during the WESTON site reconnaissance; therefore, WESTON installed four new 1.5-inch-diameter wells (MW-1, MW-5, MW-6, and MW-7) to collect the groundwater samples. These wells,

which are shown on Figure 4-2, were installed using a direct push track-mounted GeoProbe system. Groundwater samples collected from the wells were field-filtered and then shipped off-site for laboratory analysis. The samples were analyzed for VOCs by EPA Method SW-846/8026B, and for metals by methods 6010A and 7471A (RCRA-8 metals only). The laboratory analytical results, which are presented in Table 7 (Appendix C), indicate that vinyl chloride was detected in one downgradient well (MW-7) at a concentration that exceeds the RCGW-2 criteria for groundwater at the Site. There were no detections of VOCs above the RCGW-2 criteria in upgradient monitoring wells MW-1, MW-5, and MW-6, and no detection of metals at any of the four locations.

4.2.3 Sediment

In September 2002, H&A collected nine sediment samples from the Merrimack River for PCB analysis. The samples were collected from 0-1 ft from the river bottom using a hand auger. The samples were analyzed for PCBs only and results indicated exceedances above the National Ocean and Atmospheric Administration Threshold Effect Levels (NOAA TELs) for Aroclor 1260 at two sample locations (SED-4 and SED-7). Sample location SED-7 also had an exceedance for Aroclor 1254. Sample results are presented in Table 4, Appendix C.

In February 2003, WESTON collected an additional three sediment samples. Two samples were collected upstream of the Site (CB-1and RSED-1), and one sample was collected downstream of the Site (OUTFALL-1). The purpose of collecting additional sediment samples was to determine if sediment concentrations leaving the Site via the outfall adversely impact ecological receptors in the Merrimack River, determine if concentrations of COCs leaving the Site are less than or equal to those entering the Site, and determine if there are other potential contributors to sediment contamination in the Merrimack River (i.e., other Primary Responsible Parties). Sample results, which are included in Table 8 (Appendix C), show that levels of PCBs (Aroclor 1242 and Aroclor 1260) and metals (arsenic, cadmium, chromium, lead, and mercury) are detectable at concentrations that exceed the NOAA TELs in samples collected both upstream and downstream of the Site. With the exception of Aroclor 1242 and cadmium, the concentration of contaminants is lower at the downstream sample location (OUTFALL-1) compared to the two upstream sample locations (CB-1 and RSED-1). Based on these results, it is likely that contaminants detected in sediment samples are neither originating nor migrating in high

concentrations from Site sources; however, there is insufficient data available to definitely correlate results obtained downstream with those obtained upstream.

4.3 SOURCE CHARACTERIZATION

Potential source areas of contamination at the Site are described in the following subsections.

4.3.1 Soil

The Site is a commercial/industrial property with a residential area located within 500 ft of the site boundary. Consequently, Site soils have been classified by MDEP as RCS-1 for current and future conditions. Soil sampling data collected to date, as previously discussed in Subsection 4.1, indicate that PCBs, metals (specifically lead), and TPHs exist in both surface and subsurface soils in exceedance of MCP and/or EPA criteria. The majority of impacted soils are surficial soils that will be covered in the future by buildings and/or asphalt.

4.3.2 Groundwater

The Site is not located near any public drinking water supply sources, and there are no private water supplies used for drinking water within 500 ft of the property boundary. According to the Inspection Service Department (Health and Food Division) for the City of Lawrence, there are no wells of any type that exist within a 500-ft radius of the Site. Based on these criteria, the Site is classified as GW-2 by MDEP. Since all groundwater associated with the Site is expected to eventually discharge to a surface water body, it is also classified GW-3. Groundwater sampling data collected to date, as previously discussed in Subsection 4.1, indicated that elevated levels of VOCs and metals exist in Site groundwater. Although, Site groundwater is not likely to affect drinking water or surface water within 500 ft of the Site, it is a potential source of VOCs in air within future buildings on-site.

4.3.3 Baler/Press Room

Oily sludge (RTN 3-18431) observed on the baler/press room floor contains PCBs, TPHs, metals, and VOCs and may contribute to elevated concentrations of these constituents in samples collected elsewhere on the Site.

4.3.4 Municipal Sewer

Flooding and back-ups from the municipal sewer have been identified as potential sources of contamination at the Site.

4.3.5 Shear Residue/Berm Material

Soil materials intermixed with metals were previously stockpiled on-site, and may have contributed to contaminant loadings at the Site.

4.3.6 Abandoned Underground Storage Tank

An abandoned 500-gallon underground storage tank is located adjacent to the baler/press building.

4.4 VERTICAL AND HORIZONTAL EXTENT OF CONTAMINATION

Soil sampling has indicated that several areas of the Site contain elevated levels of PCBs in subsurface soils; however, the horizontal and vertical extent of some of these areas has not been adequately defined. To further assess the extent of contamination, it will be necessary to excavate soil from these areas and collect samples from the bottom and sidewalls of the excavations. As shown in Figure 4-1, lead has been detected in soil at two locations in excess of 2,000 ppm.

Volatile organic compounds have been detected in site groundwater, and could impact indoor air quality of future buildings constructed on-site. Further evaluation of soil gas within the vicinity of impacted groundwater is necessary to determine the vapor phase content of the VOC constituents from groundwater.

4.5 PRESENCE OF NON-AQUEOUS PHASE LIQUIDS

Free product (oily sludge) remains within the baler/press building and constitutes a potential threat to the surrounding environment. This situation has been previously reported to MDEP and assigned RTN 3-18431.

SECTION 5

ENVIRONMENTAL FATE AND TRANSPORT OF OIL AND/OR HAZARDOUS MATERIAL - CHARACTERIZATION OF EXISTING AND POTENTIAL MIGRATION PATHWAYS [30 CMR 40.0835(e)]

5. ENVIRONMENTAL FATE AND TRANSPORT OF OIL AND/OR HAZARDOUS MATERIAL - CHARACTERIZATION OF EXISTING AND POTENTIAL MIGRATION PATHWAYS [30 CMR 40.0835(e)]

There are several possible mechanisms by which COCs could migrate from the Site to environmental receptors. The COCs could be released to air through volatilization or dust generation; to groundwater by percolation or flow through contaminated soils; or to surface water through runoff or groundwater discharge.

Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup Numerical Ranking System Site Scoring Map (See Figure 3-1) for the Site shows site features used as scoring criteria located within 500 ft and 0.5 mile of the Site. The map shows the following with regard to potential receptors/nearby features:

- The Site is situated over a medium yield NPDWSA.
- The Site is located approximately 650 ft northeast of a protected open space area. There are no other protected open spaces, certified vernal pools, or Areas of Critical Environmental Concern within 0.5 mile of the Site.
- The Site is located approximately 600 ft from the Federal Emergency Management Agency 100-year floodplain of the Merrimack River and its associated wetlands habitat. There are no other wetlands habitats located within 0.5 mile of the Site.
- An intermittent stream tributary to the Merrimack River flows approximately 800 ft south of the Site.
- There are no other major, perennial, or intermittent streams or stream basins within 0.5 mile of the Site.
- There are two medium-yield potentially productive aquifers within 0.5 mile of the Site. These aquifers are located along the Merrimack River and are immediately adjacent to a medium-yield NPDWSA.
- There are no public water supplies, Approved Zone 2's, Interim Wellhead Protection Areas, or surface water supply Zone A's located within 0.5 mile of the Site.
- There are no MDEP-permitted Solid Waste Facilities within 0.5 mile of the Site.

To supplement the information above, Subsections 4.1 through 4.7 briefly describe potential exposure pathways for on-site or nearby receptors. A more complete description of exposure

pathways can be found in the *Human Health Risk Assessment* (Sundstrom, 2004) included as Appendix F of this document.

5.1 AIR

Fugitive dust emissions from wind or mechanical disturbances may occur from unpaved or unvegetated areas of the Site; therefore, COCs detected in surface soil are susceptible to migration via dust generation under current site conditions. Future paving or otherwise capping the Site soils would mitigate the potential for fugitive dust emissions.

5.2 SOIL

Contaminants present in soil can leach to groundwater or surface waters. The rate of contaminant movement through soils depends on the physical and chemical properties of the contaminants (i.e., solubility, density, viscosity, etc.) and the surrounding environment (i.e., rainfall, soil permeability, porosity, organic carbon content, etc.). The main COCs at the Site, PCB Arochlors, are considered relatively immobile in the environment and would not be expected to move readily through site soils.

5.3 GROUNDWATER

The rate of contaminant movement in groundwater systems is also influenced by the physical/chemical factors of the COCs and the surrounding environment. Once the COCs reach groundwater, they will be transported by advection and dispersion; however, for contaminants such as PCBs and metals that readily adsorb to soil particles, downstream migration is hindered by the sorption process. Based on the data collected in this assessment (refer to Section 4), VOCs and metals have been found to exist at detectable concentrations in site groundwater.

5.4 SURFACE WATER

The Merrimack River, which is located just east (and downgradient) of the property, could be impacted by site contaminants through run-off, groundwater percolation, and/or flow-through impacted soil/sediments. Under current Brownfields legislation, as long as future contaminant migration from the Site to the river is eliminated, new property owners will not be held responsible for historical impacts to the river.

5.5 SEDIMENT

In general, PCBs and some metals have low solubility in water and as a result are sorbed onto sediment particles that eventually settle in the bottoms of water bodies. The finer the sediment particles, the more easily PCBs and/or metals are adsorbed. Storms, or other high water flow events, can cause resuspension of PCB-laden sediment resulting in downstream migration of the contaminants. Based on the data collected in this assessment (refer to Section 4), PCBs (Aroclor 1242 and Aroclor 1260) and metals (arsenic, cadmium, chromium, lead, and mercury) have been found at detectable concentrations in sediments both upstream and downstream of the Site.

5.6 FOOD CHAIN

Polychlorinated Biphenyls are highly soluble in lipids and tend to accumulate in fatty tissue becoming more concentrated as they are passed through the food chain.

5.7 INDOOR AIR

Volatile organic compounds detected in soil or groundwater could result in exceedances of indoor air quality criteria. In addition, PCBs sorbed to soil particles could become airborne as respirable dust, although this is not likely in indoor air. This phenomenon would be more likely to occur in outdoor trenches or as the result of construction or other intrusive activities.

SECTION 6

RISK CHARACTERIZATION AND EXPOSURE ASSESSMENT [30 CMR 40.0835(g)-(h)]

6. RISK CHARACTERIZATION AND EXPOSURE ASSESSMENT [30 CMR 40.0835(g)-(h)]

A risk assessment was completed as part of this Phase II CSA to evaluate whether COCs detected in groundwater and soil at the Site pose a significant risk of harm to human health, public welfare or the environment, as defined in the MCP. A Method 3 Human Health Risk Assessment and a Stage I Environmental Screening Risk Assessment were performed to evaluate potential risks under current and reasonably foreseeable future conditions. Results of these assessments are summarized below, and presented in detail in the *Human Health Risk Assessment* (Sundstrom, 2004), which is included as Appendix F of this document.

6.1 EXPOSURE ASSESSMENT

The exposure assessment for the Site was conducted to identify current and reasonably foreseeable future exposure scenarios and complete exposure pathways by which the COCs detected at the Site may reach potential human receptors. Potential human receptors considered in the exposure assessment for both current and future site conditions included trespassers, site employees, and construction/utility workers.

It was assumed that under future conditions the surface soil would be covered either by buildings or asphalt pavement, and employees or visitors to the property would not be exposed to surface soils. Furthermore, since groundwater is impacted only by very low concentrations of VOCs, it is unlikely that future impacts to indoor air would be significant; therefore, this exposure pathway was not quantified. It was also assumed that ambient air would not be significantly impacted by the low VOC concentrations detected in soil and groundwater at the Site. In addition, PCBs were not detected in groundwater; thus, inhalation of PCB constituents in ambient air during excavation activities was also not considered significant.

At the conclusion of the exposure assessment, those exposure pathways considered to be complete included the following:

- **Trespassers:** Under current conditions, exposure through dermal contact, and/or incidental ingestion of surficial soil could occur
- **Employees:** Future employees at the Site have minimal risk of contact with COCs, and were not carried forward in the risk evaluation
- **Construction/Utility workers:** Workers could be exposed to impacted Site soils and/or groundwater through dermal contact, incidental ingestion, and/or inhalation while conducting excavations or other intrusive work at the Site

6.2 DISPOSAL SITE RISK CHARACTERIZATION

The risk assessment was performed in accordance with existing MCP and EPA guidance documents as referenced in the *Human Health Risk Assessment* (Sundstrom, 2004) (Appendix F).

As previously discussed, the Site is impacted with PCBs, PAHs, and metals in soil, and VOCs in groundwater. For the purposes of this assessment, it was assumed that VOC concentrations detected in groundwater would not result in significant impacts to ambient air or indoor air quality of future buildings constructed at the Site. Furthermore, VOCs were not detected in soil at significant concentrations; therefore, exposure via inhalation was not evaluated. It was also assumed that future employees at the Site would not be exposed to soil contaminants, because surficial soils will be covered by buildings and asphalt during redevelopment of the Site. Exposure was assessed for trespassers and construction/utility workers. Results of the assessment (refer to Appendix F) indicated that COCs in the soil do not pose a significant risk to trespassers with the exception of one "hot spot" identified within the vicinity of WSB-6 (refer to Figure 4-1). Risks to construction workers were identified in association with "hot spots" within the vicinity of WSB-6, CD-45, WSB-2, and the berms on the east/southeast side of the property (refer to Figure 4-1). Risks to utility workers were identified in association with "hot spots" within the vicinity of WSB-6 and CD-45 (refer to Figure 4-1). Based on these results it has been

concluded that a condition of No Significant Risk (NSR) exists at the Site with the following exceptions:

- Within the vicinity of the WSB-6 and WSB-2 "hot spots".
- Between 1-2 ft bgs at CD-45.
- Subsurface soils associated with the berms in the southern and eastern portions of the Site.

SECTION 7

CONCLUSIONS
[30 CMR 40.0835(l)]

7. CONCLUSIONS [30 CMR 40.0835(i)]

The following conclusions are based on current site data and the associated risk assessment results as presented in this Phase II CSA:

- Polychlorinated biphenyls exist in site soils at concentrations that require future response actions in accordance with both the MCP and Subpart O of TSCA.
- Metals (lead and cadmium) exist in Site soils at concentrations that exceed both MCP and EPA published standards.
- Free product (oily sludge) has been observed within the baler/press building and constitutes a potential threat to the surrounding environment. This situation was previously reported to MDEP, and was assigned RTN 3-18431.
- The Merrimack River, which is located just east (and downgradient) of the property, has been impacted by low levels of PCBs, which exceed environmental screening criteria. The source of the PCB contamination has not been determined; however, under current Brownfields legislation, as long as future contaminant migration from the Site to the river is eliminated, new property owners will not be held responsible for historical impacts to the river.
- Following any type of redevelopment of the Site involving paving and building construction over impacted soils, detectable concentrations of the COCs in soil and groundwater would pose NSR to human health or the environment with the exception of localized "hot spots" where construction/utility workers could be exposed to impacted soils via dermal contact, inhalation, and/or incidental ingestion.

SECTION 8

REFERENCES

8. REFERENCES

Massachusetts Department of Environmental Protection (MDEP), *Massachusetts Contingency Plan* (MCP), 310 CMR 40.0000, 29 October 1999, as updated 20 June 2003.

Haley and Aldrich, Inc. (H&A), 2001: *Immediate Response Action (IRA) Completion Report for the American Recycling of Mass., Inc Property – 207 Marston Street, Lawrence, MA.* RTN 3-18126. 15 May 2001.

MDEP. MASS GIS Numerical Ranking System Scoring Map for Tombarello & Sons Property, Lawrence, MA.

U.S. Environmental Protection Agency (EPA). 1976. Toxic Substances Control Act (TSCA) 40 CFR 761.61 and Subpart O.

Sundstrom, Susan A., 2004. *Human Health Risk Assessment – Former Tombarello & Sons Site,* 14 May 2004.

WESTON, 2003. *Letter to Ms. Kimberly Tisa of the U.S. Environmental Protection Agency, re: Characterization of PCBs in Soil – Former Tombarello & Sons Property,* 8 August 2003.

WESTON, 2004. *Letter from Ms. Diane Quigley (WESTON Chemist) to Ms. Pamela Hoskins (WESTON Licensed Site Professional) re: Tombarello Data Evaluation Summary.* ?? July 2004 Have draft only. Need to get final version from Diane.

W. Z. Baumgartner and Associates, Inc. (WZB), 1998: *Environmental Site Assessment – John C. Tombarello & Sons, Inc.,* August 1998.

APPENDIX A

LIST OF MAJOR REPORTS AND SELECT RELEVANT LEGAL CORRESPONDENCES

APPENDIX A

The following is a list of major reports and select relevant legal correspondence in the Tombarello & Sons, Inc. (Tombarello) file/paperwork. Copies of these reports, and/or results of the investigations described in these reports, can be made available upon request. In addition to the reports listed below, there are also numerous facility permits on file.

1. Response Action Outcome Statement

RTN 3-16817
Heat Transfer Fluid Release
John C. Tombarello & Sons, Inc
207 Martson Street
Lawrence, MA 01841

Prepared for:
Sprague Energy
126 River Road
Newington, New Hampshire

20 July 1998

Prepared by:
By New England Disposal Technologies, Inc. (NEDT)

The Response Action Outcome (RAO) resulted in closeout of Release Tracking Number (RTN) 3-16817, associated with the release of heat transfer oil on the site on 19 May 1998. However, Massachusetts Department of Environmental Protection (MDEP), in a request for information (2 December 1998), indicated that residual contamination at the property may be the result of other historic releases of other oil and/or hazardous materials (OHM), and not exclusively the result of heat transfer oil release.

2. Environmental Site Assessment

RTN 3-18126
John C. Tombarello & Sons, Inc.
Lawrence, Massachusetts

August 1998

By: W.Z. Baumgartner & Associates, Inc.
Environmental Consultants
P.O. Box 786
Brentwood, TN 37024-0786

The assessment was prepared in support of purchase of the property from Tombarello by American Recycling, Inc. Information presented in the assessment indicated the presence of OHM exceeding Massachusetts Contingency Plan (MCP) Reportable Concentrations on the property. On 31 March 1999, MDEP issued a *Notice of Responsibility (NOR)* and *Interim Deadline Letter* to both Tombarello and American Recycling, based on information contained in the documents listed above. A new RTN (3-18126) was assigned. Polychlorinated biphenyl (PCB) concentrations noted in the site assessment were interpreted by MDEP as constituting an Imminent Hazard Condition.

3. ***Environmental FirstSearch(TM) Report***
Target Property: 207 Marston St., Lawrence MA
Prepared for: Higgins Environmental Associates, Inc.

21 April 1999

Prepared By: DataMap Technology Corporation

This report was used in formulation of the IRA Plan.

4. ***Immediate Response Action Plan***
RTN 3-18126
John C. Tombarello & Sons, Inc
207 Martson Street
Lawrence, MA 01841

Prepared By: Higgins Environmental Associates, Inc.

21 April 1999

This plan was written in response to the *NOR* letter described in No. 2 above. The plan provided for removal of residual stockpiled soils associated with RTN 3-16817, as well as collection and analysis of surface soils and resampling and analysis of groundwater previously sampled in support of document No. 2.

5. ***Modified Immediate Response Action Plan***
RTN 3-18126
John C. Tombarello & Sons, Inc
207 Martson Street
Lawrence, MA 01841

1 June 1999

Prepared By: Higgins Environmental Associates, Inc.

6. ***Immediate Response Action Status Report***
1 June 1999 status update
RTN 3-18126
John C. Tombarello & Sons, Inc
207 Marston Street
Lawrence, MA 01841

28 July 1999

Prepared By: Higgins Environmental Associates, Inc.

Summarized site sampling activities and results, and addressed imminent hazard conditions, through installation of a perimeter fence to limit access to the property by children. Polycyclic Aromatic Hydrocarbons (PAHs), PCBs, and

7. ***MCP Options and Deadlines***
RTN 3-18126
John C. Tombarello & Sons, Inc
207 Martson Street
Lawrence, MA 01841

Revised 19 August 1999

Prepared By: Higgins Environmental Associates, Inc.

8. ***Response Action Outcome Statement and Supporting Information***
RTN 3-18431
Threat of Release Condition
Baler/Press Building
207 Marston Street
Lawrence, Massachusetts

Prepared For: American Recycling, Inc.

23 August 1999

Prepared By: Higgins Environmental Associates, Inc.

The RAO was filed, but not accepted by MDEP. As a result, RTN 3-18431 remains open and is now linked with 3-18126.

9. ***Field Inspection Notes***
Bureau of Waste Site Cleanup
Audits and Site Management Branch
Re: Former Tombarello & Sons

By Commonwealth of Massachusetts
Department of Environmental Protection

10. ***Administrative Consent Order and Notice of Noncompliance***
File No. ACOP-NE-00-9013-123
In the Matter of:
American Recycling of Massachusetts, Inc.
d/b/a Tombarello & Sons

Filed by Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection

This Order established deadlines for accomplishing MCP milestones for the property, including completion of Phases 2 through 5 and RAO of the Site.

11. ***Notice of Enforcement Conference***
Re: American Recycling of Massachusetts, Inc.
207 Marston Street
Lawrence, MA 01841

By Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection

12. ***Phase I Requirements/Tier Classification***
RTN: 3-18126
207 Marston Street
Lawrence, Massachusetts
File No. 12671-040

Prepared by: Haley & Aldrich, Inc. (for MDEP)

31 March 2000

Site Classified as Tier 1C in accordance with 310 CMR 40.0000.

13. ***Immediate Response Action (IRA) Completion Report***
RTN 3-18126
American Recycling of Mass., Inc.
207 Marston Street
Lawrence Massachusetts

Prepared by Haley and Aldrich, Inc. (for MDEP)

15 May 2001

This report summarized the following IRA findings:

- Polychlorinated biphenyl concentrations exceeding 10 milligrams per liter remained at the property in near surface soils
- The condition triggering an Imminent Hazard under the MCP had been abated via erection of a fence, controlling access to the property by children
- Groundwater sampling indicated that groundwater contaminant concentrations did not exceed RCGW-2 values.

14. ***Scope of Work***
Phase II Comprehensive Site Assessment
American Recycling of Mass., Inc.
d/b/a John C. Tombarello & Sons
207 Marston Street
Lawrence, Massachusetts
RTN 3-18126, 3-18431

Prepared by: Haley & Aldrich, Inc.

March 2002

This plan was written to address residual soil PAH, metals, and PCB contamination in surface soil, as well as to investigate other MDEP concerns, including utility lines and other potential release to/from these lines, sediment contamination in the Merrimack River which flows east of the site.

APPENDIX B

SOIL BORING/MONITORING LOGS

SOIL BORING/MONITORING LOG

PROJECT NO.	03014-99	DATE STARTED:	6/1/99	SOIL BORING/WELL NO.	SB5/MW5
PROJECT	Tombarello's	DATE COMPLETED:	6/1/99	SHEET	1 of 1
LOCATION:	Lawrence, MA	DRILLING CO.:	NH Boring	CHECKED BY	JBH
HEA PERSONNEL	JBH	FOREMAN:	Greg Levitt		

DRILLING METHOD		SAMPLER		GROUND WATER MEASUREMENTS			
MAKE:	Failing	TYPE:	2ftx2inch Split Spoon	DATE	DEPTH(ft)	DATUM	STABILIZATION
MODEL:	track-mounted	HAMMER:	140 lbs.	6/1/99	7	BGS	Drilling
TYPE:	4.25" IDHSA	FALL:	30 Inches				

Depth(ft.)	Sample No.	Sample Pen/Rec (inches)	Sample Depth (feet)	Sample Blows	Sample Description	Stratum Description	Well Schematic	Field Screening (PPM) (1)	Notes
					Earthen		Concrete		
1					HSA to five feet below grade.				
					Brown, C-F SAND, Some Subang. Fine Gravel	Sand			
2					Dry.				
3									
4									
							Bentonite		
5									
	S1	24/14	5-7	4-4	Light Brown, VF-F SAND, little/trace Silt, Wet.			0.0	1
6				6-7	Saturated in tip, M. Dense.				
7									
8							Sand Pack		
9									
10									
	S2	24/19	10-12	7-7	Similar to S1 except Saturated, some/little M. Sand.			0.0	
11				9-13					
12									
13									
14									
15									
	S3	18/12	15-	18-75	15-15.8ft: Similar to 10-12ft. 15.8-16.2ft:			0.0	
			16.2	50/0.2'	Ang. Rock fragments (Gabbro diorite)	Bedrock			

Granular Soils		Cohesive Soils		Composition of Soil	
Blows/Ft.	Density	Blows/Ft.	Consistency	Percentage	Description
0-4	V. Loose	<2	V. Soft	0-10	Trace
4-10	Loose	2-4	Soft	10-20	Little
10-30	M. Dense	4-8	M. Stiff	20-35	Some
30-50	Dense	8-15	Stiff	35-50	And
>50	V. Dense	15-30	V. Stiff		
		>30	Hard		

NOTE:
1. Field Headspace Screening with an 11.7 eV Photoionization Detector

SOIL BORING/MONITORING LOG

PROJECT NO.	03014-99	DATE STARTED.	6/1/99	SOIL BORING/WELL NO..	SB6/MW6
PROJECT	Tomberello's	DATE COMPLETED:	6/1/99	SHEET	1 of 1
LOCATION	Lawrence, MA	DRILLING CO.:	NH Boring	CHECKED BY:	JBH
HEA PERSONNEL	JBH	FOREMAN.	Greg Levitt		

DRILLING METHOD		SAMPLER	
MAKE:	Failing	TYPE:	2ftx2inch Split Spoon
MODEL	track-mounted	HAMMER	140 lbs.
TYPE:	4.25" IDHSA	FALL:	30 inches

GROUND WATER MEASUREMENTS			
DATE	DEPTH(ft)	DATUM	STABILIZATION
6/1/99	7	BGS	Drilling

Depth(ft.)	Sample No	Sample Per/Rec (inches)	Sample Depth (feet)	Sample Blows	Sample Description	Stratum Description	Well Schematic	Field Screening (PPM) (1)	Notes
					Earthen		Concrete		
1					HSA to five feet below grade.				
					Brown, F SAND, some Silt Dry	Sand			
2									
3									
4									
							Bentonite		
5									
	S1	24/24	5-7	5-5	Light Brown, F SAND, some Silt, little C-F Sand			0.0	1
6				6-7	layers. Saturated at 7 feet. M. Dense.				
7									
8									
							Sand Pack		
9									
10									
	S2	24/20	10-12	13-20	Light Brown-Gray, F SAND, some Silt, little subang.			0.0	
11				26-26	Gravel, trace Clay Dense				
12									
13									
14									
15									
	S3	24/15	16-17	23-20	Similar to S2.			0.0	
				40-21					

Granular Soils	
Blows/Ft.	Density
0-4	V. Loose
4-10	Loose
10-30	M. Dense
30-50	Dense
>50	V. Dense

Cohesive Soils	
Blows/Ft.	Consistency
<2	V. Soft
2-4	Soft
4-8	M. Stiff
8-15	Stiff
15-30	V. Stiff
>30	Hard

Composition of Soil	
Percentage	Description
0-10	Trace
10-20	Little
20-35	Some
35-50	And

NOTES:
1 Field Headspace Screening with an 11.7 eV Photoionization Detector

SOIL BORING/MONITORING LOG

PROJECT NO.	03014-99	DATE STARTED:	6/1/99	SOIL BORING/WELL NO.:	**SB7/MW7**
PROJECT	Tombarello's	DATE COMPLETED:	6/1/99	SHEET	1 of 1
LOCATION:	Lawrence, MA	DRILLING CO.:	NH Boring	CHECKED BY:	JBH
HEA PERSONNEL	JBH	FOREMAN:	Greg Levitt		

DRILLING METHOD		SAMPLER		GROUND WATER MEASUREMENTS			
MAKE:	Failing	TYPE:	2to2inch Split Spoon	DATE	DEPTH(ft)	DATUM	STABILIZATION
MODEL:	track-mounted	HAMMER	140 lbs.	6/1/99	8	BGS	Drilling
TYPE:	4.25" IDHSA	FALL:	30 inches				

Depth(ft.)	Sample No	Pen/Rec (inches)	Depth (feet)	Blows	Sample Description	Stratum Description	Well Schematic	Field Screening (PPM) (1)	Notes
					SAND and Gravel at Grade		Concrete		
1					HSA to five feet below grade.				
						Sandy Fill			
2					2-3ft: Fill: Dark Gray to Black, C-F SAND and BRICK,			1.7	1
					WOOD, GLASS, little M-F Subang. - Rounded				
3					Gravel.				
4									
							Bentonite		
5									
	S1	24/2	5-7	4-1	Similar to above off augers Very Loose Wet in tip			0.0	
6				1-3					
7									
8									
							Sand Pack		
9									
10									
	S2	24/6	10-12	3-1	Similar to S1. Saturated.			0.0	
11				2-3					
12									
13									
14									
15									
	S3	24/4	15-17	2-1	Similar to S2.			0.0	
				1-2					

Granular Soils		Cohesive Soils		Composition of Soil	
Blows/Ft.	Density	Blows/Ft.	Consistency	Percentage	Descriptive
0-4	V. Loose	<2	V. Soft	0-10	Trace
4-10	Loose	2-4	Soft	10-20	Little
10-30	M. Dense	4-8	M. Stiff	20-35	Some
30-50	Dense	8-15	Stiff	35-50	And
>50	V. Dense	15-30	V. Stiff		
		>30	Hard		

NOTES:
1. Field Headspace Screening with an 11.7 eV Photoionization Detector

APPENDIX C

TABULATED SAMPLE RESULTS FOR SOIL, GROUNDWATER, AND SEDIMENT

The Following
Document Contains

Some Poor Quality

Originals

Table 1
WZB Analytical Soil Results - 8 July 1998
Former Tombarello and Sons Property
Lawrence, Massachusetts

Analyte	[redacted]	Sample ID, Grid Location & Depth														
		SB-1			SB-2		SB-3		SB-4	SB-5		SB-6		SS-7	SS-8	SS-9
		CD-23			GH-34		IJ-34		KL-34	KL-56		LM 1-2		HI 6-7	KL-34	HI-45
		0-2'	2'-4'	9'-11'	0-2'	2'-4'	0-2'	2'-4'	0-2'	0-2'	4-6'	0-2'	4-6'	0-6"	0-6"	0-6"
Semivolatile Organics (mg/kg)																
Acenaphthene	[redacted]	2.28	N/A	N/A	<8.3	N/A	<0.33	N/A	19.4	0.367	N/A	<0.33	N/A	N/A	N/A	N/A
Acenaphthylene	[redacted]	<1.65	N/A	N/A	<8.3	N/A	<0.33	N/A	<6.67	<0.33	N/A	<0.33	N/A	N/A	N/A	N/A
Anthracene	[redacted]	6.71	N/A	N/A	<8.3	N/A	0.493	N/A	36	1.19	N/A	<0.33	N/A	N/A	N/A	N/A
Benzo(a)Anthracene	[redacted]	**24.6**	N/A	N/A	**<8.3**	N/A	**1.96**	N/A	**58.6**	**3.95**	N/A	<0.33	N/A	N/A	N/A	N/A
Benzo(a)Pyrene	[redacted]	**15.3**	N/A	N/A	**<8.3**	N/A	**1.71**	N/A	**32.2**	**3.1**	N/A	<0.33	N/A	N/A	N/A	N/A
Benzo(b)Fluoranthene	[redacted]	**19.3**	N/A	N/A	**<8.3**	N/A	**2.07**	N/A	**39.5**	**2.0**	N/A	<0.33	N/A	N/A	N/A	N/A
Benzo(g,h,i)Perylene	[redacted]	3.94	N/A	N/A	<8.3	N/A	0.455	N/A	6.84	0.715	N/A	<0.33	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	[redacted]	**8.96**	N/A	N/A	**<8.3**	N/A	1.49	N/A	**22.6**	0.718	N/A	<0.33	N/A	N/A	N/A	N/A
Chrysene	[redacted]	**25**	N/A	N/A	**<8.3**	N/A	2.14	N/A	**60.4**	4.09	N/A	<0.33	N/A	N/A	N/A	N/A
Dibenz(a,h)Anthracene	[redacted]	<1.65	N/A	N/A	<8.3	N/A	<0.33	N/A	**<6.67**	<0.33	N/A	<0.33	N/A	N/A	N/A	N/A
Fluoranthene	[redacted]	42.9	N/A	N/A	<8.3	N/A	2.7	N/A	118	7.28	N/A	<0.33	N/A	N/A	N/A	N/A
Fluorene	[redacted]	2.69	N/A	N/A	<8.3	N/A	<0.33	N/A	25.8	0.42	N/A	<0.33	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)Pyrene	[redacted]	**4.39**	N/A	N/A	**<8.3**	N/A	0.48	N/A	**7.63**	**0.826**	N/A	<0.33	N/A	N/A	N/A	N/A
2-Methylnaphthalene	[redacted]	<1.65	N/A	N/A	**<8.3**	N/A	<0.33	N/A	**<6.67**	<0.33	N/A	<0.33	N/A	N/A	N/A	N/A
Naphthalene	[redacted]	<1.65	N/A	N/A	**<8.3**	N/A	<0.33	N/A	**<6.67**	<0.33	N/A	<0.33	N/A	N/A	N/A	N/A
Phenanthrene	[redacted]	29.4	N/A	N/A	<8.3	N/A	1.99	N/A	**143**	4.23	N/A	<0.33	N/A	N/A	N/A	N/A
Pyrene	[redacted]	56	N/A	N/A	12.1	N/A	4.24	N/A	141	9.56	N/A	<0.33	N/A	N/A	N/A	N/A
Dibenzofuran	[redacted]	<1.65	N/A	N/A	<8.3	N/A	<0.33	N/A	14	<0.33	N/A	<0.33	N/A	N/A	N/A	N/A
Carbazole	[redacted]	2.41	N/A	N/A	<8.3	N/A	<0.33	N/A	16.2	0.442	N/A	<0.33	N/A	N/A	N/A	N/A
Butylbenzylphthalate	[redacted]	<1.65	N/A	N/A	<8.3	N/A	<0.33	N/A	<6.67	0.372	N/A	<0.33	N/A	N/A	N/A	N/A
Bis(2-ethylhexyl)phthalate	[redacted]	<1.65	N/A	N/A	15.8	N/A	<0.33	N/A	<6.67	2.24	N/A	0.524	N/A	N/A	N/A	N/A
Metals (mg/kg)																
Arsenic	[redacted]	N/A	3.22	N/A	2.74	3.18	9.52	4.4	5.73	13.3	3.99	3.62	4.2	10.7	11.8	4.98
Barium	[redacted]	N/A	25.6	N/A	13.3	16.7	333	12.5	54	197	16.4	44.3	19.8	141	552	52.9
Cadmium	[redacted]	N/A	2.62	N/A	<0.98	<0.99	2.67	<1.01	<0.99	5.78	<1	<1.01	<0.95	8.19	4.95	<0.96
Chromium	[redacted]	N/A	10.1	N/A	6.46	8.55	60.4	8.69	33	57.4	7.19	14.5	7.63	62.3	64	38.3
Lead	[redacted]	N/A	**712**	N/A	26.8	9.74	**918**	5.45	106	**3470**	8.58	37.4	4.01	**672**	**1110**	172
Mercury	[redacted]	N/A	<0.1	N/A	0.43	<0.1	0.97	<0.1	0.5	2.13	<0.1	<0.1	<0.1	4.19	7.13	1.06
Selenium	[redacted]	N/A	<1.01	N/A	<0.98	<0.99	<0.95	<1.01	<0.99	<0.96	<1	<1.01	<0.95	<0.95	<0.95	<0.96
Silver	[redacted]	N/A	2.21	N/A	<0.98	<0.99	1.71	<1.01	<0.99	<0.96	<1	<1.01	<0.95	20.8	<0.95	<0.96
Target VOCs (mg/kg)																
Benzene	10	<0.1	N/A	N/A	<0.1	N/A	<0.1	N/A	<0.1	<0.002	N/A	<0.002	N/A	N/A	N/A	N/A
Ethylbenzene	80	<0.1	N/A	N/A	<0.1	N/A	<0.1	N/A	<0.1	<0.002	N/A	<0.002	N/A	N/A	N/A	N/A
MtBE	0.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Naphthalene	4	<0.1	N/A	N/A	<0.1	N/A	<0.1	N/A	<0.1	<0.002	N/A	<0.002	N/A	N/A	N/A	N/A
Toluene	90	<0.1	N/A	N/A	<0.1	N/A	<0.1	N/A	<0.1	<0.002	N/A	<0.002	N/A	N/A	N/A	N/A
Xylenes	500	<0.1	N/A	N/A	<0.1	N/A	<0.1	N/A	<0.1	<0.002	N/A	<0.002	N/A	N/A	N/A	N/A
VOCSs (mg/kg)																
Trichlorofluoromethane	0.1	<0.1	N/A	N/A	<0.1	N/A	<0.1	N/A	<0.1	<0.002	N/A	<0.002	N/A	N/A	N/A	N/A
Tetrachloroethene	0.5	<0.1	N/A	N/A	<0.1	N/A	<0.1	N/A	<0.1	<0.002	N/A	<0.002	N/A	N/A	N/A	N/A
1,1,1-Trichloroethane	30	<0.1	N/A	N/A	<0.1	N/A	<0.1	N/A	<0.1	<0.002	N/A	<0.002	N/A	N/A	N/A	N/A
PCBs (mg/kg)																
Aroclor 1016	2	<0.1665	N/A	N/A	<0.0333	N/A	<3.33	N/A	<0.0333	<0.333	N/A	<0.0333	N/A	<0.333	<0.333	<0.333
Aroclor 1221	2	<0.333	N/A	N/A	<0.0666	N/A	**<6.66**	N/A	<0.0666	<0.666	N/A	<0.0666	N/A	<0.666	<0.666	<0.666
Aroclor 1232	2	<0.1665	N/A	N/A	<0.0333	N/A	<3.33	N/A	<0.0333	<0.333	N/A	<0.0333	N/A	<0.333	<0.333	<0.333
Aroclor 1242	2	<0.1665	N/A	N/A	<0.0333	N/A	<3.33	N/A	<0.0333	<0.333	N/A	<0.0333	N/A	<0.333	<0.333	<0.333
Aroclor 1248	2	**3.097**	N/A	N/A	0.6194	N/A	<3.33	N/A	<0.0333	**3.663**	N/A	<0.0333	N/A	**3.696**	**7.193**	<0.333
Aroclor 1254	2	<0.1665	N/A	N/A	<0.0333	N/A	<3.33	N/A	<0.0333	<0.333	N/A	<0.0333	N/A	<0.333	<0.333	<0.333
Aroclor 1260	2	**3.913**	N/A	N/A	0.7659	N/A	**59.27**	N/A	0.6094	**5.828**	N/A	0.6793	N/A	**2.707**	**3.397**	<0.333
TPH (mg/kg)																
TPH (GRO)	200	N/A	N/A	<5	N/A	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<5	21.7	<5
TPH (DRO)	200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**2260**	**2740**	**1900**

Notes:

1. Yellow highlighting indicates sample result exceeds the RCS-1 Criteria under the MCP

DRO = diesel range organics
GRO = gasoline range organics
PCBs = polycyclic biphenyls
TPH = total petroleum hydrocarbons
VOC = volatile organic compound
mg/kg = milligrams per kilogram

Table 2

HEA Analytical Soil Results - 29 April 1999 4 June 1999

Former Tombarello and Sons Property

Lawrence, Massachusetts

[1]Analyte	RCS-1	28-Apr-1999													
		Sample ID, Grid Location & Depth													
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	SS8 South	SS8 East	SS8 West	SS7	SS7 North	SS7 South	SS7 East	SS7 West
		KL-56				KL-34					HI-67				
		0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
EPH (mg/kg)															
C9-C18 Aliphatics	1000	**2,000**	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	**1,200**	N/A	N/A	**1,100**	N/A	N/A
C19-C36 Aliphatics	2000	**6,600**	770	**2,700**	**5,000**	1,350	N/A	N/A	N/A	**8,900**	N/A	N/A	**8,800**	N/A	N/A
C11-C22 Aromatics	500	<0.01	<0.01	**620**	<0.01	<0.01	N/A	N/A	N/A	<0.01	N/A	N/A	<0.01	N/A	N/A
PAHs (mg/kg)															
Acenaphthalene	100	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	<0.01	N/A	N/A	<0.01	N/A	N/A
Acenaphthene	100	<0.01	2.8	<0.01	<0.01	<0.01	N/A	N/A	N/A	<0.01	N/A	N/A	<0.01	N/A	N/A
Anthracene	1000	<0.01	6.2	1.7	<0.01	3.5	N/A	N/A	N/A	14	N/A	N/A	35	N/A	N/A
Benzo(a)Anthracene	7	**10**	**7.6**	**5.9**	<0.01	**5**	N/A	N/A	N/A	**24**	N/A	N/A	**72**	N/A	N/A
Benzo(a)Pyrene	2	**11**	**8.9**	**7.0**	<0.01	**9.1**	N/A	N/A	N/A	**44**	N/A	N/A	**38**	N/A	N/A
Benzo(b)fluoranthene	7	**15**	**12.0**	**13.0**	<0.01	**9.3**	N/A	N/A	N/A	**40**	N/A	N/A	**61**	N/A	N/A
Benzo(g,h,i)Perylene	1000	12	7.6	9.5	<0.01	13	N/A	N/A	N/A	51	N/A	N/A	69	N/A	N/A
Benzo(k)fluoranthene	70	**11**	**8.0**	**9.9**	<0.01	**8.1**	N/A	N/A	N/A	**34**	N/A	N/A	**53**	N/A	N/A
Chrysene	70	**18**	**11.0**	**9.6**	**21**	**12**	N/A	N/A	N/A	**51**	N/A	N/A	**84**	N/A	N/A
Dibenzo(a,h)Anthracene	0.7	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	<0.01	N/A	N/A	<0.01	N/A	N/A
Fluoranthene	1000	24	18	12	26	15	N/A	N/A	N/A	68	N/A	N/A	120	N/A	N/A
Fluorene	1000	<0.01	3.7	<0.01	<0.01	1.8	N/A	N/A	N/A	<0.01	N/A	N/A	52	N/A	N/A
Indeno(1,2,3-cd)Pyrene	7	**9**	**5.9**	**7**	<0.01	<0.01	N/A	N/A	N/A	**42**	N/A	N/A	<0.01	N/A	N/A
Naphthalene	100	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	<0.01	N/A	N/A	<0.01	N/A	N/A
2-Methylnaphthalene	100	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	<0.01	N/A	N/A	<0.01	N/A	N/A
Phenanthrene	1000	13	15	5.2	<0.01	8.5	N/A	N/A	N/A	32	N/A	N/A	72	N/A	N/A
Pyrene	1000	23	16	12	25	14	N/A	N/A	N/A	69	N/A	N/A	120	N/A	N/A
Metals (mg/kg)															
Cadmium	2	6.6	0.59	5.45	5.4	2.72	4.58	3.42	3.36	2.98	N/A	N/A	N/A	N/A	N/A
Lead	300	**550**	100	**980**	**670**	270	**500**	**310**	**490**	**330**	N/A	N/A	N/A	N/A	N/A
VPH (mg/kg)															
C5-C8 Aliphatics	100	<0.001	0.062	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C9-C12 Aliphatics	1000	1.7	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C9-C10 Aromatics	1000	0.580	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Target VOCs (mg/kg)															
Benzene	1	<0.001	0.130	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethylbenzene	90	<0.001	<0.001	0.044	0.050	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MtBE	0.3	<0.001	**0.480**	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Naphthalene	4	<0.001	1.900	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	90	0.047	0.040	0.058	0.087	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Xylenes	500	0.114	<0.001	0.350	0.300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VOCs (mg/kg)															
Trichlorofluoromethane	0.1	**1.000**	**0.200**	**0.690**	**0.720**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1,1-Trichloroethane	30	<0.001	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachloroethene	0.5	0.220	<0.001	<0.001	0.079	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (mg/kg)															
Aroclor 1016/1242	2	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Aroclor 1221	2	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Aroclor 1232	2	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Aroclor 1248	2	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Aroclor 1254	2	**2.1**	<0.0001	**2**	**2.3**	0.95	**3**	**3.4**	**2.7**	**2.3**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Aroclor 1260	2	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**3.2**	**2.6**	**3.2**	**3.5**	**2.9**

Notes:

1. Yellow highlighting indicates sample result exceeds the RCS-1 Criteria under the MCP

EPH = extractable petroleum hydrocarbons

PCB = polycyclic biphenyls PAH = polycyclic aromatic hydrocarbons ug/kg = micrograms per kilogram

VOC = volatile organic hydrocarbon VPH = volatile petroleum hydrocarbons mg/kg = milligrams per kilogram

Table 2

HEA Analytical Soil Results - 29 April 1999 4 June 1999

Former Tombarello and Sons Property

Lawrence, Massachusetts

[redacted]		28-April-1999, Cont'D.					2-Jun-1999				
		Sample ID, Grid Location & Depth									
[redacted]		[redacted]	[redacted]	[redacted]	[redacted]	SB6-S51	SB6-S57	SB6-N1	SB6-E1	SB6-S1	SB6-W1
		LM-45	IJ-45	GH-34	GH-12	LM-12	LM-12				
		0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
EPH (mg/kg)											
[redacted]	[redacted]	**2,400**	550	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	**23,800**	**5,500**	1,900	700	1,300	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A	N/A
PAHs (mg/kg)											
[redacted]	[redacted]	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	6.2	<0.01	<0.01	7.8	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	19	<0.01	3.7	15	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	**25**	<0.01	**7.7**	**24**	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	**26**	<0.01	**10**	**26**	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	**32**	**4.7**	**9.6**	**32**	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	46	<0.01	<0.01	51	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	**22**	5.1	**9.3**	**24**	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	**51**	**7.3**	**15**	**45**	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	87	8.2	18	61	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	9.8	<0.01	<0.01	11	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	**39**	<0.01	<0.01	**37**	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	<0.01	<0.01	<0.01	**5**	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	67	6	13	62	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.01	71	7.4	16	50	N/A	N/A	N/A	N/A	N/A
Metals (mg/kg)											
[redacted]	[redacted]	6.4	4.58	3.24	4.57	8.21	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	**610**	**770**	210	160	**790**	N/A	N/A	N/A	N/A	N/A
VPH (mg/kg)											
[redacted]	[redacted]	0.51	<0.001	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	2.7	<0.001	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	8.1	0.29	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A
Target VOCs (mg/kg)											
[redacted]	[redacted]	0.081	<0.001	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	0.190	0.280	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	**0.340**	<0.001	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	1.900	3.400	N/A	2.900	<0.001	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	0.850	0.065	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	1.710	2.170	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A
VOCs (mg/kg)											
[redacted]	[redacted]	**2.600**	**2.700**	N/A	**0.110**	**0.470**	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.001	<0.001	N/A	<0.001	0.250	N/A	N/A	N/A	N/A	N/A
[redacted]	[redacted]	<0.001	<0.001	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A	N/A
PCBs (mg/kg)											
[redacted]	[redacted]	<0.0001	<0.0001	2	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
[redacted]	[redacted]	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
[redacted]	[redacted]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
[redacted]	[redacted]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
[redacted]	[redacted]	**6.1**	**3**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
[redacted]	[redacted]	<0.0001	<0.0001	<0.0001	<0.0001	**57**	<0.0001	**92**	**3.8**	<0.0001	<0.0001

Notes:

1. Yellow highlighting indicates sample result exceeds the RC

EPH = extractable petroleum hydrocarbons

PCB = polycyclic biphenyls PAH = polycyclic arc

VOC = volatile organic hydrocarbon VPH = volatile petrol

Table 3
H A Analytical Soil Results - September 2001
Former Tombarello and Sons Property
Lawrence, Massachusetts

	Sample ID	B4	D5	E4	F2	F4	G3	G4	BLR-TP1		BLR-TP2	H2	H3
	Grid ID	B4	D5	E4	F2	F4	G3	G4	H3	H3	G3	H2	H3
	Depth	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	1.5-2'	3-4.5'	0-1'	0-1'	0-1'
[1,2] Analyte	RCS-1 Criteria	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1016	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**3.2**	**2.1**	N/A	N/A	**6.5**
Aroclor 1242	2	N/A	N/A	N/A	N/A	N/A	**64**	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1254	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1260	2	0.85	**52**	**15**	**26**	**11**	N/A	**21**	**2.8**	**3.6**	**2**	**11**	**37**

	Sample ID	H6	I3	I4	J1	J5	SCC-1	L5	M2	SM2-3	M3	M4
	Grid ID	H6	I3	I4	J1	J5	K6	L5	M2	M2	M3	M4
	Depth	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'
[1,2] Analyte	RCS-1 Criteria	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1016	2	**8.7**	N/A	0.81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1242	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**66**
Aroclor 1254	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**9.2**	N/A
Aroclor 1260	2	**8.2**	**43**	**2.2**	**2.6**	0.74	**3.2**	**3.8**	1.4	**2.8**	**2.4**	N/A

	Sample ID	BRM-TP1	BRM-TP3	BRM-TP4		BRM-TP5	BRM-TP6	BRM-TP7		BRM-TP8		BRM-TP9/9A	BRM-TP10
	Grid ID	G6	J6	J6		K6	L5	L5		L3		M2	M1
	Depth	4-6'	9-11'	3.5-5'	6-7'	9-11'	11-13'	3-6'	12-15'	4-5'	5-6'	4-6'	0-1'
[1,2] Analyte	RCS-1 Criteria	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aroclor 1016	2	N/A	**2.6**	N/A	**9.3**	11	**4.5**	N/A	0.37	N/A	N/A	N/A	N/A
Aroclor 1242	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1254	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11	0.68	N/A	0.86
Aroclor 1260	2	**13**	**9.3**		**62**	**60**	**11**	**9.9**	0.57	N/A	0.47	**42**	1.1

Notes:
1. Yellow highlighting indicates sample result exceeds the RCS-1 Criteria under the MCP
2. Purple highlighting indicates result exceeds the 75ppm site-specific criteria.
mg/kg = milligrams per kilogram

Table 4
WESTON Analytical Soil Results - February 2003
Former Tombarello and Sons Property
Lawrence, Massachusetts

Analyte	RCS-1 Criteria	Sample ID, Grid Location & Date													
		WSB-1		WSB-2		WSB-3		WSB-4		WSB-5		WSB-6		WSB-7	
		CD-12		CD-34		CD-45		FG-23		FG-45		FG-12		HI-23	
		1-3'	3-5'	1-3'	3-5'	0-1'	1-3'	0-1'	1-3'	0-1'	1-3'	0-1'	1-3'	0-1'	
C9-C18 Aliphatics	1000	<27.1	<31.4	369	<619	<29.2	<138	<27.5	<30.9	<90.1	<164	<28.4	<32.1	<27.9	<27.5
C19-C36 Aliphatics	2500	123	<31.4	1650	**7300**	545	497	399	<30.9	345	812	311	<32.1	582	126
C11-C22 Aromatics	200	**375**	<31.4	**983**	**1670**	182	**1140**	150	<30.9	**968**	**272**	**527**	<32.1	136	83.9
Arsenic	30	6.1	5.88	7.42	11	5.49	6.75	8.97	15.6	13.6	14.2	17.9	8.52	9.89	6.13
Barium	1000	106	64	107	166	74.4	142	156	52.9	344	867	55.8	19.4	70.6	197
Cadmium	30	4.01	<0.796	**716**	20	1.82	3.86	2.88	<0.796	3.75	5.77	1.61	<0.801	2.3	3.07
Chromium	1000	23.2	12.4	34.4	220	27.5	30.7	29.1	15.5	40	52.2	29.6	12.6	48.6	28.9
Lead	300	**1180**	159	**1330**	168	**389**	**563**	**381**	30.2	**2700**	**1260**	92.2	<8.01	215	**517**
Mercury	20	2.71	0.145	1.17	0.367	3.07	2.42	0.912	<0.0392	1.07	<1.86	0.327	<0.0414	1.39	0.535
Selenium	400	<7.1	<7.96	<6.89	<10.7	<7.94	<7.12	<6.87	<7.96	<7.48	<8.66	<6.89	<8.01	<7.12	<7.2
Silver	100	<0.71	<0.796	<0.689	<1.07	<0.794	<0.712	<0.687	<0.796	<0.748	<0.866	<0.689	<0.801	<0.712	1.62
	2	1.6	0.05	**26.4**	<0.05	0.27	**21.8**	**9.8**	0.25	1.9	**7**		**34**	0.8	**7.1**

Analyte	RCS-1 Criteria	Sample ID, Grid Location & Depth													
		WSB-8		WSB-9		WSB-10		WSB-11		WSB-12		WSB-14			
		GH-34		IJ-23		HI-45		JK-12		LM-23		KL-56			
		1-3'	3-5'	0-1'	1-3'	0-1'	1-3'	0-1'	1-3'	0-1'	1-3'	0-1'	1-3'	3-5'	5-7'
C9-C18 Aliphatics	1000	<133	45	<31.6	<32.4	<137	63.5	<144	<144	<142	<30.1	<28.2	**1750**	<30.6	<30.9
C19-C36 Aliphatics	2500	219	826	104	<32.4	2310	557	361	918	396	<30.1	250	**6980**	77.6	<30.9
C11-C22 Aromatics	200	**240**	**255**	<31.6	<32.4	70.6	**214**	**739**	**649**	156	<30.1	72.1	**1955**	30.6	<30.9
Arsenic	30	4.49	8.1	7.33	5.56	**69.4**	10.8	6.04	14.3	8.51	<3.91	<3.69	14.05	10.7	4.66
Barium	1000	35.3	184	228	18.9	195	526	82.3	176	376	46.6	45.8	765	**1480**	18.1
Cadmium	30	<0.669	3.55	1.42	<0.866	0.977	4.1	1.68	12.5	10.6	<0.782	2.11	6.245	<0.808	<0.786
Chromium	1000	15.5	35.5	20.6	12.6	40.1	47	28.7	57.9	40.7	10.1	24.6	52.15	15.1	8.34
Lead	300	99.2	**464**	94.9	<8.66	**789**	**1320**	216	**709**	**652**	13.7	115	**1240**	**2230**	<7.86
Mercury	20	0.401	1.29	0.174	<0.0433	0.323	2.08	0.661	2.26	0.715	<0.0382	1.28	1.41	0.28	<0.0398
Selenium	400	<6.69	<7.58	<8.38	<8.66	<7.18	<7.41	<7.51	<7.51	<7.33	<7.82	<7.38	<7.7	<8.08	<7.86
Silver	100	<0.669	<0.758	<0.838	<0.866	<0.718	<0.741	<0.751	<0.751	<0.733	<0.782	<0.738	0.99	<0.808	<0.786
	2	**7.3**	<0.04	0.36	0.04	**4.8**	**26**	0.45	**4.5**	**7.1**	0.09	0.15	**7.85**	<0.04	<0.04

Notes:
1. Yellow highlighting indicates sample result exceeds the RCS-1 Criteria under the MCP
2. Purple highlighting indicates result is >75ppm site-specific criteria.
EPH = extractable petroleum hydrocarbons
PCBs = polycyclic biphenyls
mg/kg = milligrams per kilogram

TABLE 5
WESTON Analytical Soil Results - July 2003
Former Tombarello and Sons Property
Lawrence, Massachusetts

Sample ID	Composite Sample Grid Locations	Sample Date	Sample Depth (ft bgs)	[2,3]Total PCBs (ppm)
AB13	AB-12/AB-23	7/14/03	0-1	1.1
			1-3	0.6 U
AB35	AB-34/AB-45	7/14/03	0-1	17.2
			1-3	0.7 U
BC13	BC-12/BC-23	7/14/03	0-1	10.2
			1-3	1.2
BC35	BC-34/BC-45	7/14/03	0-1	3.9
			1-3	0.7 U
CD13	CD-12/CD-23	7/14/03	0-1	22.1
			1-3	0.6 U
CD35	CD-34/CD-45	7/14/03	0-1	4.6
			1-3	[redacted]
DE13	DE-12/DE-23	7/14/03	0-1	[redacted]
			1-3	0.6 U
DE35	DE-34/DE-45	7/14/03	0-1	3.4
			1-3	0.6 U
EF13	EF-12/EF-23	7/14/03	0-1	11
			1-3	0.6 U
EF35	EF-34/EF-45	7/14/03	0-1	20
			1-3	7.8
FG13	FG-12/FG-23	7/14/03	0-1	[redacted]
			1-3	0.6 U
FG35	FG-34/FG-45	7/14/03	0-1	[redacted]
			1-3	0.6 U
GH24	GH-23/GH-34	7/14/03	0-1	3.7
			1-3	0.6 U
GH46	GH45/GH56	7/14/03	0-1	28
			1-3	0.5 U
HI24	HI-23/HI-34	7/14/03	0-1	2.8
			1-3	0.6 U
HI46	HI-45/HI-56	7/14/03	0-1	11.4
			1-3	1.5
IJ24	IJ-23/IJ-34	7/14/03	0-1	18.1
			1-3	0.6 U
IJ46	IJ-45/IJ-56	7/14/03	0-1	15.2
			1-3	0.6 U
JK24	JK-23/JK-34	7/14/03	0-1	7
			1-3	3.5
JK46	JK-45/JK-56	7/14/03	0-1	[redacted]
			1-3	4
KL24	KL-23/KL-34	7/14/03	0-1	4.9
			1-3	5.9
LM24	LM-23/LM-34	7/14/03	0-1	25.7
			1-3	0.6 U

Sample ID	Grid Location	Sample Date	Sample Depth (ft bgs)	[2,3]Total PCBs (ppm)
WSB-16	LM-12	7/14/03	0-1	3.1
			1-2	0.5 U
			2-3	0.6 U
WSB-17	LM-12	7/14/03	0-1	2.5
			0-1 (dup.)	3.7
			1-2	0.6 U
			2-3	0.6 U
WSB-18	LM-12	7/14/03	0-1	1.7
			1-2	0.6 U
			2-3	0.6 U
WSB-21	LM-12	7/14/03	0-1	18.2
			1-2	0.6 U
			2-3	0.6 U
WSB-22	LM-23	7/14/03	0-1	17
			1-2	0.6 U
			2-3	0.6 U
WSB-25	FG-23	7/14/03	0-1	14.9
			1-2	0.6 U
			2-3	0.6 U
WSB-26	FG-12	7/14/03	0-1	39
			0-1 (dup.)	50
			1-2	[redacted]
			2-3	7.1
WSB-27	FG-12	7/14/03	0-1	24
			1-2	0.6 U
			2-3	0.6 U
WSB-30	FG-12	7/14/03	0-1	20 U
			1-2	20 U
			2-3	0.6 U
WSB-31	GH-12	7/14/03	0-1	[redacted]
			1-2	2.7
			2-3	0.6 U
WSB-32	GH-12	7/14/03	0-1	3 U
			1-2	3 U
			2-3	0.6 U

Notes:

[1]Composite samples comprise two grab samples

[2]Yellow highlighting indicates result is > 2ppm RCS-1 criteria, but < 75ppm site-specific criteria. Purple highlighting indicates result is >75ppm site-specific criteria.

[3]To account for the 2 grab samples that comprise each two-point composite, these results were doubled prior to comparing to the 2ppm RCS-1 criteria and/or the 75ppm site-specific criteria.

ft bgs = feet below ground surface

PCB = polychlorinated biphenyl

ppm = parts per million

U = Not detected at associated numerical reporting limit.

Table 6
WESTON Analytical Soil Results - September 2003
Former Tombarello and Sons Property
Lawrence, Massachusetts

Sample ID	[1]Grid Location	Sample Date	Sample Depth (ft bgs)	Total PCBs (ppm)
WSB-35	JK-56	9/2/03	0-1	**38**
			1-2	1.9
			2-3	0.6 U
WSB-41	JK-45	9/2/03	0-1	**16.3**
			1-2	**41**
			2-3	0.5 U
WSB-45	FG-45	9/2/03	0-1	**16**
			1-2	0.6 U
			2-3	0.6 U
WSB-50	FG-34	9/2/03	0-1	**71**
			1-2	0.8 U
			2-3	**39**
WSB-56	FG-23	9/2/03	0-1	0.5 U
			1-2	**3.5**
			2-3	**7.9**
WSB-61	FG-12	9/2/03	0-1	**31**
			1-2	0.6 U
			2-3	0.6 U
WSB-65	DE-23	9/2/03	0-1	**25**
			1-2	0.6 U
			2-3	0.6 U
WSB-70	DE-12	9/2/03	0-1	0.5 U
			1-2	0.5 U
			2-3	0.7 U
WSB-73	CD-34	9/2/03	0-1	**3.5**
			1-2	**22**
			2-3	0.5 U
			3-4	0.5 U
WSB-76	CD-45	9/2/03	0-1	0.7
			1-2	[redacted]
			2-3	0.7
WSB-77	CD-45	9/2/03	0-1	**2.2**
			1-2	**37**
			2-3	[redacted]
			3-4	**8.4**
WSB-78	CD-45	9/2/03	0-1	**15.6**
			1-2	[redacted]
			2-3	**14**
WSB-79	CD-45	9/2/03	0-1	**10**
			1-2	[redacted]
			2-3	**22**
WSB-80	CD-45	9/2/03	0-1	**8.3**
			1-2	**20.1**
			2-3	**62**

Notes:
[1]Grid location represents former composite sample location from July 2003, where the composite result exceeded the site specific criteria of 75ppm.
ft bgs = feet below ground surface
ppm = parts per million
PCB = polychlorinated biphenyl
U = Not detected at associated reporting limit.
Yellow highlighting indicates result is > 2ppm RCS-1 criteria, but < 75ppm site-specific criteria. Purple highlighting indicates result is >75ppm site-specific criteria.

Table 7

Groundwater Data - WZB, HEA, and WESTON

Former Tombarello and Sons Property

Lawrence, Massachusetts

Analytes	RCGW-2 mg/L	WZB Sample ID, Grid Location, Date Sampled									Weston Sample ID, Grid Location, Date Sampled			
		MW-1	MW-2A	MW-3	MW-3A	MW-4					MW-1	MW-5	MW-6	MW-7
		GH-34	GH-34	IJ-34	IJ-34	KL-34	CD-23	LM-12	HJ-34	JK-45	CD-12	LM-23	HI-34	KL-67
		9-Jul-98	30-Jul-98	9-Jul-98	30-Jul-98	9-Jul-98	10-Jun-99	10-Jun-99	10-Jun-99	10-Jun-99	13-Feb-03	13-Feb-03	13-Feb-03	13-Feb-03
Acetone	50,000	<10	<10	<10	<10	<10	<15	<15	<15	<15	<25	<25	<25	140
Chloroethane	10,000	<2	<2	<2	<2	<2	<1	<1	<1	13	<2	<2	<2	<2
1,1-Dichloroethane	9,000	113.8	<2	74.2	16.7	<2	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	30,000	2.2	<2	9.2	2.4	<2	<1	<1	<1	<1	<1	<1	<1	57.6
4-Methyl-2-pentanone	50,000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	6,000	4.1	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	3.97	3.27
Tetrachloroethene	3,000	<2	<2	7.1	2.6	<2	<1	<1	<1	<1	<1	1.53	3.61	38.2
Toluene	6,000	3	<2	2	<2	<2	<1	<1	2	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	4,000	14.5	<2	5.3	3.9	<2	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	300	<2	3.2	2.7	4.4	3.2	<1	<1	<13	<1	<1	<1	56.8	17.6
1,2,4-Trimethylbenzene	100,000	2.4	3.3	3.3	2.8	3.3	<1	<1	<1	<1	<1	1.1	2.04	2.83
Vinyl Chloride	2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<2	<2	<2	4.66
Xylenes	6,000	5.7	<2	<2	<2	<2	<1	<1	<1	<1	<2	2.32	2.06	<2
Methyl-tert-Butylether	50,000	N/A	N/A	N/A	N/A	N/A	<1	<1	5	<1	<1	125	4.92	1.320
phenolics	30000	<50	N/A	72	N/A	<50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	0.4	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05
Barium	30	0.177	0.049	0.07	0.048	0.108	N/A	N/A	N/A	N/A	<0.05	0.07	0.07	<0.05
Cadmium	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A	<0.005	<0.005	<0.005	<0.005
Chromium	0.2	<0.005	<0.005	<0.005	<0.005	<0.005	N/A	N/A	0.013	0.016	<0.02	<0.02	<0.02	<0.02
Lead	0.03	<0.003	<0.003	<0.003	<0.003	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005
Mercury	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	N/A	N/A	N/A	N/A	<0.0005	<0.0005	<0.0005	<0.0005
Selenium	0.08	<0.005	<0.005	<0.005	<0.005	<0.005	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	<0.01
Silver	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	N/A	N/A	N/A	N/A	<0.005	<0.005	<0.005	<0.005
SVOCs		ND	ND	ND	ND	ND	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C5-C8 Aliphatics	1000	N/A	N/A	N/A	N/A	N/A	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A
C9-12 Aliphatics	1000	N/A	N/A	N/A	N/A	N/A	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A
C9-C10 Aromatics	4000	N/A	N/A	N/A	N/A	N/A	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	2,000	2.5	<2	13.6	3.4	<2	<1	<1	<1	<1	<1	<1	<1	4.55
Ethylbenzene	4,000	N/A	N/A	N/A	N/A	N/A	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A
MtBe	50,000	N/A	N/A	N/A	N/A	N/A	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A
Naphthalene	6,000	N/A	N/A	N/A	N/A	N/A	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	6,000	N/A	N/A	N/A	N/A	N/A	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A
xylenes	6,000	N/A	N/A	N/A	N/A	N/A	<1	<1	N/A	N/A	N/A	N/A	N/A	N/A
C9-C18 Aliphatics	1,000	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
C19-C36 Aliphatics	20,000	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
C11-C22 Aromatics	30,000	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthalene	3,000	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthene	5,000	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene	3,000	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)Anthracene	3,000	N/A	N/A	N/A	N/A	N/A	<0.1	<0.1	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)Pyrene	3,000	N/A	N/A	N/A	N/A	N/A	<0.1	<0.1	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	3,000	N/A	N/A	N/A	N/A	N/A	<0.1	<0.1	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(g,h,I)Perylene	3,000	N/A	N/A	N/A	N/A	N/A	<0.1	<0.1	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	3,000	N/A	N/A	N/A	N/A	N/A	<0.1	<0.1	N/A	N/A	N/A	N/A	N/A	N/A
Chrysene	3,000	N/A	N/A	N/A	N/A	N/A	<0.1	<0.1	N/A	N/A	N/A	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	3,000	N/A	N/A	N/A	N/A	N/A	<0.1	<0.1	N/A	N/A	N/A	N/A	N/A	N/A
Fluoranthene	200	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
Fluorene	3,000	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)Pyrene	3,000	N/A	N/A	N/A	N/A	N/A	<0.1	<0.1	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene	3,000	N/A	N/A	N/A	N/A	N/A	<5	<5	N/A	N/A	N/A	N/A	N/A	N/A
Naphthalene	6,000	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
Phenanthrene	50	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A
Pyrene	3,000	N/A	N/A	N/A	N/A	N/A	<10	<10	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

1. Green highlighting indicates sample result exceeds the RCGW-1 Criteria under the MCP
2. Yellow highlighting indicates sample result exceeds both the RCGW-1 and RCGW-2 Criteria under the MCP

ug/L = micrograms per liter
EPH = extractable petroleum hydrocarbons
PCB = polychlorinated biphenyls

mg/L = milligrams per liter
PAH = polycyclic aromatic hydrocarbon
VOC = volatile organic carbons

TABLE 8
SEDIMENT SAMPLE RESULTS
FORMER TOMBARELLO AND SONS PROPERTY
LAWRENCE, MASS

		Haley & Aldrich September-2002									WESTON 12-February-2003		
Analytes	[1]NOAA TELs	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	CB1	RSED1	OUTFALL1
C9-C18 Aliphatics	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	403 U	192 U	35.2 U
C19-C36 Aliphatics	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,850	321	204
C11-C22 Aromatics	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,140	305	107
Aroclor 1016	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1221	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1232	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1242	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	**0.0668**	**3.48**
Aroclor 1248	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1254	0.03	ND	ND	ND	ND	ND	ND	**0.16**	ND	ND	0.538 U	0.0511 U	0.47 U
Aroclor 1260	0.03	ND	ND	ND	**2.1**	ND	ND	**0.33**	ND	ND	**1.64**	0.0511 U	0.47 U
Arsenic	5.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	**16.9**	**7.82**	4.7 U
Barium	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	598	51.4	73.3
Cadmium	0.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	**8.96**	**1.09**	**2.28**
Chromium	36.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	**72.7**	**77.8**	**77.2**
Lead	35	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1,480**	**120**	**94.6**
Mercury	0.174	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.04** *	**0.605** **	**0.235**
Selenium	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.6 U	9.99 U	9.39 U
Silver	NL	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.22	0.999 U	1.43
	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NS	26,000	4100

Notes:

* = Result and reporting limit based on 10x dilution

** = Result and reporting limit based on 5x dilution

U = Not detected at associated reporting limit

NS = Not Sampled

NL = Not Listed

NA = Not Applicable

[1] = Lowest ARCs H. azteca TEL or Threshold Effects Level (TEL), whichever is lowest (freshwater sediment).

Highlighted values exceed NOAA TEL

APPENDIX D

RAW LABORATORY DATA PACKAGES

WZB ANALYTICAL RESULTS
1998

MONITORING WELL

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0154
Acenaphthylene	< 0.0154
Anthracene	< 0.0154
Benzo(a)anthracene	< 0.0154
Benzo(a)pyrene	< 0.0154
Benzo(b)fluoranthene	< 0.0154
Benzo(g,h,i)perylene	< 0.0154
Benzo(k)fluoranthene	< 0.0154
4-Bromophenyl-phenylether	< 0.0154
Butylbenzylphthalate	< 0.0154
Carbazole	< 0.0154
4-Chloro-3-methylphenol	< 0.0154
4-Chloroaniline	< 0.0154
Bis(2-chloroethoxy)methane	< 0.0154
Bis(2-chloroethyl)ether	< 0.0154
Bis(2-chloroisopropyl)ether	< 0.0154
2-Chloronaphthalene	< 0.0154
2-Chlorophenol	< 0.0154
4-Chlorophenyl-phenylether	< 0.0154
Chrysene	< 0.0154
Dibenzofuran	< 0.0154
Dibenz(a,h)anthracene	< 0.0154
1,2-Dichlorobenzene	< 0.0154
1,3-Dichlorobenzene	< 0.0154
1,4-Dichlorobenzene	< 0.0154
3,3'-Dichlorobenzidine	< 0.0385
2,4-Dichlorophenol	< 0.0154
Diethylphthalate	< 0.0154

WZB

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
2,4-Dimethylphenol	< 0.0154
Dimethylphthalate	< 0.0154
Di-n-Butylphthalate	< 0.0154
4,6-Dinitro-2-methylphenol	< 0.0385
2,4-Dinitrophenol	< 0.0385
2,4-dinitrotoluene	< 0.0154
2,6-Dinitrotoluene	< 0.0154
Di-n-octylphthalate	< 0.0154
Fluoranthene	< 0.0154
Fluorene	< 0.0154
Hexachlorobenzene	< 0.0154
Hexachlorobutadiene	< 0.0154
Hexachlorocyclopentadiene	< 0.0154
Hexachloroethane	< 0.0154
Indeno(1,2,3-cd)pyrene	< 0.0154
Isophorone	< 0.0154
2-Methylnaphthalene	< 0.0154
2-Methylphenol	< 0.0154
3 and 4-Methylphenol	< 0.0154
Naphthalene	< 0.0154
2-Nitroaniline	< 0.0385
3-Nitroaniline	< 0.0385
4-Nitroaniline	< 0.0385
Nitrobenzene	< 0.0154
2-Nitrophenol	< 0.0154
4-Nitrophenol	< 0.0385
N-Nitroso-Di-n-Propylamine	< 0.0154
N-Nitrosodiphenylamine	< 0.0154
Pentachlorophenol	< 0.0385

WZB

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
Phenanthrene	< 0.0154
Phenol	< 0.0154
Pyrene	< 0.0154
Bis(2-ethylhexyl)phthalate	< 0.0154
1,2,4-Trichlorobenzene	< 0.0154
2,4,5-Trichlorophenol	< 0.0385
2,4,6-Trichlorophenol	< 0.0154
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	0.0025
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

WZB

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	0.1138
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	0.0022
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	0.0027
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	0.0041
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

WZB

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00515
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	< 0.0050
Arsenic, Dissolved	< 0.005
Barium, Total	0.1770
Barium, Dissolved	0.177
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	< 0.0050
Chromium, Dissolved	< 0.0050
Lead, Total	0.0050
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

WZB

EXHIBIT NO. 3-B

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-2 (49728)
Mercury, Dissolved	< 0.00020
Selenium, Total	< 0.0050
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	< 0.050

WZB

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

W Z B

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

WZB

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

WZB

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

W Z B

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	0 0032
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	0.0033
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00051
Aroclor 1221	< 0.00051
Aroclor 1232	< 0.00051
Aroclor 1242	< 0.00051
Aroclor 1248	< 0.00051
Aroclor 1254	< 0.00051
Aroclor 1260	< 0.00051
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

WZB

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00510
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.0530
Arsenic, Dissolved	< 0.005
Barium, Total	0.3290
Barium, Dissolved	0.049
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.1450
Chromium, Dissolved	< 0.0050
Lead, Total	0.0250
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

WZB

EXHIBIT NO. 3-C

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-2A (50062)
Mercury, Dissolved	< 0.00020
Selenium, Total	< 0.0050
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050

WZB

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

WZB

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

WZB

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	0.0136
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

WZB

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	0.0742
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	0.0092
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

WZB

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	0.0071
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	0.0053
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	0.0027
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00052
Aroclor 1221	< 0.00052
Aroclor 1232	< 0.00052
Aroclor 1242	< 0.00052
Aroclor 1248	< 0.00052
Aroclor 1254	< 0.00052
Aroclor 1260	< 0.00052
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

WZB

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00515
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.0240
Arsenic, Dissolved	< 0.005
Barium, Total	0.1800
Barium, Dissolved	0.070
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.0330
Chromium, Dissolved	< 0.0050
Lead, Total	0.0310
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

WZB

EXHIBIT NO. 3-D

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-3 (49729)
Mercury, Dissolved	< 0.00020
Selenium, Total	0.0090
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	0.072

WZB

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

WZB

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

WZB

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	0.0034
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

WZB

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	0.0167
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	0.0024
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

WZB

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	0.0026
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	0.0039
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	0.0044
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	0.0028
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00051
Aroclor 1221	< 0.00051
Aroclor 1232	< 0.00051
Aroclor 1242	< 0.00051
Aroclor 1248	< 0.00051
Aroclor 1254	< 0.00051
Aroclor 1260	< 0.00051
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

WZB

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00510
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.1430
Arsenic, Dissolved	< 0.005
Barium, Total	0.9150
Barium, Dissolved	0.048
Cadmium, Total	0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.4770
Chromium, Dissolved	< 0.0050
Lead, Total	0.0580
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

WZB

EXHIBIT NO. 3-E

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	MW-3A (50063)
Mercury, Dissolved	< 0.00020
Selenium, Total	0.0060
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050

WZB

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

WZB

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

WZB

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

WZB

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

WZB

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00050
Aroclor 1221	< 0.00050
Aroclor 1232	< 0.00050
Aroclor 1242	< 0.00050
Aroclor 1248	< 0.00050
Aroclor 1254	< 0.00050
Aroclor 1260	< 0.00050
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

WZB

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00500
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.0210
Arsenic, Dissolved	< 0.005
Barium, Total	0.9960
Barium, Dissolved	0.108
Cadmium, Total	0.0036
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.0270
Chromium, Dissolved	< 0.0050
Lead, Total	1.560
Lead, Dissolved	0.0060
Mercury, Total	0.00064

WZB

EXHIBIT NO. 3-F

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	MW-4 (49730)
Mercury, Dissolved	< 0.00020
Selenium, Total	< 0.0050
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	< 0.050

WZB

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0100
Acenaphthylene	< 0.0100
Anthracene	< 0.0100
Benzo(a)anthracene	< 0.0100
Benzo(a)pyrene	< 0.0100
Benzo(b)fluoranthene	< 0.0100
Benzo(g,h,i)perylene	< 0.0100
Benzo(k)fluoranthene	< 0.0100
4-Bromophenyl-phenylether	< 0.0100
Butylbenzylphthalate	< 0.0100
Carbazole	< 0.0100
4-Chloro-3-methylphenol	< 0.0100
4-Chloroaniline	< 0.0100
Bis(2-chloroethoxy)methane	< 0.0100
Bis(2-chloroethyl)ether	< 0.0100
Bis(2-chloroisopropyl)ether	< 0.0100
2-Chloronaphthalene	< 0.0100
2-Chlorophenol	< 0.0100
4-Chlorophenyl-phenylether	< 0.0100
Chrysene	< 0.0100
Dibenzofuran	< 0.0100
Dibenz(a,h)anthracene	< 0.0100
1,2-Dichlorobenzene	< 0.0100
1,3-Dichlorobenzene	< 0.0100
1,4-Dichlorobenzene	< 0.0100
3,3'-Dichlorobenzidine	< 0.0250
2,4-Dichlorophenol	< 0.0100
Diethylphthalate	< 0.0100

WZB

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
2,4-Dimethylphenol	< 0.0100
Dimethylphthalate	< 0.0100
Di-n-Butylphthalate	< 0.0100
4,6-Dinitro-2-methylphenol	< 0.0250
2,4-Dinitrophenol	< 0.0250
2,4-dinitrotoluene	< 0.0100
2,6-Dinitrotoluene	< 0.0100
Di-n-octylphthalate	< 0.0100
Fluoranthene	< 0.0100
Fluorene	< 0.0100
Hexachlorobenzene	< 0.0100
Hexachlorobutadiene	< 0.0100
Hexachlorocyclopentadiene	< 0.0100
Hexachloroethane	< 0.0100
Indeno(1,2,3-cd)pyrene	< 0.0100
Isophorone	< 0.0100
2-Methylnaphthalene	< 0.0100
2-Methylphenol	< 0.0100
3 and 4-Methylphenol	< 0.0100
Naphthalene	< 0.0100
2-Nitroaniline	< 0.0250
3-Nitroaniline	< 0.0250
4-Nitroaniline	< 0.0250
Nitrobenzene	< 0.0100
2-Nitrophenol	< 0.0100
4-Nitrophenol	< 0.0250
N-Nitroso-Di-n-Propylamine	< 0.0100
N-Nitrosodiphenylamine	< 0.0100
Pentachlorophenol	< 0.0250

WZB

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
Phenanthrene	< 0.0100
Phenol	< 0.0100
Pyrene	< 0.0100
Bis(2-ethylhexyl)phthalate	< 0.0100
1,2,4-Trichlorobenzene	< 0.0100
2,4,5-Trichlorophenol	< 0.0250
2,4,6-Trichlorophenol	< 0.0100
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	0.0131
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

WZB

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	0.0715
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	0.0086
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

WZB

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	0.0064
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	0.0057
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	0.0025
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00050
Aroclor 1221	< 0.00050
Aroclor 1232	< 0.00050
Aroclor 1242	< 0.00050
Aroclor 1248	< 0.00050
Aroclor 1254	< 0.00050
Aroclor 1260	< 0.00050
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

WZB

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00500
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	0.0170
Arsenic, Dissolved	< 0.005
Barium, Total	0.1470
Barium, Dissolved	0.084
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	0.0230
Chromium, Dissolved	< 0.0050
Lead, Total	0.0230
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

WZB

EXHIBIT NO. 3-G

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	EQB (49731)
Mercury, Dissolved	< 0.00020
Selenium, Total	0.0090
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	< 0.050

WZB

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.0111
Acenaphthylene	< 0.0111
Anthracene	< 0.0111
Benzo(a)anthracene	< 0.0111
Benzo(a)pyrene	< 0.0111
Benzo(b)fluoranthene	< 0.0111
Benzo(g,h,i)perylene	< 0.0111
Benzo(k)fluoranthene	< 0.0111
4-Bromophenyl-phenylether	< 0.0111
Butylbenzylphthalate	< 0.0111
Carbazole	< 0.0111
4-Chloro-3-methylphenol	< 0.0111
4-Chloroaniline	< 0.0111
Bis(2-chloroethoxy)methane	< 0.0111
Bis(2-chloroethyl)ether	< 0.0111
Bis(2-chloroisopropyl)ether	< 0.0111
2-Chloronaphthalene	< 0.0111
2-Chlorophenol	< 0.0111
4-Chlorophenyl-phenylether	< 0.0111
Chrysene	< 0.0111
Dibenzofuran	< 0.0111
Dibenz(a,h)anthracene	< 0.0111
1,2-Dichlorobenzene	< 0.0111
1,3-Dichlorobenzene	< 0.0111
1,4-Dichlorobenzene	< 0.0111
3,3'-Dichlorobenzidine	< 0.0278
2,4-Dichlorophenol	< 0.0111
Diethylphthalate	< 0.0111

WZB

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
2,4-Dimethylphenol	< 0.0111
Dimethylphthalate	< 0.0111
Di-n-Butylphthalate	< 0.0111
4,6-Dinitro-2-methylphenol	< 0.0278
2,4-Dinitrophenol	< 0.0278
2,4-dinitrotoluene	< 0.0111
2,6-Dinitrotoluene	< 0.0111
Di-n-octylphthalate	< 0.0111
Fluoranthene	< 0.0111
Fluorene	< 0.0111
Hexachlorobenzene	< 0.0111
Hexachlorobutadiene	< 0.0111
Hexachlorocyclopentadiene	< 0.0111
Hexachloroethane	< 0.0111
Indeno(1,2,3-cd)pyrene	< 0.0111
Isophorone	< 0.0111
2-Methylnaphthalene	< 0.0111
2-Methylphenol	< 0.0111
3 and 4-Methylphenol	< 0.0111
Naphthalene	< 0.0111
2-Nitroaniline	< 0.0278
3-Nitroaniline	< 0.0278
4-Nitroaniline	< 0.0278
Nitrobenzene	< 0.0111
2-Nitrophenol	< 0.0111
4-Nitrophenol	< 0.0278
N-Nitroso-Di-n-Propylamine	< 0.0111
N-Nitrosodiphenylamine	< 0.0111
Pentachlorophenol	< 0.0278

WZB

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
Phenanthrene	< 0.0111
Phenol	< 0.0111
Pyrene	< 0.0111
Bis(2-ethylhexyl)phthalate	< 0.0111
1,2,4-Trichlorobenzene	< 0.0111
2,4,5-Trichlorophenol	< 0.0278
2,4,6-Trichlorophenol	< 0.0111
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100

WZB

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

WZB

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	0.0061
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020
1,2,3-Trichloropropane	0.0187
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	0.0024
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aldrin	< 0.00005
Aroclor 1016	< 0.00051
Aroclor 1221	< 0.00051
Aroclor 1232	< 0.00051
Aroclor 1242	< 0.00051
Aroclor 1248	< 0.00051
Aroclor 1254	< 0.00051
Aroclor 1260	< 0.00051
a-BHC	< 0.00005
b-BHC	< 0.00005
d-BHC	< 0.00005
g-BHC, Lindane	< 0.00005

WZB

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
4,4'-DDD	< 0.00010
4,4'-DDE	< 0.00010
4,4'DDT	< 0.00010
Dieldrin	< 0.00010
Endosulfan I	< 0.00005
Endosulfan II	< 0.00010
Endosulfan Sulfate	< 0.00010
Endrin	< 0.00010
Endrin Aldehyde	< 0.00010
Endrin Ketone	< 0.00010
Heptachlor	< 0.00005
Heptachlor Epoxide	< 0.00005
Methoxychlor	< 0.00010
Toxaphene	< 0.00505
alpha-Chlordane	< 0.00005
gamma-Chlordane	< 0.00005
METALS	
Arsenic, Total	< 0.0050
Arsenic, Dissolved	< 0.005
Barium, Total	< 0.0100
Barium, Dissolved	< 0.010
Cadmium, Total	< 0.0010
Cadmium, Dissolved	< 0.0010
Chromium, Total	< 0.0050
Chromium, Dissolved	< 0.0050
Lead, Total	< 0.0030
Lead, Dissolved	< 0.0030
Mercury, Total	< 0.00020

WZB

EXHIBIT NO. 3-H

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 9, 1998

PARAMETER	FB (49732)
Mercury, Dissolved	< 0.00020
Selenium, Total	< 0.0050
Selenium, Dissolved	< 0.0050
Silver, Total	< 0.0050
Silver, Dissolved	< 0.0050
MISCELLANEOUS CHEMISTRY	
Cyanide	< 0.010
Phenolics	< 0.050

WZB

EXHIBIT NO. 3-I

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	TB (50064)
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0020
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0020
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0100
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020

WZB

EXHIBIT NO. 3-I

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	TB (50064)
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020

WZB

EXHIBIT NO. 3-I

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

MONITORING WELL ANALYSIS (mg/l)

JULY 30, 1998

PARAMETER	TB (50064)
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020

WZB

SOIL

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
SEMIVOLATILE ORGANICS	
Acenaphthene	2.28
Acenaphthylene	< 1.65
Anthracene	6.71
Benzo(a)anthracene	24.6
Benzo(a)pyrene	15.3
Benzo(b)fluoranthene	19.3
Benzo(g,h,i)perylene	3.94
Benzo(k)fluoranthene	8.96
4-Bromophenylphenylether	< 1.65
Butylbenzylphthalate	< 1.65
Carbazole	2.41
4-Chloro-3-methylphenol	< 1.65
4-Chloroaniline	< 1.65
bis(2-Chloroethoxy)methane	< 1.65
bis(2-Chloroethyl)ether	< 1.65
bis(2-Chloroisopropyl)ether	< 1.65
2-Chloronaphthalene	< 1.65
2-Chlorophenol	< 1.65
4-Chlorophenylphenylether	< 1.65
Chrysene	25.0
Dibenzofuran	< 1.65
Dibenz(a,h)anthracene	< 1.65
1,2-Dichlorobenzene	< 1.65
1,3-Dichlorobenzene	< 1.65
1,4-Dichlorobenzene	< 1.65
3,3'-Dichlorobenzidine	< 4.12
2,4-Dichlorophenol	< 1.65
Diethylphthalate	< 1.65

AZB

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
2,4-Dimethylphenol	< 1.65
Dimethylphthalate	< 1.65
Di-n-butylphthalate	< 1.65
4,6-Dinitro-2-methylphenol	< 4.12
2,4-Dinitrophenol	< 4.12
2,4-dinitrotoluene	< 1.65
2,6-Dinitrotoluene	< 1.65
Di-n-octylphthalate	< 1.65
Fluoranthene	42.9
Fluorene	2.69
Hexachlorobenzene	< 1.65
Hexachlorobutadiene	< 1.65
Hexachlorocyclopentadiene	< 1.65
Hexachloroethane	< 1.65
Indeno(1,2,3-cd)pyrene	4.39
Isophorone	< 1.65
2-Methylnaphthalene	< 1.65
2-Methylphenol	< 1.65
m,p-Methylphenol	< 1.65
Naphthalene	< 1.65
2-Nitroaniline	< 4.12
3-Nitroaniline	< 4.12
4-Nitroaniline	< 4.12
Nitrobenzene	< 1.65
2-Nitrophenol	< 1.65
4-Nitrophenol	< 4.12
N-nitrosodi-n-propylamine	< 1.65
N-nitrosodiphenylamine	< 1.65
Pentachlorophenol	< 4.12

WZB

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
Phenanthrene	29.4
Phenol	< 1.65
Pyrene	56.0
Bis(2-ethylhexyl)phthalate	< 1.65
1,2,4-Trichlorobenzene	< 1.65
2,4,5-Trichlorophenol	< 4.12
2,4,6-Trichlorophenol	< 1.65
VOLATILE ORGANICS	
Acetone	< 0.5000
Benzene	< 0.1000
Bromobenzene	< 0.1000
Bromochloromethane	< 0.1000
Bromoform	< 0.1000
Bromomethane	< 0.5000
2-Butanone	< 0.5000
n-Butylbenzene	< 0.1000
sec-Butylbenzene	< 0.1000
t-Butylbenzene	< 0.1000
Carbon Disulfide	< 0.1000
Carbon tetrachloride	< 0.1000
Chlorobenzene	< 0.1000
Chloroethane	< 0.1000
2-Chloroethylvinylether	< 0.1000
Chloroform	< 0.1000
Chloromethane	< 0.5000
2-Chlorotoluene	< 0.1000
4-Chlorotoluene	< 0.1000
1,2-Dibromo-3-chloropropane	< 0.1000

WZB

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
Dibromochloromethane	< 0.1000
1,2-Dibromoethane	< 0.1000
Dibromomethane	< 0.1000
1,2-Dichlorobenzene	< 0.1000
1,3-Dichlorobenzene	< 0.1000
1,4-Dichlorobenzene	< 0.1000
Dichlorodifluoromethane	< 0.1000
1,1-Dichloroethane	< 0.1000
1,2-Dichloroethane	< 0.1000
1,1-Dichloroethene	< 0.1000
cis-1,2-Dichloroethene	< 0.1000
trans-1,2-Dichloroethene	< 0.1000
1,2-Dichloropropane	< 0.1000
1,3-Dichloropropane	< 0.1000
2,2-Dichloropropane	< 0.1000
1,1-Dichloropropene	< 0.1000
cis-1,3-Dichloropropene	< 0.1000
trans-1,3-Dichloropropene	< 0.1000
Ethylbenzene	< 0.1000
Hexachlorobutadiene	< 0.1000
2-Hexanone	< 0.5000
Isopropylbenzene	< 0.1000
4-Isopropyltoluene	< 0.1000
4-Methyl-2-pentanone	< 0.5000
Methylene chloride	< 0.1000
Naphthalene	< 0.1000
n-Propylbenzene	< 0.1000
Styrene	< 0.1000
1,1,1,2-Tetrachloroethane	< 0.1000

WZB

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
1,1,2,2-Tetrachloroethane	< 0.1000
Tetrachloroethene	0.3000
Toluene	< 0.1000
1,2,3-Trichlorobenzene	< 0.1000
1,2,4-Trichlorobenzene	< 0.1000
1,1,1-Trichloroethane	< 0.1000
1,1,2-Trichloroethane	< 0.1000
Trichloroethene	< 0.1000
1,2,3-Trichloropropane	< 0.1000
1,2,4-Trimethylbenzene	< 0.1000
1,3,5-Trimethylbenzene	< 0.1000
Vinyl chloride	< 0.1000
Xylenes	< 0.1000
Bromodichloromethane	< 0.1000
Trichlorofluoromethane	< 0.1000
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.1665
Aroclor 1221	< 0.3330
Aroclor 1232	< 0.1665
Aroclor 1242	< 0.1665
Aroclor 1248	3.097
Aroclor 1254	< 0.1665
Aroclor 1260	3.913
METALS	
Arsenic	4.76
Barium	45.5
Cadmium	1.90

WZB

EXHIBIT NO. 3-J

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 0-2 (49790)
Chromium	15.2
Lead	146.
Mercury	0.32
Selenium	< 0.95
Silver	< 0.95

WZB

EXHIBIT NO. 3-K

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 2-4 (49791)
METALS	
Arsenic	3.22
Barium	25.6
Cadmium	2.62
Chromium	10.1
Lead	712.
Mercury	< 0.10
Selenium	< 1.01
Silver	2.21

WZB

EXHIBIT NO. 3-L

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB1 9-11 (49770)
ORGANIC PARAMETERS	
TPH (Gasoline Range)	< 5.00

WZB

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 8.33
Acenaphthylene	< 8.33
Anthracene	< 8.33
Benzo(a)anthracene	< 8.33
Benzo(a)pyrene	< 8.33
Benzo(b)fluoranthene	< 8.33
Benzo(g,h,i)perylene	< 8.33
Benzo(k)fluoranthene	< 8.33
4-Bromophenylphenylether	< 8.33
Butylbenzylphthalate	< 8.33
Carbazole	< 8.33
4-Chloro-3-methylphenol	< 8.33
4-Chloroaniline	< 8.33
bis(2-Chloroethoxy)methane	< 8.33
bis(2-Chloroethyl)ether	< 8.33
bis(2-Chloroisopropyl)ether	< 8.33
2-Chloronaphthalene	< 8.33
2-Chlorophenol	< 8.33
4-Chlorophenylphenylether	< 8.33
Chrysene	< 8.33
Dibenzofuran	< 8.33
Dibenz(a,h)anthracene	< 8.33
1,2-Dichlorobenzene	< 8.33
1,3-Dichlorobenzene	< 8.33
1,4-Dichlorobenzene	< 8.33
3,3'-Dichlorobenzidine	< 20.8
2,4-Dichlorophenol	< 8.33

WZB

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
Diethylphthalate	< 8.33
2,4-Dimethylphenol	< 8.33
Dimethylphthalate	< 8.33
Di-n-butylphthalate	< 8.33
4,6-Dinitro-2-methylphenol	< 20.8
2,4-Dinitrophenol	< 20.8
2,4-dinitrotoluene	< 8.33
2,6-Dinitrotoluene	< 8.33
Di-n-octylphthalate	< 8.33
Fluoranthene	< 8.33
Fluorene	< 8.33
Hexachlorobenzene	< 8.33
Hexachlorobutadiene	< 8.33
Hexachlorocyclopentadiene	< 8.33
Hexachloroethane	< 8.33
Indeno(1,2,3-cd)pyrene	< 8.33
Isophorone	< 8.33
2-Methylnaphthalene	< 8.33
2-Methylphenol	< 8.33
m,p-Methylphenol	< 8.33
Naphthalene	< 8.33
2-Nitroaniline	< 20.8
3-Nitroaniline	< 20.8
4-Nitroaniline	< 20.8
Nitrobenzene	< 8.33
2-Nitrophenol	< 8.33
4-Nitrophenol	< 20.8
N-nitrosodi-n-propylamine	< 8.33
N-nitrosodiphenylamine	< 8.33

WZB

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
Pentachlorophenol	< 20.8
Phenanthrene	< 8.33
Phenol	< 8.33
Pyrene	12.1
Bis(2-ethylhexyl)phthalate	15.8
1,2,4-Trichlorobenzene	< 8.33
2,4,5-Trichlorophenol	< 20.8
2,4,6-Trichlorophenol	< 8.33
VOLATILE ORGANICS	
Acetone	< 0.5000
Benzene	< 0.1000
Bromobenzene	< 0.1000
Bromochloromethane	< 0.1000
Bromoform	< 0.1000
Bromomethane	< 0.5000
2-Butanone	< 0.5000
n-Butylbenzene	< 0.1000
sec-Butylbenzene	< 0.1000
t-Butylbenzene	< 0.1000
Carbon Disulfide	< 0.1000
Carbon tetrachloride	< 0.1000
Chlorobenzene	< 0.1000
Chloroethane	< 0.1000
2-Chloroethylvinylether	< 0.1000
Chloroform	< 0.1000
Chloromethane	< 0.5000
2-Chlorotoluene	< 0.1000
4-Chlorotoluene	< 0.1000

WZB

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
1,2-Dibromo-3-chloropropane	< 0.1000
Dibromochloromethane	< 0.1000
1,2-Dibromoethane	< 0.1000
Dibromomethane	< 0.1000
1,2-Dichlorobenzene	< 0.1000
1,3-Dichlorobenzene	< 0.1000
1,4-Dichlorobenzene	< 0.1000
Dichlorodifluoromethane	< 0.1000
1,1-Dichloroethane	< 0.1000
1,2-Dichloroethane	< 0.1000
1,1-Dichloroethene	< 0.1000
cis-1,2-Dichloroethene	< 0.1000
trans-1,2-Dichloroethene	< 0.1000
1,2-Dichloropropane	< 0.1000
1,3-Dichloropropane	< 0.1000
2,2-Dichloropropane	< 0.1000
1,1-Dichloropropene	< 0.1000
cis-1,3-Dichloropropene	< 0.1000
trans-1,3-Dichloropropene	< 0.1000
Ethylbenzene	< 0.1000
Hexachlorobutadiene	< 0.1000
2-Hexanone	< 0.5000
Isopropylbenzene	< 0.1000
4-Isopropyltoluene	< 0.1000
4-Methyl-2-pentanone	< 0.5000
Methylene chloride	< 0.1000
Naphthalene	< 0.1000
n-Propylbenzene	< 0.1000
Styrene	< 0.1000

WZB

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
1,1,1,2-Tetrachloroethane	< 0.1000
1,1,2,2-Tetrachloroethane	< 0.1000
Tetrachloroethene	< 0.1000
Toluene	< 0.1000
1,2,3-Trichlorobenzene	< 0.1000
1,2,4-Trichlorobenzene	< 0.1000
1,1,1-Trichloroethane	< 0.1000
1,1,2-Trichloroethane	< 0.1000
Trichloroethene	< 0.1000
1,2,3-Trichloropropane	< 0.1000
1,2,4-Trimethylbenzene	< 0.1000
1,3,5-Trimethylbenzene	< 0.1000
Vinyl chloride	< 0.1000
Xylenes	< 0.1000
Bromodichloromethane	< 0.1000
Trichlorofluoromethane	< 0.1000
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.0333
Aroclor 1221	< 0.0666
Aroclor 1232	< 0.0333
Aroclor 1242	< 0.0333
Aroclor 1248	0.6194
Aroclor 1254	< 0.0333
Aroclor 1260	0.7659
METALS	
Arsenic	2.74
Barium	13.3

WZB

EXHIBIT NO. 3-M

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 0-2 (49771)
Cadmium	< 0.98
Chromium	6.46
Lead	26.8
Mercury	0.43
Selenium	< 0.98
Silver	< 0.98

WZB

EXHIBIT NO. 3-N

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB2 2-4 (49772)
METALS	
Arsenic	3.18
Barium	16.7
Cadmium	< 0.99
Chromium	8.55
Lead	9.74
Mercury	< 0.10
Selenium	< 0.99
Silver	< 0.99

WZB

EXHIBIT NO. 3-O

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.330
Acenaphthylene	< 0.330
Anthracene	0.493
Benzo(a)anthracene	1.96
Benzo(a)pyrene	1.71
Benzo(b)fluoranthene	2.07
Benzo(g,h,i)perylene	0.455
Benzo(k)fluoranthene	1.49
4-Bromophenylphenylether	< 0.330
Butylbenzylphthalate	< 0.330
Carbazole	< 0.330
4-Chloro-3-methylphenol	< 0.330
4-Chloroaniline	< 0.330
bis(2-Chloroethoxy)methane	< 0.330
bis(2-Chloroethyl)ether	< 0.330
bis(2-Chloroisopropyl)ether	< 0.330
2-Chloronaphthalene	< 0.330
2-Chlorophenol	< 0.330
4-Chlorophenylphenylether	< 0.330
Chrysene	2.14
Dibenzofuran	< 0.330
Dibenz(a,h)anthracene	< 0.330
1,2-Dichlorobenzene	< 0.330
1,3-Dichlorobenzene	< 0.330
1,4-Dichlorobenzene	< 0.330
3,3'-Dichlorobenzidine	< 0.825
2,4-Dichlorophenol	< 0.330

WZB

EXHIBIT NO. 3-O

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
Diethylphthalate	< 0.330
2,4-Dimethylphenol	< 0.330
Dimethylphthalate	< 0.330
Di-n-butylphthalate	< 0.330
4,6-Dinitro-2-methylphenol	< 0.825
2,4-Dinitrophenol	< 0.825
2,4-dinitrotoluene	< 0.330
2,6-Dinitrotoluene	< 0.330
Di-n-octylphthalate	< 0.330
Fluoranthene	2.70
Fluorene	< 0.330
Hexachlorobenzene	< 0.330
Hexachlorobutadiene	< 0.330
Hexachlorocyclopentadiene	< 0.330
Hexachloroethane	< 0.330
Indeno(1,2,3-cd)pyrene	0.480
Isophorone	< 0.330
2-Methylnaphthalene	< 0.330
2-Methylphenol	< 0.330
m,p-Methylphenol	< 0.330
Naphthalene	< 0.330
2-Nitroaniline	< 0.825
3-Nitroaniline	< 0.825
4-Nitroaniline	< 0.825
Nitrobenzene	< 0.330
2-Nitrophenol	< 0.330
4-Nitrophenol	< 0.825
N-nitrosodi-n-propylamine	< 0.330
N-nitrosodiphenylamine	< 0.330

WZB

EXHIBIT NO. 3-O

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
Pentachlorophenol	< 0.825
Phenanthrene	1.99
Phenol	< 0.330
Pyrene	4.24
Bis(2-ethylhexyl)phthalate	< 0.330
1,2,4-Trichlorobenzene	< 0.330
2,4,5-Trichlorophenol	< 0.825
2,4,6-Trichlorophenol	< 0.330
VOLATILE ORGANICS	
Acetone	< 0.5000
Benzene	< 0.1000
Bromobenzene	< 0.1000
Bromochloromethane	< 0.1000
Bromoform	< 0.1000
Bromomethane	< 0.5000
2-Butanone	< 0.5000
n-Butylbenzene	< 0.1000
sec-Butylbenzene	< 0.1000
t-Butylbenzene	< 0.1000
Carbon Disulfide	< 0.1000
Carbon tetrachloride	< 0.1000
Chlorobenzene	< 0.1000
Chloroethane	< 0.1000
2-Chloroethylvinylether	< 0.1000
Chloroform	< 0.1000
Chloromethane	< 0.5000
2-Chlorotoluene	< 0.1000
4-Chlorotoluene	< 0.1000

WZB

EXHIBIT NO. 3-O

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
1,2-Dibromo-3-chloropropane	< 0.1000
Dibromochloromethane	< 0.1000
1,2-Dibromoethane	< 0.1000
Dibromomethane	< 0.1000
1,2-Dichlorobenzene	< 0.1000
1,3-Dichlorobenzene	< 0.1000
1,4-Dichlorobenzene	< 0.1000
Dichlorodifluoromethane	< 0.1000
1,1-Dichloroethane	< 0.1000
1,2-Dichloroethane	< 0.1000
1,1-Dichloroethene	< 0.1000
cis-1,2-Dichloroethene	< 0.1000
trans-1,2-Dichloroethene	< 0.1000
1,2-Dichloropropane	< 0.1000
1,3-Dichloropropane	< 0.1000
2,2-Dichloropropane	< 0.1000
1,1-Dichloropropene	< 0.1000
cis-1,3-Dichloropropene	< 0.1000
trans-1,3-Dichloropropene	< 0.1000
Ethylbenzene	< 0.1000
Hexachlorobutadiene	< 0.1000
2-Hexanone	< 0.5000
Isopropylbenzene	< 0.1000
4-Isopropyltoluene	< 0.1000
4-Methyl-2-pentanone	< 0.5000
Methylene chloride	< 0.1000
Naphthalene	< 0.1000
n-Propylbenzene	< 0.1000
Styrene	< 0.1000

WZB

EXHIBIT NO. 3-O

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
1,1,1,2-Tetrachloroethane	< 0.1000
1,1,2,2-Tetrachloroethane	< 0.1000
Tetrachloroethene	< 0.1000
Toluene	< 0.1000
1,2,3-Trichlorobenzene	< 0.1000
1,2,4-Trichlorobenzene	< 0.1000
1,1,1-Trichloroethane	< 0.1000
1,1,2-Trichloroethane	< 0.1000
Trichloroethene	< 0.1000
1,2,3-Trichloropropane	< 0.1000
1,2,4-Trimethylbenzene	< 0.1000
1,3,5-Trimethylbenzene	< 0.1000
Vinyl chloride	< 0.1000
Xylenes	< 0.1000
Bromodichloromethane	< 0.1000
Trichlorofluoromethane	< 0.1000
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 3.330
Aroclor 1221	< 6.660
Aroclor 1232	< 3.330
Aroclor 1242	< 3.330
Aroclor 1248	< 3.330
Aroclor 1254	< 3.330
Aroclor 1260	59.27
METALS	
Arsenic	9.52
Barium	333.

WZB

EXHIBIT NO. 3-O

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 0-2 (49774)
Cadmium	2.67
Chromium	60.4
Lead	918.
Mercury	0.97
Selenium	< 0.95
Silver	1.71

WZB

EXHIBIT NO. 3-P

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB3 2-4 (49775)
METALS	
Arsenic	4.04
Barium	12.5
Cadmium	< 1.01
Chromium	8.69
Lead	5.45
Mercury	< 0.10
Selenium	< 1.01
Silver	< 1.01

WZB

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
SEMIVOLATILE ORGANICS	
Acenaphthene	19.4
Acenaphthylene	< 6.67
Anthracene	36.0
Benzo(a)anthracene	58.6
Benzo(a)pyrene	32.2
Benzo(b)fluoranthene	39.5
Benzo(g,h,i)perylene	6.84
Benzo(k)fluoranthene	22.6
4-Bromophenylphenylether	< 6.67
Butylbenzylphthalate	< 6.67
Carbazole	16.2
4-Chloro-3-methylphenol	< 6.67
4-Chloroaniline	< 6.67
bis(2-Chloroethoxy)methane	< 6.67
bis(2-Chloroethyl)ether	< 6.67
bis(2-Chloroisopropyl)ether	< 6.67
2-Chloronaphthalene	< 6.67
2-Chlorophenol	< 6.67
4-Chlorophenylphenylether	< 6.67
Chrysene	60.4
Dibenzofuran	14.0
Dibenz(a,h)anthracene	< 6.67
1,2-Dichlorobenzene	< 6.67
1,3-Dichlorobenzene	< 6.67
1,4-Dichlorobenzene	< 6.67
3,3'-Dichlorobenzidine	< 16.7
2,4-Dichlorophenol	< 6.67

WZB

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
Diethylphthalate	< 6.67
2,4-Dimethylphenol	< 6.67
Dimethylphthalate	< 6.67
Di-n-butylphthalate	< 6.67
4,6-Dinitro-2-methylphenol	< 16.7
2,4-Dinitrophenol	< 16.7
2,4-dinitrotoluene	< 6.67
2,6-Dinitrotoluene	< 6.67
Di-n-octylphthalate	< 6.67
Fluoranthene	118.
Fluorene	25.8
Hexachlorobenzene	< 6.67
Hexachlorobutadiene	< 6.67
Hexachlorocyclopentadiene	< 6.67
Hexachloroethane	< 6.67
Indeno(1,2,3-cd)pyrene	7.63
Isophorone	< 6.67
2-Methylnaphthalene	< 6.67
2-Methylphenol	< 6.67
m,p-Methylphenol	< 6.67
Naphthalene	< 6.67
2-Nitroaniline	< 16.7
3-Nitroaniline	< 16.7
4-Nitroaniline	< 16.7
Nitrobenzene	< 6.67
2-Nitrophenol	< 6.67
4-Nitrophenol	< 16.7
N-nitrosodi-n-propylamine	< 6.67
N-nitrosodiphenylamine	< 6.67

WZB

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
Pentachlorophenol	< 16.7
Phenanthrene	143.
Phenol	< 6.67
Pyrene	141.
Bis(2-ethylhexyl)phthalate	< 6.67
1,2,4-Trichlorobenzene	< 6.67
2,4,5-Trichlorophenol	< 16.7
2,4,6-Trichlorophenol	< 6.67
VOLATILE ORGANICS	
Acetone	< 0.5000
Benzene	< 0.1000
Bromobenzene	< 0.1000
Bromochloromethane	< 0.1000
Bromoform	< 0.1000
Bromomethane	< 0.5000
2-Butanone	< 0.5000
n-Butylbenzene	< 0.1000
sec-Butylbenzene	< 0.1000
t-Butylbenzene	< 0.1000
Carbon Disulfide	< 0.1000
Carbon tetrachloride	< 0.1000
Chlorobenzene	< 0.1000
Chloroethane	< 0.1000
2-Chloroethylvinylether	< 0.1000
Chloroform	< 0.1000
Chloromethane	< 0.5000
2-Chlorotoluene	< 0.1000
4-Chlorotoluene	< 0.1000

WZB

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
1,2-Dibromo-3-chloropropane	< 0.1000
Dibromochloromethane	< 0.1000
1,2-Dibromoethane	< 0.1000
Dibromomethane	< 0.1000
1,2-Dichlorobenzene	< 0.1000
1,3-Dichlorobenzene	< 0.1000
1,4-Dichlorobenzene	< 0.1000
Dichlorodifluoromethane	< 0.1000
1,1-Dichloroethane	< 0.1000
1,2-Dichloroethane	< 0.1000
1,1-Dichloroethene	< 0.1000
cis-1,2-Dichloroethene	< 0.1000
trans-1,2-Dichloroethene	< 0.1000
1,2-Dichloropropane	< 0.1000
1,3-Dichloropropane	< 0.1000
2,2-Dichloropropane	< 0.1000
1,1-Dichloropropene	< 0.1000
cis-1,3-Dichloropropene	< 0.1000
trans-1,3-Dichloropropene	< 0.1000
Ethylbenzene	< 0.1000
Hexachlorobutadiene	< 0.1000
2-Hexanone	< 0.5000
Isopropylbenzene	< 0.1000
4-Isopropyltoluene	< 0.1000
4-Methyl-2-pentanone	< 0.5000
Methylene chloride	< 0.1000
Naphthalene	< 0.1000
n-Propylbenzene	< 0.1000
Styrene	< 0.1000

WZB

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
1,1,1,2-Tetrachloroethane	< 0.1000
1,1,2,2-Tetrachloroethane	< 0.1000
Tetrachloroethene	< 0.1000
Toluene	< 0.1000
1,2,3-Trichlorobenzene	< 0.1000
1,2,4-Trichlorobenzene	< 0.1000
1,1,1-Trichloroethane	< 0.1000
1,1,2-Trichloroethane	< 0.1000
Trichloroethene	< 0.1000
1,2,3-Trichloropropane	< 0.1000
1,2,4-Trimethylbenzene	< 0.1000
1,3,5-Trimethylbenzene	< 0.1000
Vinyl chloride	< 0.1000
Xylenes	< 0.1000
Bromodichloromethane	< 0.1000
Trichlorofluoromethane	< 0.1000
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.0333
Aroclor 1221	< 0.0666
Aroclor 1232	< 0.0333
Aroclor 1242	< 0.0333
Aroclor 1248	< 0.0333
Aroclor 1254	< 0.0333
Aroclor 1260	0.6094
METALS	
Arsenic	5.73
Barium	54.0

WZB

EXHIBIT NO. 3-Q

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB4 0-2 (49778)
Cadmium	< 0.99
Chromium	33.0
Lead	106.
Mercury	0.50
Selenium	< 0.99
Silver	< 0.99

WZB

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
SEMIVOLATILE ORGANICS	
Acenaphthene	0.367
Acenaphthylene	< 0.330
Anthracene	1.19
Benzo(a)anthracene	3.95
Benzo(a)pyrene	3.10
Benzo(b)fluoranthene	2.00
Benzo(g,h,i)perylene	0.715
Benzo(k)fluoranthene	0.718
4-Bromophenylphenylether	< 0.330
Butylbenzylphthalate	0.372
Carbazole	0.442
4-Chloro-3-methylphenol	< 0.330
4-Chloroaniline	< 0.330
bis(2-Chloroethoxy)methane	< 0.330
bis(2-Chloroethyl)ether	< 0.330
bis(2-Chloroisopropyl)ether	< 0.330
2-Chloronaphthalene	< 0.330
2-Chlorophenol	< 0.330
4-Chlorophenylphenylether	< 0.330
Chrysene	4.09
Dibenzofuran	< 0.330
Dibenz(a,h)anthracene	< 0.330
1,2-Dichlorobenzene	< 0.330
1,3-Dichlorobenzene	< 0.330
1,4-Dichlorobenzene	< 0.330
3,3'-Dichlorobenzidine	< 0.825
2,4-Dichlorophenol	< 0.330

WZB

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
Diethylphthalate	< 0.330
2,4-Dimethylphenol	< 0.330
Dimethylphthalate	< 0.330
Di-n-butylphthalate	< 0.330
4,6-Dinitro-2-methylphenol	< 0.825
2,4-Dinitrophenol	< 0.825
2,4-dinitrotoluene	< 0.330
2,6-Dinitrotoluene	< 0.330
Di-n-octylphthalate	< 0.330
Fluoranthene	7.28
Fluorene	0.420
Hexachlorobenzene	< 0.330
Hexachlorobutadiene	< 0.330
Hexachlorocyclopentadiene	< 0.330
Hexachloroethane	< 0.330
Indeno(1,2,3-cd)pyrene	0.826
Isophorone	< 0.330
2-Methylnaphthalene	< 0.330
2-Methylphenol	< 0.330
m,p-Methylphenol	< 0.330
Naphthalene	< 0.330
2-Nitroaniline	< 0.825
3-Nitroaniline	< 0.825
4-Nitroaniline	< 0.825
Nitrobenzene	< 0.330
2-Nitrophenol	< 0.330
4-Nitrophenol	< 0.825
N-nitrosodi-n-propylamine	< 0.330
N-nitrosodiphenylamine	< 0.330

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
Pentachlorophenol	< 0.825
Phenanthrene	4.23
Phenol	< 0.330
Pyrene	9.56
Bis(2-ethylhexyl)phthalate	2.42
1,2,4-Trichlorobenzene	< 0.330
2,4,5-Trichlorophenol	< 0.825
2,4,6-Trichlorophenol	< 0.330
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0100
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon Disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0100
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020

WZB

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
1,2-Dibromo-3-chloropropane	< 0.0020
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
1,1,1,2-Tetrachloroethane	< 0.0020
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	< 0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.3330
Aroclor 1221	< 0.6660
Aroclor 1232	< 0.3330
Aroclor 1242	< 0.3330
Aroclor 1248	3.663
Aroclor 1254	< 0.3330
Aroclor 1260	5.828
METALS	
Arsenic	13.3
Barium	197.

EXHIBIT NO. 3-R

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 0-2 (49780)
Cadmium	5.78
Chromium	57.4
Lead	3470
Mercury	2.13
Selenium	< 0.96
Silver	< 0.96

EXHIBIT NO. 3-S

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB5 4-6 (49781)
METALS	
Arsenic	3.99
Barium	16.4
Cadmium	< 1.00
Chromium	7.19
Lead	8.58
Mercury	< 0.10
Selenium	< 1.00
Silver	< 1.00

WZB

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
SEMIVOLATILE ORGANICS	
Acenaphthene	< 0.330
Acenaphthylene	< 0.330
Anthracene	< 0.330
Benzo(a)anthracene	< 0.330
Benzo(a)pyrene	< 0.330
Benzo(b)fluoranthene	< 0.330
Benzo(g,h,i)perylene	< 0.330
Benzo(k)fluoranthene	< 0.330
4-Bromophenylphenylether	< 0.330
Butylbenzylphthalate	< 0.330
Carbazole	< 0.330
4-Chloro-3-methylphenol	< 0.330
4-Chloroaniline	< 0.330
bis(2-Chloroethoxy)methane	< 0.330
bis(2-Chloroethyl)ether	< 0.330
bis(2-Chloroisopropyl)ether	< 0.330
2-Chloronaphthalene	< 0.330
2-Chlorophenol	< 0.330
4-Chlorophenylphenylether	< 0.330
Chrysene	< 0.330
Dibenzofuran	< 0.330
Dibenz(a,h)anthracene	< 0.330
1,2-Dichlorobenzene	< 0.330
1,3-Dichlorobenzene	< 0.330
1,4-Dichlorobenzene	< 0.330
3,3'-Dichlorobenzidine	< 0.825
2,4-Dichlorophenol	< 0.330
Diethylphthalate	< 0.330

WZB

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
2,4-Dimethylphenol	< 0.330
Dimethylphthalate	< 0.330
Di-n-butylphthalate	< 0.330
4,6-Dinitro-2-methylphenol	< 0.825
2,4-Dinitrophenol	< 0.825
2,4-dinitrotoluene	< 0.330
2,6-Dinitrotoluene	< 0.330
Di-n-octylphthalate	< 0.330
Fluoranthene	< 0.330
Fluorene	< 0.330
Hexachlorobenzene	< 0.330
Hexachlorobutadiene	< 0.330
Hexachlorocyclopentadiene	< 0.330
Hexachloroethane	< 0.330
Indeno(1,2,3-cd)pyrene	< 0.330
Isophorone	< 0.330
2-Methylnaphthalene	< 0.330
2-Methylphenol	< 0.330
m,p-Methylphenol	< 0.330
Naphthalene	< 0.330
2-Nitroaniline	< 0.825
3-Nitroaniline	< 0.825
4-Nitroaniline	< 0.825
Nitrobenzene	< 0.330
2-Nitrophenol	< 0.330
4-Nitrophenol	< 0.825
N-nitrosodi-n-propylamine	< 0.330
N-nitrosodiphenylamine	< 0.330
Pentachlorophenol	< 0.825

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
Phenanthrene	< 0.330
Phenol	< 0.330
Pyrene	< 0.330
Bis(2-ethylhexyl)phthalate	0.524
1,2,4-Trichlorobenzene	< 0.330
2,4,5-Trichlorophenol	< 0.825
2,4,6-Trichlorophenol	< 0.330
VOLATILE ORGANICS	
Acetone	< 0.0100
Benzene	< 0.0020
Bromobenzene	< 0.0020
Bromochloromethane	< 0.0020
Bromoform	< 0.0020
Bromomethane	< 0.0100
2-Butanone	< 0.0100
n-Butylbenzene	< 0.0020
sec-Butylbenzene	< 0.0020
t-Butylbenzene	< 0.0020
Carbon Disulfide	< 0.0020
Carbon tetrachloride	< 0.0020
Chlorobenzene	< 0.0020
Chloroethane	< 0.0020
2-Chloroethylvinylether	< 0.0020
Chloroform	< 0.0020
Chloromethane	< 0.0100
2-Chlorotoluene	< 0.0020
4-Chlorotoluene	< 0.0020
1,2-Dibromo-3-chloropropane	< 0.0020

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
Dibromochloromethane	< 0.0020
1,2-Dibromoethane	< 0.0020
Dibromomethane	< 0.0020
1,2-Dichlorobenzene	< 0.0020
1,3-Dichlorobenzene	< 0.0020
1,4-Dichlorobenzene	< 0.0020
Dichlorodifluoromethane	< 0.0020
1,1-Dichloroethane	< 0.0020
1,2-Dichloroethane	< 0.0020
1,1-Dichloroethene	< 0.0020
cis-1,2-Dichloroethene	< 0.0020
trans-1,2-Dichloroethene	< 0.0020
1,2-Dichloropropane	< 0.0020
1,3-Dichloropropane	< 0.0020
2,2-Dichloropropane	< 0.0020
1,1-Dichloropropene	< 0.0020
cis-1,3-Dichloropropene	< 0.0020
trans-1,3-Dichloropropene	< 0.0020
Ethylbenzene	< 0.0020
Hexachlorobutadiene	< 0.0020
2-Hexanone	< 0.0100
Isopropylbenzene	< 0.0020
4-Isopropyltoluene	< 0.0020
4-Methyl-2-pentanone	< 0.0100
Methylene chloride	< 0.0020
Naphthalene	< 0.0020
n-Propylbenzene	< 0.0020
Styrene	< 0.0020
1,1,1,2-Tetrachloroethane	< 0.0020

WZB

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
1,1,2,2-Tetrachloroethane	< 0.0020
Tetrachloroethene	0.0020
Toluene	< 0.0020
1,2,3-Trichlorobenzene	< 0.0020
1,2,4-Trichlorobenzene	< 0.0020
1,1,1-Trichloroethane	< 0.0020
1,1,2-Trichloroethane	< 0.0020
Trichloroethene	< 0.0020
1,2,3-Trichloropropane	< 0.0020
1,2,4-Trimethylbenzene	< 0.0020
1,3,5-Trimethylbenzene	< 0.0020
Vinyl chloride	< 0.0020
Xylenes	< 0.0020
Bromodichloromethane	< 0.0020
Trichlorofluoromethane	< 0.0020
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.0333
Aroclor 1221	< 0.0666
Aroclor 1232	< 0.0333
Aroclor 1242	< 0.0333
Aroclor 1248	< 0.0333
Aroclor 1254	< 0.0333
Aroclor 1260	0.6793
METALS	
Arsenic	3.62
Barium	44.3
Cadmium	< 1.01

EXHIBIT NO. 3-T

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 0-2 (49784)
Chromium	14.5
Lead	37.4
Mercury	< 0.10
Selenium	< 1.01
Silver	< 1.01

WZB

EXHIBIT NO. 3-U

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	SB6 4-6 (49785)
METALS	
Arsenic	4.20
Barium	19.8
Cadmium	< 0.95
Chromium	7.63
Lead	4.01
Mercury	< 0.10
Selenium	< 0.95
Silver	< 0.95

EXHIBIT NO. 3-V

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	S-7 (49787)
ORGANIC PARAMETERS	
TPH (Gasoline Range)	< 5.00
TPH (Diesel Range)	2260
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.3330
Aroclor 1221	< 0.6660
Aroclor 1232	< 0.3330
Aroclor 1242	< 0.3330
Aroclor 1248	3.696
Aroclor 1254	< 0.3330
Aroclor 1260	2.707
METALS	
Arsenic	10.7
Barium	141.
Cadmium	8.19
Chromium	62.3
Lead	672.
Mercury	4.19
Selenium	< 0.95
Silver	20.8

WZB

EXHIBIT NO. 3-W

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	S-8 (49788)
ORGANIC PARAMETERS	
TPH (Gasoline Range)	21.7
TPH (Diesel Range)	2740
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.3330
Aroclor 1221	< 0.6660
Aroclor 1232	< 0.3330
Aroclor 1242	< 0.3330
Aroclor 1248	7.193
Aroclor 1254	< 0.3330
Aroclor 1260	3.397
METALS	
Arsenic	11.8
Barium	552.
Cadmium	4.95
Chromium	64.0
Lead	1110
Mercury	7.13
Selenium	< 0.95
Silver	< 0.95

WZB

EXHIBIT NO. 3-X

JOHN C. TOMBARELLO & SONS, INC.
LAWRENCE, MASSACHUSETTS

SOILS ANALYSIS (mg/Kg)

JULY 8, 1998

PARAMETER	S-9 (49789)
ORGANIC PARAMETERS	
TPH (Gasoline Range)	< 5.00
TPH (Diesel Range)	1900
PESTICIDES/PCB'S/HERBICIDES	
Aroclor 1016	< 0.3330
Aroclor 1221	< 0.6660
Aroclor 1232	< 0.3330
Aroclor 1242	< 0.3330
Aroclor 1248	< 0.3330
Aroclor 1254	< 0.3330
Aroclor 1260	< 0.3330
METALS	
Arsenic	4.98
Barium	52.9
Cadmium	< 0.96
Chromium	38.3
Lead	172.
Mercury	1.06
Selenium	< 0.96
Silver	< 0.96

WZB

HEA ANALYTICAL RESULTS
1999

SOIL

ChemServe
ENVIRONMENTAL ANALYSTS

317 Elm Street
Milford NH 03055
Tel (603) 673-5440
Fax (603) 673-0366

May 21, 1999

Mr. Jonathan Higgins
Higgins Environmental Assoc.
19 Elizabeth St.
Amesbury, MA 01913

Job Name	**: 03014-Lawrence**	**Laboratory #**	**: 99040303**
Job #	**: 03014-99**	**Purchase Order #**	**: 03014-99**
Location	**: Massachusetts**	**Control #**	**: 20122,20123,20124**

Dear Mr. Higgins,

Enclosed please find the laboratory results for the above referenced samples which were received by the Chemserve sample custodian, under chain of custody control number 20122, 20123 & 20124 on April 29, 1999. Samples were collected by Jonathan Higgins on April 28, 1999. Any abnormalities to the samples on receipt would be noted on the enclosed chain of custody document. This report is not valid without a completed Chemserve chain of custody with the corresponding control number, attached.

All samples analyzed by Chemserve are subjected to quality standards. These standards are either as stringent or more stringent than those established under 40 CFR Part 136, state certification programs, and corresponding methodologies. Chemserve has a written QA/QC Procedures Manual which outlines these standards, and is available, upon request, for your reference. Unless otherwise stated on the Chain of Custody or within the report, all holding times, preservation techniques, container types, and analytical methods are analogous with those outlined by the U.S. EPA.

I certify that I have reviewed the above referenced analytical data and state forms, and I have found this report within compliance with the procedures outlined in the Chemserve QA/QC Procedures Manual.

Ellen Abrams - QA/QC Administrator

Jay W. Chrystal - President/Laboratory Director

This report contains 58 pages.

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment __Other	
Containers	_x_Satisfactory __ Broken __Leaking	
Preservation	_x_N/A __ pH<2 __pH>2 Comment:	
	_x_N/A __ Samples NOT preserved in Methanol or air-tight container	
	_x_Samples rec'd in Methanol _x_ covering soil __ not covering soil	
	_x_Samples rec'd in air-tight container	
Temperature	__On Ice _x_At 4C ___Other	mL Methanol / g soil 10mL / 21.0g

VPH ANALYTICAL RESULTS

	Lab ID:		99040303-01
	Client ID:		03014-SB5-SOUTH
	Date Collected:		04/28/99
	Date Received:		04/29/99
	Date Analyzed:		05/11/99
	Dilution Factor:		25.0
	%Solid		95.1
Range /Target Analyte	RL	Units	
Unadjusted C5-C8 Aliphatics[1]	1	UG/KG	710
Unadjusted C9-C12 Aliphatics[1]	1	UG/KG	<RL
Methyl-tert-butylether	1	UG/KG	480
Benzene	1	UG/KG	130
Toluene	1	UG/KG	40
m- & p- Xylenes	1	UG/KG	<RL
o-Xylene	1	UG/KG	<RL
Ethylbenzene	1	UG/KG	<RL
Naphthalene	1	UG/KG	1,900
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/KG	62
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/KG	<RL
C9-C10 Aromatic Hydrocarbons[1]	1	UG/KG	<RL
Dibromofluoromethane % Recovery			84%
Toluene-d8 % Recovery			84%
4-Bromofluorobenzene % Recovery			81%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? ___Yes _x_No- Details attached

Sample diluted due to matrix.

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99

Date

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment __Other	
Containers	_x_Satisfactory __ Broken __Leaking	
Preservation	_x_N/A __ pH<2 __pH>2 Comment:	
	_x_N/A __ Samples NOT preserved in Methanol or air-tight container	
	_x_Samples rec'd in Methanol _x_ covering soil __ not covering soil	
	_x_Samples rec'd in air-tight container	
Temperature	__On Ice _x_At 4C ___Other	mL Methanol / g soil 10mL / 25.9g

VPH ANALYTICAL RESULTS

	Lab ID:		99040303-02
	Client ID:		03014-SB5-WEST
	Date Collected:		04/28/99
	Date Received:		04/29/99
	Date Analyzed:		05/11/99
	Dilution Factor:		19.9
	%Solid		97.1
Range /Target Analyte	RL	Units	
Unadjusted C5-C8 Aliphatics[1]	1	UG/KG	87
Unadjusted C9-C12 Aliphatics[1]	1	UG/KG	320
Methyl-tert-butylether	1	UG/KG	<RL
Benzene	1	UG/KG	<RL
Toluene	1	UG/KG	87
m- & p- Xylenes	1	UG/KG	190
o-Xylene	1	UG/KG	110
Ethylbenzene	1	UG/KG	50
Naphthalene	1	UG/KG	<RL
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/KG	<RL
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/KG	<RL
C9-C10 Aromatic Hydrocarbons[1]	1	UG/KG	<RL
Dibromofluoromethane % Recovery			91%
Toluene-d8 % Recovery			96%
4-Bromofluorobenzene % Recovery			88%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

Sample diluted due to matrix.

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/11/99

Date

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment __Other	
Containers	_x_Satisfactory __ Broken __Leaking	
Preservation	_x_N/A __ pH<2 __pH>2 Comment:	
	_x_N/A __ Samples NOT preserved in Methanol or air-tight container	
	_x_Samples rec'd in Methanol _x_ covering soil __ not covering soil	
	_x_Samples rec'd in air-tight container	
Temperature	__On Ice _x_At 4C ___Other	mL Methanol / g soil 10mL / 25.7g

VPH ANALYTICAL RESULTS

	Lab ID:		99040303-03
	Client ID:		03014-SB5-EAST
	Date Collected:		04/28/99
	Date Received:		04/29/99
	Date Analyzed:		05/12/99
	Dilution Factor:		20.7
	%Solid		94.2
Range /Target Analyte	RL	Units	
Unadjusted C5-C8 Aliphatics[1]	1	UG/KG	58
Unadjusted C9-C12 Aliphatics[1]	1	UG/KG	390
Methyl-tert-butylether	1	UG/KG	<RL
Benzene	1	UG/KG	<RL
Toluene	1	UG/KG	58
m- & p- Xylenes	1	UG/KG	210
o-Xylene	1	UG/KG	140
Ethylbenzene	1	UG/KG	44
Naphthalene	1	UG/KG	<RL
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/KG	<RL
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/KG	<RL
C9-C10 Aromatic Hydrocarbons[1]	1	UG/KG	<RL
Dibromofluoromethane % Recovery			84%
Toluene-d8 % Recovery			92%
4-Bromofluorobenzene % Recovery			77%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

Sample diluted due to matrix.

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99

Date

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment __Other	
Containers	_x_Satisfactory __ Broken __Leaking	
Preservation	_x_N/A __ pH<2 __pH>2 Comment:	
	_x_N/A __ Samples NOT preserved in Methanol or air-tight container	
	_x_Samples rec'd in Methanol _x_ covering soil __ not covering soil	
	_x_Samples rec'd in air-tight container	
Temperature	__On Ice _x_At 4C ___Other	mL Methanol / g soil 10mL / 24.1g

VPH ANALYTICAL RESULTS

	Lab ID:		99040303-04
	Client ID:		03014-SB5-NORTH
	Date Collected:		04/28/99
	Date Received:		04/29/99
	Date Analyzed:		05/12/99
	Dilution Factor:		21.4
	%Solid		96.8
Range /Target Analyte	RL	Units	
Unadjusted C5-C8 Aliphatics[1]	1	UG/KG	47
Unadjusted C9-C12 Aliphatics[1]	1	UG/KG	1,800
Methyl-tert-butylether	1	UG/KG	<RL
Benzene	1	UG/KG	<RL
Toluene	1	UG/KG	47
m- & p- Xylenes	1	UG/KG	65
o-Xylene	1	UG/KG	49
Ethylbenzene	1	UG/KG	<RL
Naphthalene	1	UG/KG	<RL
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/KG	<RL
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/KG	1,700
C9-C10 Aromatic Hydrocarbons[1]	1	UG/KG	580
Dibromofluoromethane % Recovery			79%
Toluene-d8 % Recovery			78%
4-Bromofluorobenzene % Recovery			81%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

Sample diluted due to matrix.

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/11/99
Date

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment __Other	
Containers	_x_Satisfactory __ Broken __Leaking	
Preservation	_x_N/A __ pH<2 __pH>2 Comment:	
	_x_N/A __ Samples NOT preserved in Methanol or air-tight container	
	_x_Samples rec'd in Methanol _x_ covering soil __ not covering soil	
	_x_Samples rec'd in air-tight container	
Temperature	__On Ice _x_At 4C ___Other	mL Methanol / g soil 10mL / 20.1g

VPH ANALYTICAL RESULTS

	Lab ID:		99040303-05
	Client ID:		03014-F2
	Date Collected:		04/28/99
	Date Received:		04/29/99
	Date Analyzed:		05/12/99
	Dilution Factor:		28.4
	%Solid		87.7
Range /Target Analyte	**RL**	**Units**	
Unadjusted C5-C8 Aliphatics[1]	1	UG/KG	1,800
Unadjusted C9-C12 Aliphatics[1]	1	UG/KG	4,600
Methyl-tert-butylether	1	UG/KG	340
Benzene	1	UG/KG	81
Toluene	1	UG/KG	850
m- & p- Xylenes	1	UG/KG	1,100
o-Xylene	1	UG/KG	610
Ethylbenzene	1	UG/KG	190
Naphthalene	1	UG/KG	1,900
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/KG	510
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/KG	2,700
C9-C10 Aromatic Hydrocarbons[1]	1	UG/KG	8,100
Dibromofluoromethane % Recovery			91%
Toluene-d8 % Recovery			101%
4-Bromofluorobenzene % Recovery			80%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

Sample diluted due to matrix.

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99
Date

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment __Other	
Containers	_x_Satisfactory __ Broken __Leaking	
Preservation	_x_N/A __ pH<2 __pH>2 Comment:	
	_x_N/A __ Samples NOT preserved in Methanol or air-tight container	
	_x_Samples rec'd in Methanol _x_ covering soil __ not covering soil	
	_x_Samples rec'd in air-tight container	
Temperature	__On Ice _x_At 4C ___Other	mL Methanol / g soil 10mL / 22.5g

VPH ANALYTICAL RESULTS

	Lab ID:		99040303-16
	Client ID:		03014-F7
	Date Collected:		04/28/99
	Date Received:		04/29/99
	Date Analyzed:		05/12/99
	Dilution Factor:		22.7
	%Solid		97.7
Range /Target Analyte	RL	Units	
Unadjusted C5-C8 Aliphatics[1]	1	UG/KG	65
Unadjusted C9-C12 Aliphatics[1]	1	UG/KG	2,500
Methyl-tert-butylether	1	UG/KG	<RL
Benzene	1	UG/KG	<RL
Toluene	1	UG/KG	65
m- & p- Xylenes	1	UG/KG	1,400
o-Xylene	1	UG/KG	770
Ethylbenzene	1	UG/KG	280
Naphthalene	1	UG/KG	3,400
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/KG	<RL
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/KG	<RL
C9-C10 Aromatic Hydrocarbons[1]	1	UG/KG	290
Dibromofluoromethane % Recovery			79%
Toluene-d8 % Recovery			89%
4-Bromofluorobenzene % Recovery			80%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

Sample diluted due to matrix.

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99
Date

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment __Other	
Containers	_x_Satisfactory __ Broken __Leaking	
Preservation	_x_N/A __ pH<2 __pH>2 Comment:	
	_x_N/A __ Samples NOT preserved in Methanol or air-tight container	
	_x_Samples rec'd in Methanol _x_ covering soil __ not covering soil	
	_x_Samples rec'd in air-tight container	
Temperature	__On Ice _x_At 4C ___Other	mL Methanol / g soil 10mL / 19.7g

VPH ANALYTICAL RESULTS

	Lab ID:		99040303-18
	Client ID:		03014-SB6-SS1
	Date Collected:		04/28/99
	Date Received:		04/29/99
	Date Analyzed:		05/12/99
	Dilution Factor:		27.6
	%Solid		91.9
Range /Target Analyte	**RL**	**Units**	
Unadjusted C5-C8 Aliphatics[1]	1	UG/KG	<RL
Unadjusted C9-C12 Aliphatics[1]	1	UG/KG	<RL
Methyl-tert-butylether	1	UG/KG	<RL
Benzene	1	UG/KG	<RL
Toluene	1	UG/KG	<RL
m- & p- Xylenes	1	UG/KG	<RL
o-Xylene	1	UG/KG	<RL
Ethylbenzene	1	UG/KG	<RL
Naphthalene	1	UG/KG	<RL
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/KG	<RL
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/KG	<RL
C9-C10 Aromatic Hydrocarbons[1]	1	UG/KG	<RL
Dibromofluoromethane % Recovery			82%
Toluene-d8 % Recovery			82%
4-Bromofluorobenzene % Recovery			83%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

Sample diluted due to matrix.

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99
Date

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment __Other	
Containers	_x_Satisfactory __ Broken __Leaking	
Preservation	_x_N/A __ pH<2 __pH>2 Comment:	
	_x_N/A __ Samples NOT preserved in Methanol or air-tight container	
	_x_Samples rec'd in Methanol _x_ covering soil __ not covering soil	
	_x_Samples rec'd in air-tight container	
Temperature	__On Ice _x_At 4C ___Other	mL Methanol / g soil 10mL / 19.6g

VPH ANALYTICAL RESULTS

	Lab ID:		99040303-19
	Client ID:		03014-ALL
	Date Collected:		04/28/99
	Date Received:		04/29/99
	Date Analyzed:		05/12/99
	Dilution Factor:		26.4
	%Solid		96.8
Range /Target Analyte	RL	Units	
Unadjusted C5-C8 Aliphatics[1]	1	UG/KG	<RL
Unadjusted C9-C12 Aliphatics[1]	1	UG/KG	<RL
Methyl-tert-butylether	1	UG/KG	<RL
Benzene	1	UG/KG	<RL
Toluene	1	UG/KG	<RL
m- & p- Xylenes	1	UG/KG	<RL
o-Xylene	1	UG/KG	<RL
Ethylbenzene	1	UG/KG	<RL
Naphthalene	1	UG/KG	2,900
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/KG	<RL
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/KG	<RL
C9-C10 Aromatic Hydrocarbons[1]	1	UG/KG	<RL
Dibromofluoromethane % Recovery			87%
Toluene-d8 % Recovery			87%
4-Bromofluorobenzene % Recovery			81%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? ___Yes _x_No- Details attached

Sample diluted due to matrix.

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/24/99
Date

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-01
		Client ID:		03014-SB5-SOUTH
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/10/99
		Dilution Factor:		140
		%Solid		95.1
Range /Target Analyte		**RL**	**Units**	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	120,000
Diesel PAH Analytes	**Naphthalene**	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	15,000
	Acenaphthene	10	UG/KG	2,800
Other Target Analytes	**Acenaphthalene**	10	UG/KG	<RL
	Anthracene	10	UG/KG	6,200
	Benzo(a)Anthracene	10	UG/KG	7,600
	Benzo(a)Pyrene	10	UG/KG	8,900
	Benzo(b)Fluoranthene	10	UG/KG	12,000
	Benzo(g,h,i)Perylene	10	UG/KG	7,600
	Benzo(k)Fluoranthene	10	UG/KG	8,000
	Chrysene	10	UG/KG	11,000
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	18,000
	Fluorene	10	UG/KG	3,700
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	5,900
	Pyrene	10	UG/KG	16,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	<RL
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	770,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				54%
o-Terphenyl % Recovery				30%*
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				38%*
2-Bromonaphthalene % Recovery				46%
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

sample refractionated probable matrix interference,surrogates outside acceptance limits

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99
Date

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-02
		Client ID:		03014-SB5-WEST
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/14/99
		Dilution Factor:		1370
		%Solid		97.1
Range /Target Analyte		**RL**	**Units**	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	72,000
Diesel PAH Analytes	Naphthalene	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	<RL
	Acenaphthene	10	UG/KG	<RL
Other Target Analytes	Acenaphthalene	10	UG/KG	<RL
	Anthracene	10	UG/KG	<RL
	Benzo(a)Anthracene	10	UG/KG	<RL
	Benzo(a)Pyrene	10	UG/KG	<RL
	Benzo(b)Fluoranthene	10	UG/KG	<RL
	Benzo(g,h,i)Perylene	10	UG/KG	<RL
	Benzo(k)Fluoranthene	10	UG/KG	<RL
	Chrysene	10	UG/KG	21,000
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	26,000
	Fluorene	10	UG/KG	<RL
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	<RL
	Pyrene	10	UG/KG	25,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	<RL
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	5,000,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				
o-Terphenyl % Recovery				
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				
2-Bromonaphthalene % Recovery				
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

surrogates diluted below detection

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Crystal/Laboratory Director

5/24/99
Date

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-03
		Client ID:		03014-SB5-EAST
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/11/99
		Dilution Factor:		141
		%Solid		94.2
Range /Target Analyte		**RL**	**Units**	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	710,000
Diesel PAH Analytes	**Naphthalene**	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	5,200
	Acenaphthene	10	UG/KG	<RL
Other Target Analytes	**Acenaphthalene**	10	UG/KG	<RL
	Anthracene	10	UG/KG	1,700
	Benzo(a)Anthracene	10	UG/KG	5,900
	Benzo(a)Pyrene	10	UG/KG	7,000
	Benzo(b)Fluoranthene	10	UG/KG	13,000
	Benzo(g,h,i)Perylene	10	UG/KG	9,500
	Benzo(k)Fluoranthene	10	UG/KG	9,900
	Chrysene	10	UG/KG	9,600
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	12,000
	Fluorene	10	UG/KG	<RL
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	7,100
	Pyrene	10	UG/KG	12,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	<RL
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	2,700,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	620,000
Chloro-octadecane % Recovery				77%
o-Terphenyl % Recovery				238%*
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				142%*
2-Bromonaphthalene % Recovery				74%
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

sample refractionated probable matrix interference,surrogates outside acceptance limits

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99

Date

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-04
		Client ID:		03014-SB5-NORTH
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/10/99
		Dilution Factor:		344
		%Solid		96.8
Range /Target Analyte		RL	Units	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	150,000
Diesel PAH Analytes	Naphthalene	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	13,000
	Acenaphthene	10	UG/KG	<RL
Other Target Analytes	Acenaphthalene	10	UG/KG	<RL
	Anthracene	10	UG/KG	<RL
	Benzo(a)Anthracene	10	UG/KG	10,000
	Benzo(a)Pyrene	10	UG/KG	11,000
	Benzo(b)Fluoranthene	10	UG/KG	15,000
	Benzo(g,h,i)Perylene	10	UG/KG	12,000
	Benzo(k)Fluoranthene	10	UG/KG	11,000
	Chrysene	10	UG/KG	18,000
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	24,000
	Fluorene	10	UG/KG	<RL
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	9,100
	Pyrene	10	UG/KG	23,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	2,000,000
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	6,600,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				
o-Terphenyl % Recovery				
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				
2-Bromonaphthalene % Recovery				
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

surrogates diluted below detection

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

Date 5/11/99

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-05
		Client ID:		03014-F2
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/14/99
		Dilution Factor:		3800
		%Solid		87.7
Range /Target Analyte		**RL**	**Units**	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	<RL
Diesel PAH Analytes	Naphthalene	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	<RL
	Acenaphthene	10	UG/KG	<RL
Other Target Analytes	Acenaphthalene	10	UG/KG	<RL
	Anthracene	10	UG/KG	<RL
	Benzo(a)Anthracene	10	UG/KG	<RL
	Benzo(a)Pyrene	10	UG/KG	<RL
	Benzo(b)Fluoranthene	10	UG/KG	<RL
	Benzo(g,h,i)Perylene	10	UG/KG	<RL
	Benzo(k)Fluoranthene	10	UG/KG	<RL
	Chrysene	10	UG/KG	<RL
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	<RL
	Fluorene	10	UG/KG	<RL
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	<RL
	Pyrene	10	UG/KG	<RL
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	2,400,000
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	23,800,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				
o-Terphenyl % Recovery				
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				
2-Bromonaphthalene % Recovery				
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

surrogates diluted below detection

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99
Date

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-06
		Client ID:		03014-SS8
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/11/99
		Dilution Factor:		139
		%Solid		96.0
Range /Target Analyte		RL	Units	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	99,000
Diesel PAH Analytes	Naphthalene	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	8,500
	Acenaphthene	10	UG/KG	<RL
Other Target Analytes	Acenaphthalene	10	UG/KG	<RL
	Anthracene	10	UG/KG	3,500
	Benzo(a)Anthracene	10	UG/KG	5,000
	Benzo(a)Pyrene	10	UG/KG	9,100
	Benzo(b)Fluoranthene	10	UG/KG	9,300
	Benzo(g,h,i)Perylene	10	UG/KG	13,000
	Benzo(k)Fluoranthene	10	UG/KG	8,100
	Chrysene	10	UG/KG	12,000
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	15,000
	Fluorene	10	UG/KG	1,800
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	<RL
	Pyrene	10	UG/KG	14,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	<RL
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	1,350,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				42%
o-Terphenyl % Recovery				130%
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				86%
2-Bromonaphthalene % Recovery				62%
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? _x_Yes __No- Details attached

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/26/99
Date

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-08
		Client ID:		03014-SS8-WEST
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/11/99
		Dilution Factor:		349
		%Solid		95.4
Range /Target Analyte		**RL**	**Units**	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	470,000
Diesel PAH Analytes	**Naphthalene**	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	32,000
	Acenaphthene	10	UG/KG	<RL
Other Target Analytes	**Acenaphthalene**	10	UG/KG	<RL
	Anthracene	10	UG/KG	14,000
	Benzo(a)Anthracene	10	UG/KG	24,000
	Benzo(a)Pyrene	10	UG/KG	44,000
	Benzo(b)Fluoranthene	10	UG/KG	40,000
	Benzo(g,h,i)Perylene	10	UG/KG	51,000
	Benzo(k)Fluoranthene	10	UG/KG	34,000
	Chrysene	10	UG/KG	51,000
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	68,000
	Fluorene	10	UG/KG	<RL
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	42,000
	Pyrene	10	UG/KG	69,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	1,200,000
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	8,900,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				
o-Terphenyl % Recovery				
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				
2-Bromonaphthalene % Recovery				
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

surrogates diluted below detection

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99

Date

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-15
		Client ID:		03014-SS7-SOUTH
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/11/99
		Dilution Factor:		705.0
		%Solid		94.5
Range /Target Analyte		RL	Units	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	780,000
Diesel PAH Analytes	Naphthalene	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	72,000
	Acenaphthene	10	UG/KG	<RL
Other Target Analytes	Acenaphthalene	10	UG/KG	<RL
	Anthracene	10	UG/KG	35,000
	Benzo(a)Anthracene	10	UG/KG	72,000
	Benzo(a)Pyrene	10	UG/KG	38,000
	Benzo(b)Fluoranthene	10	UG/KG	61,000
	Benzo(g,h,i)Perylene	10	UG/KG	69,000
	Benzo(k)Fluoranthene	10	UG/KG	53,000
	Chrysene	10	UG/KG	84,000
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	120,000
	Fluorene	10	UG/KG	<RL
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	52,000
	Pyrene	10	UG/KG	120,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	1,100,000
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	8,800,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				
o-Terphenyl % Recovery				
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				
2-Bromonaphthalene % Recovery				
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

surrogates diluted below detection

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director — Date 5/21/99

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-16
		Client ID:		03014-F7
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/11/99
		Dilution Factor:		341
		%Solid		97.7
Range /Target Analyte		RL	Units	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	500,000
Diesel PAH Analytes	Naphthalene	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	67,000
	Acenaphthene	10	UG/KG	6,200
Other Target Analytes	Acenaphthalene	10	UG/KG	<RL
	Anthracene	10	UG/KG	19,000
	Benzo(a)Anthracene	10	UG/KG	25,000
	Benzo(a)Pyrene	10	UG/KG	26,000
	Benzo(b)Fluoranthene	10	UG/KG	32,000
	Benzo(g,h,i)Perylene	10	UG/KG	46,000
	Benzo(k)Fluoranthene	10	UG/KG	22,000
	Chrysene	10	UG/KG	51,000
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	87,000
	Fluorene	10	UG/KG	9,800
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	39,000
	Pyrene	10	UG/KG	71,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	550,000
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	5,500,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				
o-Terphenyl % Recovery				
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				
2-Bromonaphthalene % Recovery				
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

surrogates diluted below detection

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/21/99
Date

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-17
		Client ID:		03014-SB2-SS1
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/11/99
		Dilution Factor:		345
		%Solid		96.5
Range /Target Analyte		RL	Units	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	39,000
Diesel PAH Analytes	Naphthalene	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	6,000
	Acenaphthene	10	UG/KG	<RL
Other Target Analytes	Acenaphthalene	10	UG/KG	<RL
	Anthracene	10	UG/KG	<RL
	Benzo(a)Anthracene	10	UG/KG	<RL
	Benzo(a)Pyrene	10	UG/KG	<RL
	Benzo(b)Fluoranthene	10	UG/KG	4,700
	Benzo(g,h,i)Perylene	10	UG/KG	<RL
	Benzo(k)Fluoranthene	10	UG/KG	5,100
	Chrysene	10	UG/KG	7,300
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	8,200
	Fluorene	10	UG/KG	<RL
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	<RL
	Pyrene	10	UG/KG	7,400
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	<RL
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	1,900,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				
o-Terphenyl % Recovery				
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				
2-Bromonaphthalene % Recovery				
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

surrogates diluted below detection

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director — Date 5/12/99

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-18
		Client ID:		03014-SB6-SS1
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/11/99
		Dilution Factor:		362
		%Solid		91.9
Range /Target Analyte		RL	Units	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	450,000
Diesel PAH Analytes	Naphthalene	10	UG/KG	4,600
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	62,000
	Acenaphthene	10	UG/KG	7,800
Other Target Analytes	Acenaphthalene	10	UG/KG	<RL
	Anthracene	10	UG/KG	15,000
	Benzo(a)Anthracene	10	UG/KG	24,000
	Benzo(a)Pyrene	10	UG/KG	26,000
	Benzo(b)Fluoranthene	10	UG/KG	32,000
	Benzo(g,h,i)Perylene	10	UG/KG	51,000
	Benzo(k)Fluoranthene	10	UG/KG	24,000
	Chrysene	10	UG/KG	45,000
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	61,000
	Fluorene	10	UG/KG	11,000
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	37,000
	Pyrene	10	UG/KG	50,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	<RL
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	1,300,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				
o-Terphenyl % Recovery				
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				
2-Bromonaphthalene % Recovery				
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

surrogates diluted below detection

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/11/99
Date

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	___Aq. _x_Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	_x_N/A __ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: Soil: Sonication

EPH ANALYTICAL RESULTS

		Lab ID:		99040303-19
		Client ID:		03014-ALL
		Date Collected:		04/28/99
		Date Received:		04/29/99
		Date Extracted:		05/05/99
		Date Analyzed:		05/12/99
		Dilution Factor:		344
		%Solid		96.8
Range /Target Analyte		RL	Units	
Unadjusted C11-C22 Aromatics[1]		10	UG/KG	100,000
Diesel PAH Analytes	Naphthalene	10	UG/KG	<RL
	2-Methylnaphthalene	10	UG/KG	<RL
	Phenanthrene	10	UG/KG	13,000
	Acenaphthene	10	UG/KG	<RL
Other Target Analytes	Acenaphthalene	10	UG/KG	<RL
	Anthracene	10	UG/KG	3,700
	Benzo(a)Anthracene	10	UG/KG	7,700
	Benzo(a)Pyrene	10	UG/KG	10,000
	Benzo(b)Fluoranthene	10	UG/KG	9,600
	Benzo(g,h,i)Perylene	10	UG/KG	<RL
	Benzo(k)Fluoranthene	10	UG/KG	9,300
	Chrysene	10	UG/KG	15,000
	Dibenzo(a,h)Anthracene	10	UG/KG	<RL
	Fluoranthene	10	UG/KG	18,000
	Fluorene	10	UG/KG	<RL
	Ideno(1,2,3-cd)Pyrene	10	UG/KG	<RL
	Pyrene	10	UG/KG	16,000
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/KG	<RL
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/KG	700,000
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/KG	<RL
Chloro-octadecane % Recovery				
o-Terphenyl % Recovery				
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				
2-Bromonaphthalene % Recovery				
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? __Yes _x_No- Details attached

surrogates diluted below detection

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached

sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

5/24/99
Date

ChemServe

Higgins Environmental Associates

Project Name: 03014-Lawrence
Project #: 03014-99
Collection Site: Massachusetts

Group#: 99040303
Chain of Custody ID: 20123,20122,20124
DATE SAMPLED: 4/28/1999

METHOD #	ANALYTE	RESULTS	UNIT OF MEASURE	DATE COMPLETED	DETECTION LIMIT (PQL)	ANALYST
SAMPLE#: 99040303-01						
Higgins Environmental Associates ID: 03014-SB5-South						
6010A	Cadmium	0.59	mg/Kg	5/ 3/1999	0.50 mg/Kg	PF
6010A	Lead	100.	mg/Kg	5/ 3/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-02						
Higgins Environmental Associates ID: 03014-SB5-West						
6010A	Cadmium	5.4	mg/Kg	5/ 3/1999	0.50 mg/Kg	PF
6010A	Lead	670.	mg/Kg	5/ 3/1999	25. mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-03						
Higgins Environmental Associates ID: 03014-SB5-East						
6010A	Cadmium	5.45	mg/Kg	5/ 3/1999	0.50 mg/Kg	PF
6010A	Lead	980.	mg/Kg	5/ 3/1999	25. mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-04						
Higgins Environmental Associates ID: 03014-SB5-North						
6010A	Cadmium	6.6	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	550.	mg/Kg	5/10/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-05						
Higgins Environmental Associates ID: 03014-F2						
6010A	Cadmium	6.4	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	610.	mg/Kg	5/10/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR

ChemServe

Higgins Environmental Associates

Project Name: 03014-Lawrence
Project #: 03014-99
Collection Site: Massachusetts

Group#: 99040303
Chain of Custody ID: 20123,20122,20124
DATE SAMPLED: 4/28/1999

METHOD #	ANALYTE	RESULTS	UNIT OF MEASURE	DATE COMPLETED	DETECTION LIMIT (PQL)	ANALYST
SAMPLE#: 99040303-06						
Higgins Environmental Associates ID: 03014-SS8						
6010A	Cadmium	2.72	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	270.	mg/Kg	5/10/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-07						
Higgins Environmental Associates ID: 03014-SS8-North						
6010A	Cadmium	4.58	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	500.	mg/Kg	5/10/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-08						
Higgins Environmental Associates ID: 03014-SS8-West						
6010A	Cadmium	2.98	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	330.	mg/Kg	5/10/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-09						
Higgins Environmental Associates ID: 03014-SS8-East						
6010A	Cadmium	3.36	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	490.	mg/Kg	5/10/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-10						
Higgins Environmental Associates ID: 03014-SS8-South						
6010A	Cadmium	3.42	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	310.	mg/Kg	5/10/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR

ChemServe

Higgins Environmental Associates

Project Name: 03014-Lawrence
Project #: 03014-99
Collection Site: Massachusetts

Group#: 99040303
Chain of Custody ID: 20123,20122,20124
DATE SAMPLED: 4/28/1999

METHOD #	ANALYTE	RESULTS	UNIT OF MEASURE	DATE COMPLETED	DETECTION LIMIT (PQL)	ANALYST
SAMPLE#: 99040303-16						
Higgins Environmental Associates ID: 03014-F7						
6010A	Cadmium	4.58	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	770.	mg/Kg	5/10/1999	25. mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-17						
Higgins Environmental Associates ID: 03014-SB2-SS1						
6010A	Cadmium	3.24	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	210.	mg/Kg	5/10/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-18						
Higgins Environmental Associates ID: 03014-SB6-SS1						
6010A	Cadmium	8.21	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	790.	mg/Kg	5/10/1999	25. mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR
SAMPLE#: 99040303-19						
Higgins Environmental Associates ID: 03014-All						
6010A	Cadmium	4.57	mg/Kg	5/10/1999	0.50 mg/Kg	PF
6010A	Lead	160.	mg/Kg	5/10/1999	2.5 mg/Kg	PF
SW 3051	Digestion	N/A		4/30/1999	N/A	DR

ChemServe

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8021B
ANALYZED VIA EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-01

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB5-SOUTH

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 95.1

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 25.0
CHLOROMETHANE	BDL	1
BROMOMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	1
METHYLENE CHLORIDE	BDL	1
TRICHLOROFLUOROMETHANE	200	1
1,1-DICHLOROETHENE	BDL	1
1,1-DICHLOROETHANE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
CHLOROFORM	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
BROMODICHLOROMETHANE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRICHLOROETHENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
1,1,2-TRICHLOROETHANE	BDL	1
BROMOFORM	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
CHLOROBENZENE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1

NOTE: DILUTION PERFORMED DUE TO SAMPLE MATRIX

BDL = BELOW DETECTION LIMIT

ANALYZED BY: CP

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-01

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB5-SOUTH

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 95.1

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,580
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	BDL	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8021B
ANALYZED VIA EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-02

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB5-WEST

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 97.1

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 19.9
CHLOROMETHANE	BDL	1
BROMOMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	1
METHYLENE CHLORIDE	BDL	1
TRICHLOROFLUOROMETHANE	720	1
1,1-DICHLOROETHENE	BDL	1
1,1-DICHLOROETHANE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
CHLOROFORM	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
BROMODICHLOROMETHANE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRICHLOROETHENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
1,1,2-TRICHLOROETHANE	BDL	1
BROMOFORM	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	79	1
CHLOROBENZENE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1

NOTE: DILUTION PERFORMED DUE TO SAMPLE MATRIX

BDL = BELOW DETECTION LIMIT

ANALYZED BY: CP

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-02

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB5-WEST

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 97.1

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,030
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	2,300	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8021B
ANALYZED VIA EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-03

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB5-EAST

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

MATRIX: SOLID

% TOTAL SOLIDS: 94.2

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 20.7
CHLOROMETHANE	BDL	1
BROMOMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	1
METHYLENE CHLORIDE	BDL	1
TRICHLOROFLUOROMETHANE	690	1
1,1-DICHLOROETHENE	BDL	1
1,1-DICHLOROETHANE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
CHLOROFORM	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
BROMODICHLOROMETHANE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRICHLOROETHENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
1,1,2-TRICHLOROETHANE	BDL	1
BROMOFORM	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
CHLOROBENZENE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1

NOTE: DILUTION PERFORMED DUE TO SAMPLE MATRIX

BDL=BELOW DETECTION LIMIT

ANALYZED BY: CP

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-03

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB5-EAST

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 94.2

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,060
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	2,000	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8021B
ANALYZED VIA EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-04

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB5-NORTH

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

MATRIX: SOLID

% TOTAL SOLIDS: 96.8

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 21.4
CHLOROMETHANE	BDL	1
BROMOMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	1
METHYLENE CHLORIDE	BDL	1
TRICHLOROFLUOROMETHANE	1,000	1
1,1-DICHLOROETHENE	BDL	1
1,1-DICHLOROETHANE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
CHLOROFORM	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
BROMODICHLOROMETHANE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRICHLOROETHENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
1,1,2-TRICHLOROETHANE	BDL	1
BROMOFORM	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	220	1
CHLOROBENZENE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1

NOTE: DILUTION PERFORMED DUE TO SAMPLE MATRIX

BDL=BELOW DETECTION LIMIT

ANALYZED BY: CP

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-04

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB5-NORTH

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 96.8

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,030
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	2,100	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8021B
ANALYZED VIA EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-05

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-F2

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

MATRIX: SOLID

% TOTAL SOLIDS: 87.7

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 28.4
CHLOROMETHANE	BDL	1
BROMOMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	1
METHYLENE CHLORIDE	BDL	1
TRICHLOROFLUOROMETHANE	2,600	1
1,1-DICHLOROETHENE	BDL	1
1,1-DICHLOROETHANE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
CHLOROFORM	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
BROMODICHLOROMETHANE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRICHLOROETHENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
1,1,2-TRICHLOROETHANE	BDL	1
BROMOFORM	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
CHLOROBENZENE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1

NOTE: DILUTION PERFORMED DUE TO SAMPLE MATRIX

BDL = BELOW DETECTION LIMIT

ANALYZED BY: CP

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-05

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-F2

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/13/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 87.7

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 5,700
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	6,100	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-06

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS8

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 96.0

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,040
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	950	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL=BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-07

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS8-NORTH

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 96.6

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,040
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	3,000	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-08

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS8-WEST

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 95.4

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,050
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	2,300	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL=BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-09

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS8-EAST

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 98.4

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,020
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	2,700	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL=BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-10

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS8-SOUTH

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 97.5

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,030
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	3,400	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-11

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS7

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 98.2

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,020
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	BDL	0.1
AROCLOR 1260	3,200	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-12

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS7-EAST

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 92.9

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,080
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	BDL	0.1
AROCLOR 1260	3,500	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL=BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-13

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS7-NORTH

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 98.9

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,010
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	BDL	0.1
AROCLOR 1260	2,600	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL=BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-14

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS7-WEST

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/13/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 97.5

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,030
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	BDL	0.1
AROCLOR 1260	2,900	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL=BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-15

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SS7-SOUTH

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/13/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 94.5

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,060
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	BDL	0.1
AROCLOR 1260	3,200	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL=BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8021B
ANALYZED VIA EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-16

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-F7

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

MATRIX: SOLID

% TOTAL SOLIDS: 97.7

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 22.7
CHLOROMETHANE	BDL	1
BROMOMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	1
METHYLENE CHLORIDE	BDL	1
TRICHLOROFLUOROMETHANE	2,700	1
1,1-DICHLOROETHENE	BDL	1
1,1-DICHLOROETHANE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
CHLOROFORM	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
BROMODICHLOROMETHANE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRICHLOROETHENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
1,1,2-TRICHLOROETHANE	BDL	1
BROMOFORM	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
CHLOROBENZENE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1

NOTE: DILUTION PERFORMED DUE TO SAMPLE MATRIX

BDL=BELOW DETECTION LIMIT

ANALYZED BY: CP

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-16

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-F7

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/13/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 97.7

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,020
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	3,000	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL=BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-17

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB2-SS1

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/13/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 96.5

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,040
AROCLOR 1016/1242	2,000	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	BDL	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL=BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8021B
ANALYZED VIA EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-18

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB6-SS1

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

MATRIX: SOLID

% TOTAL SOLIDS: 91.9

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 27.6
CHLOROMETHANE	BDL	1
BROMOMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	1
METHYLENE CHLORIDE	BDL	1
TRICHLOROFLUOROMETHANE	470	1
1,1-DICHLOROETHENE	BDL	1
1,1-DICHLOROETHANE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
CHLOROFORM	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1,1-TRICHLOROETHANE	250	1
CARBON TETRACHLORIDE	BDL	1
BROMODICHLOROMETHANE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRICHLOROETHENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
1,1,2-TRICHLOROETHANE	BDL	1
BROMOFORM	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
CHLOROBENZENE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1

NOTE: DILUTION PERFORMED DUE TO SAMPLE MATRIX

BDL = BELOW DETECTION LIMIT

ANALYZED BY: CP

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-18

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-SB6-SS1

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/13/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 91.9

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 54,500
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	BDL	0.1
AROCLOR 1260	57,000	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

ChemServe

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8021B
ANALYZED VIA EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-19

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-ALL

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/12/99

MATRIX: SOLID

% TOTAL SOLIDS: 96.8

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 26.4
CHLOROMETHANE	BDL	1
BROMOMETHANE	BDL	1
VINYL CHLORIDE	BDL	1
CHLOROETHANE	BDL	1
METHYLENE CHLORIDE	BDL	1
TRICHLOROFLUOROMETHANE	110	1
1,1-DICHLOROETHENE	BDL	1
1,1-DICHLOROETHANE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
CHLOROFORM	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
BROMODICHLOROMETHANE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRICHLOROETHENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
1,1,2-TRICHLOROETHANE	BDL	1
BROMOFORM	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
CHLOROBENZENE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1

NOTE: DILUTION PERFORMED DUE TO SAMPLE MATRIX

BDL = BELOW DETECTION LIMIT

ANALYZED BY: CP

ChemServe

PCB
EPA METHOD 8082

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303-19

SAMPLE LOCATION: MASSACHUSETTS

JOB#: 03014-99

SAMPLE IDENTITY: 03014-ALL

CONTROL#: 20122,20123,20124

DATE SAMPLED: 04/28/99

DATE REC'D: 04/29/99

DATE ANALYZED: 05/13/99

DATE EXTRACTED: 05/11/99

MATRIX: SOLID

% TOTAL SOLIDS: 96.8

COMPOUND	CONCENTRATION BASED ON DRY WEIGHT (UG/KG)	DETECTION LIMIT MULTIPLIER: PQL BASED ON DRY WEIGHT (UG/KG) X 1,030
AROCLOR 1016/1242	BDL	0.1
AROCLOR 1221	BDL	0.2
AROCLOR 1232	BDL	0.1
AROCLOR 1248	BDL	0.1
AROCLOR 1254	BDL	0.1
AROCLOR 1260	BDL	0.1

NOTE: NON-TARGET COMPOUNDS PRESENT

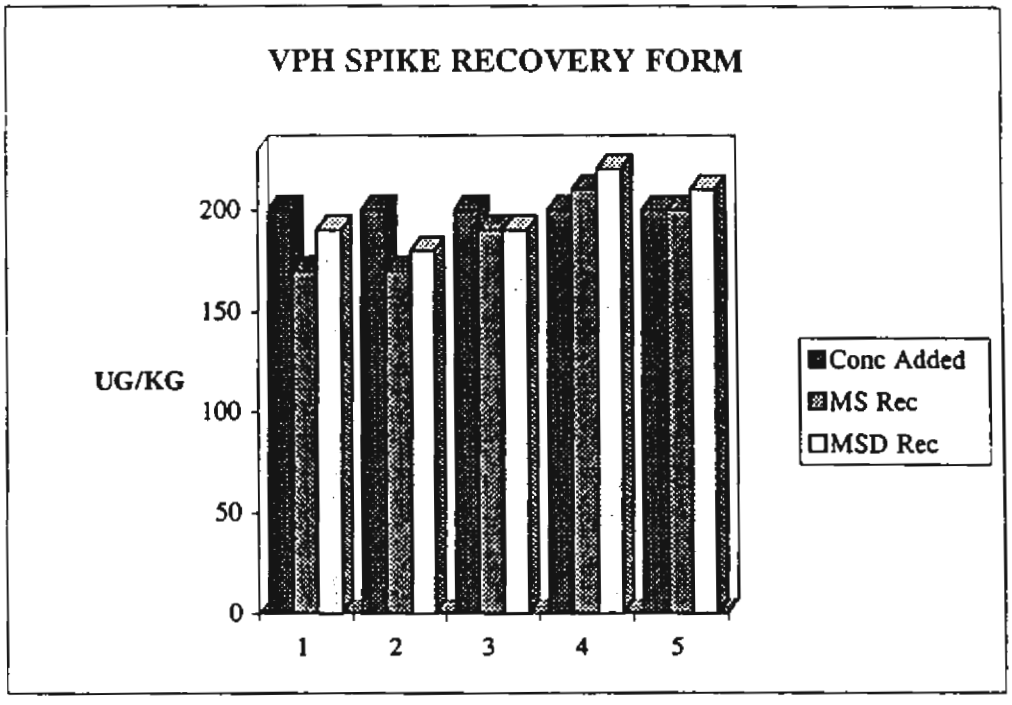
BDL = BELOW DETECTION LIMIT

ANALYZED BY: WN

MADEP VPH SPIKE DATA

Lab ID:	99040303
Date Analyzed:	05/11/99
Sample Identity:	CONTROL SPIKE 05/11/99

Target Spiking Compounds	Conc Added (UG/KG)	Amt Rec (UG/KG)	Dup Amt Rec (UG/KG)	%Rec	Dup %Rec	%Diff
Pentane	200	170	190	85%	95%	10%
2-Methylpentane	200	170	180	85%	90%	5%
Nonane	200	190	190	95%	95%	0%
Benzene	200	210	220	105%	110%	5%
Toluene	200	200	210	100%	105%	5%

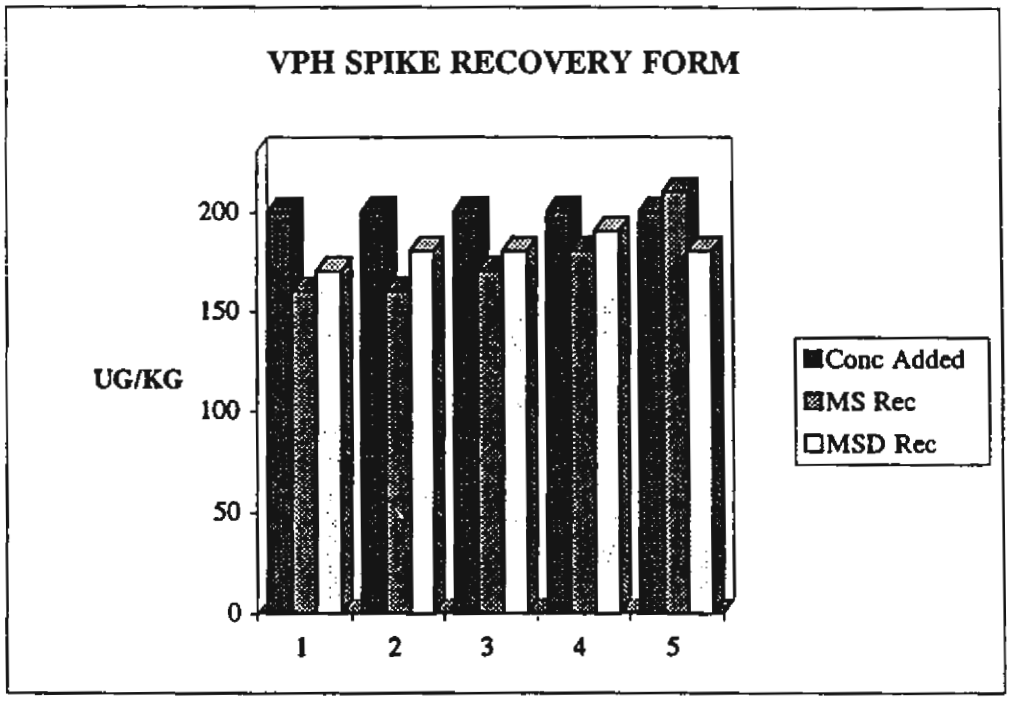


Spike Acceptance Range
65-135%

MADEP VPH SPIKE DATA

ab ID:	99040303
ate Analyzed:	05/12/99
ample Identity:	CONTROL SPIKE 05/12/99

arget Spiking Compounds	Conc Added (UG/KG)	Amt Rec (UG/KG)	Dup Amt Rec (UG/KG)	%Rec	Dup %Rec	%Diff
Pentane	200	160	170	80%	85%	5%
-Methylpentane	200	160	180	80%	90%	10%
.onane	200	170	180	85%	90%	5%
Benzene	200	180	190	90%	95%	5%
oluene	200	210	180	105%	90%	15%



Spike Acceptance Range
65-135%

ChemServe

VOA SPIKE RECOVERY FORM
EPA METHOD 8021B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303

SAMPLE LOCATION: MASSACHUSETTS

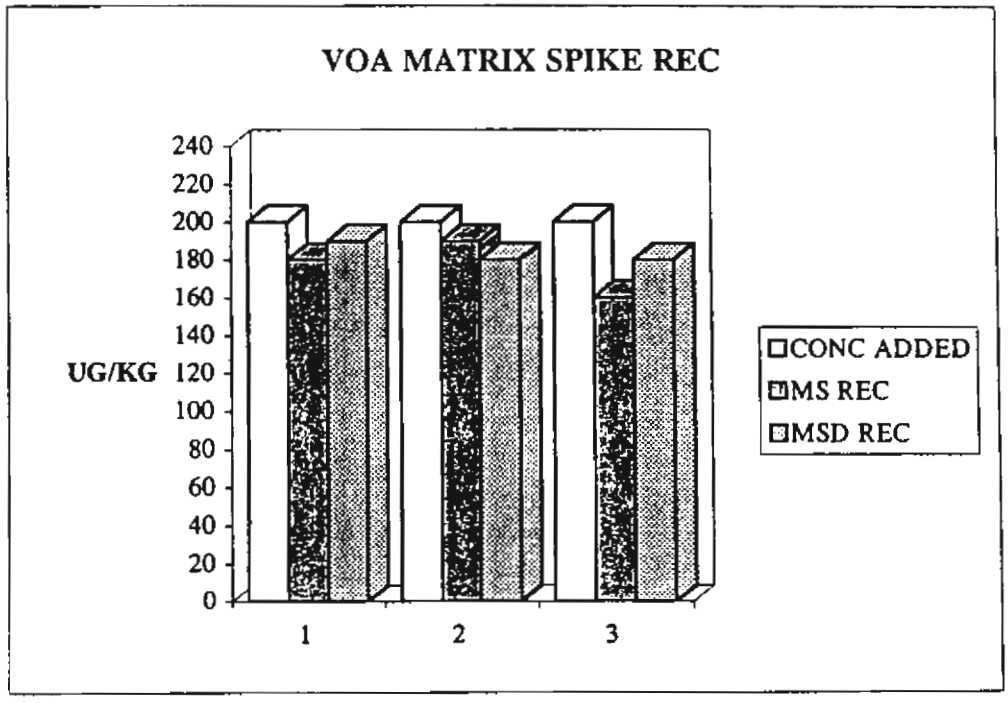
JOB#: 03014-99

SAMPLE IDENTITY: CONTROL SPIKES 05/12/99

CONTROL#: 20122,20123,20124

DATE ANALYZED: 05/12/99

COMPOUND	CONC ADDED (UG/KG)	AMT REC (UG/KG)	DUP AMT REC (UG/KG)	%REC	DUP % REC	%DIFF
1,1-DICHLOROETHENE	200	180	190	90%	95%	5%
TRICHLOROETHENE	200	190	180	95%	90%	5%
CHLOROBENZENE	200	160	180	80%	90%	10%



SPIKE RECOVERY LIMITS
65-135%

ChemServe

VOA SPIKE RECOVERY FORM
EPA METHOD 8021B

CUSTOMER: HIGGINS ENVIRONMENTAL

LAB#: 99040303

SAMPLE LOCATION: MASSACHUSETTS

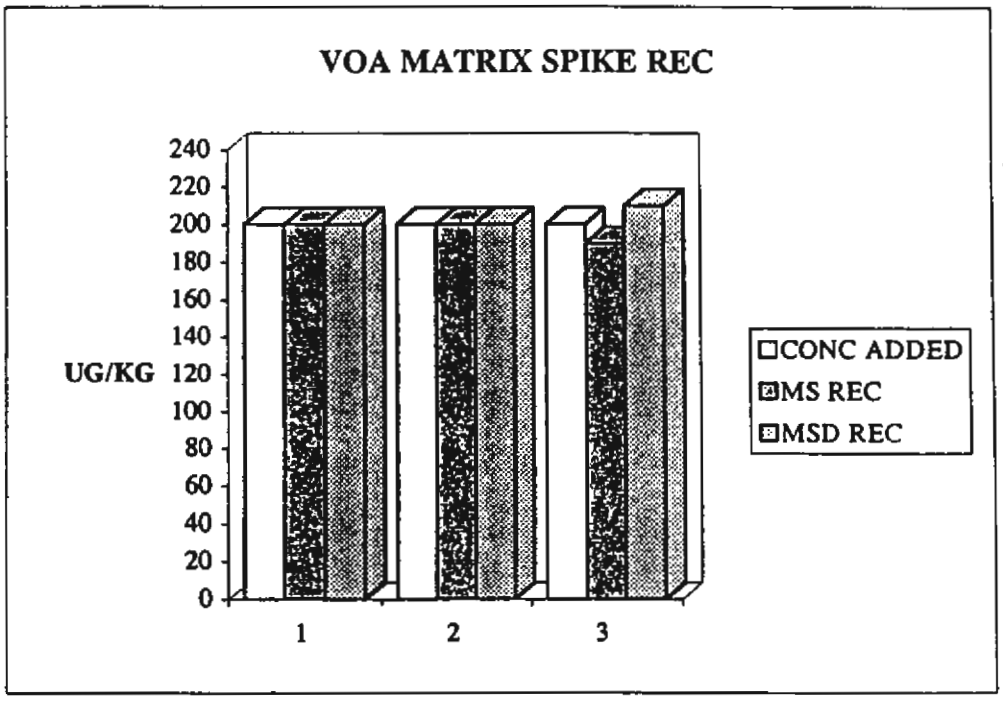
JOB#: 03014-99

SAMPLE IDENTITY: CONTROL SPIKES 05/11/99

CONTROL#: 20122,20123,20124

DATE ANALYZED: 05/11/99

COMPOUND	CONC ADDED (UG/KG)	AMT REC (UG/KG)	DUP AMT REC (UG/KG)	%REC	DUP % REC	%DIFF
1,1-DICHLOROETHENE	200	200	200	100%	100%	0%
TRICHLOROETHENE	200	200	200	100%	100%	0%
CHLOROBENZENE	200	190	210	95%	105%	10%



SPIKE RECOVERY LIMITS
65-135%

For Custody No. 26122

Multiple COC's (Yes) No

1 of 3

ChemServe ENVIRONMENTAL ANALYSTS

317 Elm Street Milford, NH 03055
(603) 673-5440/ Fax (603) 673-0366

CHAIN OF CUSTODY

A CUSTOMER INFORMATION

CUSTOMER: HEA

ADDRESS: 19 Elizabeth St.

CITY/STATE/ZIP: Amesbury MA 01913

TELEPHONE: 978 834-9000

REPORT TO: Jon Higgins

P.O NUMBER: 03014-99

D PROJECT INFORMATION

JOB NAME: 03014-[illegible]

JOB NUMBER: 03014-99

LOCATION: Massachusetts

TELEPHONE: 978-834-9000

CONTACT: Jon Higgins

QUOTE NUMBER: 03014-99

C SAMPLE INFORMATION

TURNAROUND TIME: (CIRCLE ONE:)

(STANDARD) RUSH

RUSH T.A.T. _____ (CHECK w/LAB)

AMBER GLASS (AG) / GLASS (G) / PLASTIC (P)

STATION # (I)	SAMPLE IDENTIFICATION & LOCATION (E)	COLLECTED DATE (F)	COLLECTED TIME (G)	SAMPLE TYPE GRAB (H)	SAMPLE TYPE COMP (H)	MATRIX (I) SOLID (S) LIQUID (L) COMBINED (C) HAZARD (H)	# OF CONTAINERS (J)	CONTAINER AND PRESERVATIVE (K) 4oz (G)	40ml (A)	ANALYSIS (L)
1	03014-SB5-South	4/28/99	1330	X		S	2	1	2	(A) PCBs 8082 (D) TPH (B) Pb, Cd 6010 (E) VOC 8021 (C) VPH
2	03014-SB5-West	"	1340	X		S	3	1	2	(A)(B)(C)(D)(E)
3	03014-SB5-East	"	1400	X		S	3	1	2	(A)(B)(C)(D)(E)
4	03014-SB5-North	"	1415	X		S	3	1	2	(A)(B)(C)(D)(E)
5	03014-F2	"	1440	X		S	3	1	2	(A)(B)(C)(D)(E)
6	03014-SS8	"	1500	X		S	1	1		(A)(B)(D)
7	03014-SS8-North	"	1515	X		S	1	1		(E)(B)
8	03014-SS8-West	"	1525	X		S	1	1		(A)(B)(D)

All VOC 8021B are for Halogenateds

M CUSTODY

SAMPLER: (print name) Jonathan B. Higgins

SIGNATURE:

	DATE	MILITARY TIME
RELINQUISHED:	4/28/99	1740
RECEIVED:	4/29/99	1200
RELINQUISHED:	4/29/99	1300
RECEIVED FOR LAB:	4/29/99	1511

SAMPLE CHECK LIST:

RECEIVED WITHIN HOLD TIME (YES) OR NO

RECEIVED IN GOOD CONDITION (YES) OR NO

TEMP BLANK _____ °C

SHIPPED OR HAND DELIVERED

SAMPLES WERE PROPERLY PRESERVED YES OR NO

SAMPLES WERE FILTERED IN FIELD LAB (N/A)

IF NO EXPLAIN:

4/29/99 5/13

FIELD READING(S):

Chain of Custody No: 20123

Multiple COC's (Yes) No

2 of 3

ChemServe
ENVIRONMENTAL ANALYSES

317 Elm Street Milford, NH 03055
(603) 673-5440/ Fax (603) 673-0366

CHAIN OF CUSTODY

A CUSTOMER INFORMATION

CUSTOMER: HEA
ADDRESS: 19 Elizabeth St.
CITY/STATE/ZIP: Amesbury MA 01913
TELEPHONE: 978 834-9000
REPORT TO: Jonathan Higgins
P.O NUMBER: 03014-99

B PROJECT INFORMATION

JOB NAME: 03014-Lawrence
JOB NUMBER: 03014-99
LOCATION: Massachusetts
TELEPHONE: 978-834-9000
CONTACT: Jonathan Higgins
QUOTE NUMBER: 03014-99

C SAMPLE INFORMATION

TURNAROUND TIME: (CIRCLE ONE:)
(STANDARD) RUSH
RUSH T.A.T. _____ (CHECK w/LAB)
AMBER GLASS (AG) / GLASS (G) / PLASTIC (P)

All VOC 8021B are for Halogenated

STATION # D	SAMPLE IDENTIFICATION & LOCATION E	COLLECTED F DATE	COLLECTED G TIME	SAMPLE TYPE H GRAB	SAMPLE TYPE H COMP	I MATRIX SOLID (S) LIQUID (L) COMBINED (C) HAZARD (H)	J # OF CONTAINERS	K CONTAINER AND PRESERVATIVE 8021 (G) (U) HCl 8260 (G) (U)										L ANALYSIS
9	03014-SS8-East	4/28/99	1530	X		S	1	1										(A) PCBs 8082 (B) Pb,Cd 6010
10	03014-SS8-South	11	1535	X		S	1	1										(A) (B)
11	03014-SS7	11	1600	X		S	1	1										(A) (B)
12	03014-SS7-East	11	1605	X		S	1	1										(A) (B)
13	03014-SS7-North	11	1610	X		S	1	1										(A) (B)
14	03014-SS7-West	11	1615	X		S	1	1										(A) (B)
15	03014-SS7-South	11	1620	X		S	1	1										(A) (B) (D) EPH
16	03014-F7	11	1630	X		S	2	1	2									(A) (B) (D) (E) VOC 8021B (C) VPH

M CUSTODY

SAMPLER: (print name) Jonathan B. Higgins
SIGNATURE:

	DATE	MILITARY TIME
RELINQUISHED:	4/28/99	1800
RECEIVED:	4/29/99	12:00
RELINQUISHED:	4/29/99	15:11
RECEIVED FOR LAB:		

SAMPLE CHECK LIST:

RECEIVED WITHIN HOLD TIME (YES) OR NO
RECEIVED IN GOOD CONDITION (YES) OR NO
TEMP BLANK _____ °C
SHIPPED OR HAND DELIVERED
SAMPLES WERE PROPERLY PRESERVED YES OR NO
SAMPLES WERE FILTERED IN FIELD LAB (N/A)
IF NO EXPLAIN:

990103B3

5/13

FIELD READING(S):

5/13

Chain of Custody No. 2014

Multiple COC's (Yes) No

2 of 3

ChemServe ENVIRONMENTAL ANALYSTS

317 Elm Street Milford, NH 03055
(603) 673-5440/ Fax (603) 673-0366

CHAIN OF CUSTODY

A CUSTOMER INFORMATION

CUSTOMER: H+A

ADDRESS: 191 Elizabeth St.

CITY/STATE/ZIP: Amesbury MA 01913

TELEPHONE: 978 834-4000

REPORT TO: Tom Higgins

P.O NUMBER: 03014-99

B PROJECT INFORMATION

JOB NAME: 03014- Lawrence

JOB NUMBER: 03014-99

LOCATION: Massachusetts

TELEPHONE: 978-834-4000

CONTACT: Tom Higgins

QUOTE NUMBER: 03014-99

C SAMPLE INFORMATION

TURNAROUND TIME: (CIRCLE ONE:)

(STANDARD) RUSH

RUSH T.A.T. _____ (CHECK w/LAB)

AMBER GLASS (AG) / GLASS (G) / PLASTIC (P)

STATION # (D)	SAMPLE IDENTIFICATION & LOCATION (E)	COLLECTED (F) DATE	COLLECTED (G) TIME	SAMPLE TYPE GRAB (H)	SAMPLE TYPE COMP (H)	MATRIX (I) SOLID (S) LIQUID (L) COMBINED (C) HAZARD (H)	# OF CONTAINERS (J)	CONTAINER AND PRESERVATIVE (K) 40z (G)	40z (G)											ANALYSIS (L)
																				All VOC 8021B are for Halogenated
17	03014-SB2-SS1	4/28/14	1045	X		S	1	1												(A) TCLB 8021 (D) EPH (B) Pb, Cd 6010
18	03014-SB6-SS1	4/28/14	1650	X		S	3	1	2											(A)(B)(D) (C) VPH (E) VOC 8021B
19	03014-A11	4/28/14	1700	X		S	3	1	2											(A)(B)(C)(D)(E)

M CUSTODY

		DATE	MILITARY TIME
SAMPLER: (print name)	Jonathan B. Higgins		
SIGNATURE:		4/28/14	1820
RELINQUISHED:		DATE	TIME
RECEIVED:	Hector M. Pacheco	4/29/14	12:00
RELINQUISHED:	Hector M. Pacheco	4/29/14	15:00
RECEIVED FOR LAB:		DATE	TIME

SAMPLE CHECK LIST:

RECEIVED WITHIN HOLD TIME (YES) OR NO

RECEIVED IN GOOD CONDITION (YES) OR NO

TEMP BLANK _____ °C

SHIPPED OR (HAND DELIVERED)

SAMPLES WERE PROPERLY PRESERVED YES OR NO (N/A)

SAMPLES WERE FILTERED IN FIELD LAB N/A

IF NO EXPLAIN:

04/30/2014 17:13

FIELD READING(S):

A

The Commonwealth of Massachusetts

Department of Environmental Protection

Division of Environmental Analysis
Senator William X. Wall Experiment Station

certifies

M-NH023 Chemserve
317 Elm Street
Milford, NH 03055

Laboratory Director: Jay W. Crystal

for the Chemical Analysis of Potable and Non-Potable Water

pursuant to 310 CMR 42.00

This certificate supersedes all previous Massachusetts certificates issued to this laboratory. The laboratory is regulated by and shall be responsible for being in compliance with Massachusetts regulations at 310 CMR 42.00.

This certificate is valid only when accompanied by the latest dated Certified Parameter List as issued by the Massachusetts D.E.P.

Certification is no guarantee of the validity of the data. This certification is subject to unannounced laboratory inspections.

Director, Division of Environmental Analysis

Issued: 07/01/98

Expires: 06/30/99

The Commonwealth of Massachusetts

Department of Environmental Protection

Division of Environmental Analysis
Senator William X. Wall Experiment Station

certifies

M-NH023 Chemserve
317 Elm Street
Milford, NH 03055

Laboratory Director: Jay W. Crystal

for the Microbiological Analysis of Water

pursuant to 310 CMR 42.00

This certificate supersedes all previous Massachusetts certificates issued to this laboratory. The laboratory is regulated by and shall be responsible for being in compliance with Massachusetts regulations at 310 CMR 42.00.

This certificate is valid only when accompanied by the latest dated Certified Parameter List as issued by the Massachusetts D.E.P.

Certification is no guarantee of the validity of the data. This certification is subject to unannounced laboratory inspections.

Director, Division of Environmental Analysis

Issued: 07/01/98

Expires: 06/30/99

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List

EFFECTIVE DATE: 07/01/98

EXPIRATION DATE: 06/30/99

M-NH023 Chemserve
Milford, NH

NON-POTABLE WATER

201 Aluminum
202 Antimony
203 Arsenic
204 Beryllium
205 Cadmium
206 Chromium
207 Cobalt
208 Copper
209 Iron
210 Lead
211 Manganese
* 212 Mercury
213 Molybdenum
214 Nickel
215 Selenium
216 Silver
218 Thallium
* 220 Vanadium
221 Zinc
222 pH
224 Total Dissolved Solids
225 Total Hardness (CaCO3)
226 Calcium
227 Magnesium
228 Sodium
229 Potassium
230 Total Alkalinity
231 Chloride
232 Fluoride
* 233 Sulfate
* 234 Ammonia-N
235 Nitrate-N
236 Kjeldahl-N
237 Orthophosphate
239 Chemical Oxygen Demand
240 Biochemical Oxygen Demand
242 Total Cyanide
243 Non-Filterable Residue
244 Total Residual Chlorine
245 Oil and Grease
246 Total Phenolics

* Provisional Certification

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List

EFFECTIVE DATE: 07/01/98

EXPIRATION DATE: 06/30/99

M-NH023 Chemserve
Milford, NH

NON-POTABLE WATER

247 Volatile Halocarbons
248 Volatile Aromatics
249 Chlordane
250 Aldrin
251 Dieldrin
252 DDD
253 DDE
254 DDT
255 Heptachlor
256 Heptachlor Epoxide
257 Polychlorinated Biphenyls (water)
258 Polychlorinated Biphenyls (oil)

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List

EFFECTIVE DATE: 04/21/99

EXPIRATION DATE: 06/30/99

M-NH023 Chemserve
Milford, NH

POTABLE WATER

102 Arsenic
103 Barium
104 Beryllium
105 Cadmium
106 Chromium
107 Copper
108 Lead
* 109 Mercury
110 Nickel
111 Selenium
113 Thallium
114 Nitrate-N
115 Nitrite-N
116 Fluoride
117 Sodium
119 Cyanide
120 Turbidity
* 121 Residual Free Chlorine
122 Calcium
123 Total Alkalinity
124 Total Dissolved Solids
128 2,4-D
130 Dalapon
132 Pentachlorophenol
133 Picloram
134 Alachlor
135 Atrazine
136 Chlordane
137 Endrin
138 Heptachlor
139 Heptachlor Epoxide
140 Hexachlorobenzene
141 Hexachlorocyclopentadiene
142 Lindane
143 Methoxychlor
144 Simazine
145 Toxaphene
153 Trihalomethanes
154 Volatile Organic Compounds
155 1,2-Dibromoethane
156 1,2-Dibromo-3-chloropropane

* Provisional Certification

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List

EFFECTIVE DATE: 11/18/9

EXPIRATION DATE: 06/30/9

M-NH023 Chemserve
Milford, NH

MICROBIOLOGY

301 Total Coliform
302 Fecal Coliform
303 Heterotrophic Plate Count
304 E-Coli

MONITORING WELL

ChemServe
ENVIRONMENTAL ANALYSTS

317 Elm Street
Milford NH 03055
Tel (603) 673-5440
Fax (603) 673-0366

June 22, 1999

Mr. Jonathan Higgins
Higgins Environmental Assoc.
19 Elizabeth St.
Amesbury, MA 01913

Job Name	**: 03014-Lawrence**	**Laboratory #**	**: 99060126**
Job #	**: 03014-99**	**Purchase Order #**	**: 03014-99**
Location	**: Lawrence MA**	**Control #**	**: 28831**

Dear Mr. Higgins,

Enclosed please find the laboratory results for the above referenced samples which were received by the Chemserve sample custodian, under chain of custody control number 28831 on June 11, 1999. Samples were collected by Jonathan Higgins on June 10, 1999. Any abnormalities to the samples on receipt would be noted on the enclosed chain of custody document. This report is not valid without a completed Chemserve chain of custody with the corresponding control number, attached.

All samples analyzed by Chemserve are subjected to quality standards. These standards are either as stringent or more stringent than those established under 40 CFR Part 136, state certification programs, and corresponding methodologies. Chemserve has a written QA/QC Procedures Manual which outlines these standards, and is available, upon request, for your reference. Unless otherwise stated on the Chain of Custody or within the report, all holding times, preservation techniques, container types, and analytical methods are analogous with those outlined by the U.S. EPA.

I certify that I have reviewed the above referenced analytical data and state forms, and I have found this report within compliance with the procedures outlined in the Chemserve QA/QC Procedures Manual.

Ellen Abrams - QA/QC Administrator

Jay W. Chrystal - President/Laboratory Director

This report contains 18 pages.

CHEMSERVE ENVIRONMENTAL ANALYSTS QUALITY ASSURANCE SEAL

MADEP EPH DATA

SAMPLE INFORMATION

Matrix	_x_Aq. ___Soil __Sediment ___Other
Containers	_x_Satisfactory __ Broken __Leaking
Preservation	__N/A _x_ pH<2 __pH>2 Comment:
Temperature	__On Ice _x_At 4C ___Other
Extraction Method	Water: SW846 3510A Soil:

EPH ANALYTICAL RESULTS

		Lab ID:		99060126-02
		Client ID:		03014-MW5-GW1
		Date Collected:		06/10/99
		Date Received:		06/11/99
		Date Extracted:		06/16/99
		Date Analyzed:		06/17/99
		Dilution Factor:		2
Range /Target Analyte		**RL**	**Units**	
Unadjusted C11-C22 Aromatics[1]		10	UG/L	<RL
Diesel PAH Analytes	**Naphthalene**	10	UG/L	<RL
	2-Methylnaphthalene	5	UG/L	<RL
	Phenanthrene	10	UG/L	<RL
	Acenaphthene	10	UG/L	<RL
Other Target Analytes	**Acenaphthalene**	10	UG/L	<RL
	Anthracene	10	UG/L	<RL
	Benzo(a)Anthracene	0.1	UG/L	<RL
	Benzo(a)Pyrene	0.1	UG/L	<RL
	Benzo(b)Fluoranthene	0.1	UG/L	<RL
	Benzo(g,h,i)Perylene	0.1	UG/L	<RL
	Benzo(k)Fluoranthene	0.1	UG/L	<RL
	Chrysene	0.1	UG/L	<RL
	Dibenzo(a,h)Anthracene	0.1	UG/L	<RL
	Fluoranthene	10	UG/L	<RL
	Fluorene	10	UG/L	<RL
	Ideno(1,2,3-cd)Pyrene	0.1	UG/L	<RL
	Pyrene	10	UG/L	<RL
C9-C18 Aliphatic Hydrocarbons[1]		10	UG/L	<RL
C19-C36 Aliphatic Hydrocarbons[1]		10	UG/L	<RL
C11-C22 Aromatic Hydrocarbons[1,2]		10	UG/L	<RL
Chloro-octadecane % Recovery				51%
o-Terphenyl % Recovery				76%
Surrogate Acceptance Range				40-140%
2-Fluorobiphenyl % Recovery				54%
2-Bromonaphthalene % Recovery				54%
Surrogate Acceptance Range				40-140%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Certification

Were all QA/QC procedures required by the EPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? _x_Yes __No- Details attached

Were any significant modifications made to the EPH method, as specified in section 11.3? __ No _x_ Yes-Details attached
sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

6/23/99
Date

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	_x_ Aq. __Soil __Sediment __Other	
Containers	_x_ Satisfactory __ Broken __Leaking	
Preservation	___N/A _x_ pH<2 __pH>2 Comment:	
	_x_ N/A __ Samples NOT preserved in Methanol or air-tight container	
	___Samples rec'd in Methanol __ covering soil __ not covering soil	
	_x_ Samples rec'd in air-tight container	
Temperature	__On Ice _x_ At 4C ___Other	mL Methanol / g soil N/A

VPH ANALYTICAL RESULTS

	Lab ID:		99060126-01
	Client ID:		03014-MW1-GW1
	Date Collected:		06/10/99
	Date Received:		06/11/99
	Date Analyzed:		06/18/99
	Dilution Factor:		1
Range /Target Analyte	**RL**	**Units**	
Unadjusted C5-C8 Aliphatics[1]	1	UG/L	<RL
Unadjusted C9-C12 Aliphatics[1]	1	UG/L	<RL
Methyl-tert-butylether	1	UG/L	<RL
Benzene	1	UG/L	<RL
Toluene	1	UG/L	<RL
m- & p- Xylenes	1	UG/L	<RL
o-Xylene	1	UG/L	<RL
Ethylbenzene	1	UG/L	<RL
Naphthalene	1	UG/L	<RL
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/L	<RL
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/L	<RL
C9-C10 Aromatic Hydrocarbons[1]	1	UG/L	<RL
Dibromofluoromethane % Recovery			110%
Toluene-d8 % Recovery			92%
4-Bromofluorobenzene % Recovery			99%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_ Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? _x_ Yes __No- Details attached

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached
sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

6/23/99
Date

MADEP VPH DATA

SAMPLE INFORMATION

Matrix	_x_Aq. __Soil __Sediment __Other	
Containers	_x_Satisfactory __ Broken __Leaking	
Preservation	___N/A _x_ pH<2 __pH>2 Comment:	
	_x_N/A __ Samples NOT preserved in Methanol or air-tight container	
	___Samples rec'd in Methanol __ covering soil __ not covering soil	
	_x_Samples rec'd in air-tight container	
Temperature	__On Ice _x_At 4C ___Other	mL Methanol / g soil N/A

VPH ANALYTICAL RESULTS

	Lab ID:		99060126-02
	Client ID:		03014-MW5-GW1
	Date Collected:		06/10/99
	Date Received:		06/11/99
	Date Analyzed:		06/18/99
	Dilution Factor:		1
Range /Target Analyte	RL	Units	
Unadjusted C5-C8 Aliphatics[1]	1	UG/L	<RL
Unadjusted C9-C12 Aliphatics[1]	1	UG/L	<RL
Methyl-tert-butylether	1	UG/L	<RL
Benzene	1	UG/L	<RL
Toluene	1	UG/L	<RL
m- & p- Xylenes	1	UG/L	<RL
o-Xylene	1	UG/L	<RL
Ethylbenzene	1	UG/L	<RL
Naphthalene	1	UG/L	<RL
C5-C8 Aliphatic Hydrocarbons[1,2]	1	UG/L	<RL
C9-C12 Aliphatic Hydrocarbons[1,3]	1	UG/L	<RL
C9-C10 Aromatic Hydrocarbons[1]	1	UG/L	<RL
Dibromofluoromethane % Recovery			114%
Toluene-d8 % Recovery			100%
4-Bromofluorobenzene % Recovery			101%
Surrogate Acceptance Range			70-130%

[1]Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

[2]C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes in that range

[3]C9-C12 Aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range and conc of C9-C10 Aromatics

Certification

Were all QA/QC procedures required by the VPH method followed? _x_Yes ___No- Details attached

Were all performance/acceptance standards for the required QA/QC procedures Achieved? _x_Yes __No- Details attached

Were any significant modifications made to the VPH method, as specified in section 11.3? __ No _x_ Yes-Details attached
sample analyzed via GC/MS

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

Jay W. Chrystal Laboratory Director

6/23/99
Date

ChemServe
ENVIRONMENTAL ANALYSTS

Higgins Environmental Associates

Project Name: 03014-Lawrence
Project #: 03014-99
Collection Site: Lawrence MA

Group#: 99060126
Chain of Custody ID: 28831
DATE SAMPLED: 6/10/1999

METHOD #	ANALYTE	RESULTS	UNIT OF MEASURE	DATE COMPLETED	DETECTION LIMIT (PQL)	ANALYST
SAMPLE#: 99060126-01						
Higgins Environmental Associates ID: 03014-MW1-GW2						
6010A	Chromium		<0.010 mg/L	6/14/1999	0.010 mg/L	PF
SW 3015	Digestion		N/A	6/14/1999	N/A	DR
7060	Arsenic		<0.010 mg/L.	6/15/1999	0.010 mg/L	PF
7421	Lead		<0.005 mg/L	6/16/1999	0.005 mg/L	PF
SAMPLE#: 99060126-02						
Higgins Environmental Associates ID: 03014-MW5-GW1						
6010A	Chromium		<0.010 mg/L	6/14/1999	0.010 mg/L	PF
SW 3015	Digestion		N/A	6/14/1999	N/A	DR
7060	Arsenic		<0.010 mg/L	6/15/1999	0.010 mg/L	PF
7421	Lead		<0.005 mg/L	6/16/1999	0.005 mg/L	PF
SAMPLE#: 99060126-03						
Higgins Environmental Associates ID: 03014-MW6-GW1						
6010A	Chromium		0.013 mg/L	6/14/1999	0.010 mg/L	PF
SW 3015	Digestion		N/A	6/14/1999	N/A	DR
7060	Arsenic		<0.010 mg/L	6/15/1999	0.010mg/L	PF
7421	Lead		<0.005 mg/L	6/16/1999	0.005 mg/L	PF
SAMPLE#: 99060126-04						
Higgins Environmental Associates ID: 03014-MW7-GW1						
6010A	Chromium		0.016 mg/L	6/14/1999	0.010 mg/L	PF
SW 3015	Digestion		N/A	6/14/1999	N/A	DR
7060	Arsenic		<0.010 mg/L	6/15/1999	0.010 mg/L	PF
7421	Lead		<0.005 mg/L	6/16/1999	0.005 mg/L	PF

Chemserve

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8260B

USTOMER: HIGGINS ENVIRONMENTAL ASSOCIATES

LAB#: 99060126-01

SAMPLE LOCATION: LAWRENCE, MA

JOB#: 03014-99

SAMPLE IDENTITY: 03014-MW1-GW2

CONTROL#: 28831

ATE SAMPLED: 06/10/99

DATE REC'D: 06/11/99

DATE ANALYZED: 06/18/99

MATRIX: LIQUID

OMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT BASED ON PQL DETECTION LIMIT MULTIPLIER: (UG/L) X 1
ENZENE	BDL	1
ROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
ROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
HLOROBENZENE	BDL	1
HLOROETHANE	BDL	1
CHLOROFORM	BDL	1
HLOROMETHANE	BDL	1
CHLOROTOLUENE	BDL	1
4-CHLOROTOLUENE	BDL	1
IBROMOCHLOROMETHANE	BDL	1
2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOMETHANE	BDL	1
2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
ICHLORODIFLUOROMETHANE	BDL	1
,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1-DICHLOROETHENE	BDL	1
S-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
2-DICHLOROPROPANE	BDL	1
3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1-DICHLOROPROPENE	BDL	1
S-1,3-DICHLOROPROPENE	BDL	1
RANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
ETHYLENE CHLORIDE	BDL	1
YRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,2,2-TETRACHLOROETHANE	BDL	1
ETRACHLOROETHENE	BDL	1
TOLUENE	BDL	1
1,1-TRICHLOROETHANE	BDL	1

ONTINUED: 1 OF 2 PAGES

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL ASSOCIATES

LAB#: 99060126-01

SAMPLE LOCATION: LAWRENCE, MA

JOB#: 03014-99

SAMPLE IDENTITY: 03014-MW1-GW2

CONTROL#: 28831

DATE SAMPLED: 06/10/99

DATE REC'D: 06/11/99

DATE ANALYZED: 06/18/99

MATRIX: LIQUID

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT BASED ON PQL DETECTION LIMIT MULTIPLIER: (UG/L) X 1
1,1,2-TRICHLOROETHANE	BDL	1
TRICHLOROETHENE	BDL	1
TRICHLOROFLUOROMETHANE	BDL	1
1,2,3-TRICHLOROPROPANE	BDL	1
VINYL CHLORIDE	BDL	1
M/P-XYLENE	BDL	1
O-XYLENE	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
CARBON DISULFIDE	BDL	1
n-BUTYLBENZENE	BDL	1
sec-BUTYLBENZENE	BDL	1
tert-BUTYLBENZENE	BDL	1
ISOPROPYLBENZENE	BDL	1
4-ISOPROPYLTOLUENE	BDL	1
n-PROPYLBENZENE	BDL	1
1,2,3-TRICHLOROBENZENE	BDL	1
1,2,4-TRICHLOROBENZENE	BDL	1
1,2,4-TRIMETHYLBENZENE	BDL	1
1,3,5-TRIMETHYLBENZENE	BDL	1
NAPHTHALENE	BDL	1
ACRYLONITRILE	BDL	1
HEXACHLOROBUTADIENE	BDL	1
TETRAHYDROFURAN	BDL	5
DIETHYL ETHER	BDL	5
2-HEXANONE	BDL	10
4-METHYL-2-PENTANONE	BDL	10
2-BUTANONE	BDL	10
ACETONE	BDL	15
2-CHLOROETHYL VINYL ETHER	BDL	20
ACROLEIN	BDL	50

SURROGATE	PERCENT RECOVERY	ACCEPTANCE LIMITS
DIBROMOFLUOROMETHANE	110%	76-115%
TOLUENE-D8	92%	76-115%
4-BROMOFLUOROBENZENE	99%	76-115%

BDL=BELOW DETECTION LIMIT
ANALYZED BY: CP

Chemserve

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL ASSOCIATES

LAB#: 99060126-02

SAMPLE LOCATION: LAWRENCE, MA

JOB#: 03014-99

SAMPLE IDENTITY: 03014-MW5-GW1

CONTROL#: 28831

DATE SAMPLED: 06/10/99

DATE REC'D: 06/11/99

DATE ANALYZED: 06/18/99

MATRIX: LIQUID

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT BASED ON PQL DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
BROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
BROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
CHLOROBENZENE	BDL	1
CHLOROETHANE	BDL	1
CHLOROFORM	BDL	1
CHLOROMETHANE	BDL	1
2-CHLOROTOLUENE	BDL	1
4-CHLOROTOLUENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
1,2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOMETHANE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
DICHLORODIFLUOROMETHANE	BDL	1
1,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
1,3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1,1-DICHLOROPROPENE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
METHYLENE CHLORIDE	BDL	1
STYRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
TOLUENE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1

CONTINUED: 1 OF 2 PAGES

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL ASSOCIATES

LAB#: 99060126-02

SAMPLE LOCATION: LAWRENCE, MA

JOB#: 03014-99

SAMPLE IDENTITY: 03014-MW5-GW1

CONTROL#: 28831

DATE SAMPLED: 06/10/99

DATE REC'D: 06/11/99

DATE ANALYZED: 06/18/99

MATRIX: LIQUID

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT BASED ON PQL DETECTION LIMIT MULTIPLIER: (UG/L) X 1
1,1,2-TRICHLOROETHANE	BDL	1
TRICHLOROETHENE	BDL	1
TRICHLOROFLUOROMETHANE	BDL	1
1,2,3-TRICHLOROPROPANE	BDL	1
VINYL CHLORIDE	BDL	1
M/P-XYLENE	BDL	1
O-XYLENE	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
CARBON DISULFIDE	BDL	1
n-BUTYLBENZENE	BDL	1
sec-BUTYLBENZENE	BDL	1
ert-BUTYLBENZENE	BDL	1
ISOPROPYLBENZENE	BDL	1
t-ISOPROPYLTOLUENE	BDL	1
n-PROPYLBENZENE	BDL	1
1,2,3-TRICHLOROBENZENE	BDL	1
1,2,4-TRICHLOROBENZENE	BDL	1
1,2,4-TRIMETHYLBENZENE	BDL	1
1,3,5-TRIMETHYLBENZENE	BDL	1
NAPHTHALENE	BDL	1
ACRYLONITRILE	BDL	1
HEXACHLOROBUTADIENE	BDL	1
TETRAHYDROFURAN	BDL	5
DIETHYL ETHER	BDL	5
2-HEXANONE	BDL	10
4-METHYL-2-PENTANONE	BDL	10
2-BUTANONE	BDL	10
ACETONE	BDL	15
2-CHLOROETHYL VINYL ETHER	BDL	20
ACROLEIN	BDL	50

SURROGATE	PERCENT RECOVERY	ACCEPTANCE LIMITS
DIBROMOFLUOROMETHANE	114%	76-115%
TOLUENE-D8	100%	76-115%
4-BROMOFLUOROBENZENE	101%	76-115%

BDL = BELOW DETECTION LIMIT
ANALYZED BY: CP

ChemServe

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL ASSOCIATES

LAB#: 99060126-03

SAMPLE LOCATION: LAWRENCE, MA

JOB#: 03014-99

SAMPLE IDENTITY: 03014-MW6-GW1

CONTROL#: 28831

DATE SAMPLED: 06/10/99

DATE REC'D: 06/11/99

DATE ANALYZED: 06/18/99

MATRIX: LIQUID

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT BASED ON PQL DETECTION LIMIT MULTIPLIER (UG/L) X 1
BENZENE	BDL	1
BROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
BROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
CHLOROBENZENE	BDL	1
CHLOROETHANE	BDL	1
CHLOROFORM	BDL	1
CHLOROMETHANE	BDL	1
2-CHLOROTOLUENE	BDL	1
4-CHLOROTOLUENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
1,2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOMETHANE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
DICHLORODIFLUOROMETHANE	BDL	1
1,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
1,3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1,1-DICHLOROPROPENE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
METHYLENE CHLORIDE	BDL	1
STYRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	2	1
TOLUENE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1

CONTINUED: 1 OF 2 PAGES

EPA METHOD 8260B

JSTOMER: HIGGINS ENVIRONMENTAL ASSOCIATES

LAB#: 99060126-03

AMPLE LOCATION: LAWRENCE, MA

JOB#: 03014-99

AMPLE IDENTITY: 03014-MW6-GW1

CONTROL#: 28831

ATE SAMPLED: 06/10/99

DATE REC'D: 06/11/99

DATE ANALYZED: 06/18/99

MATRIX: LIQUID

OMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT BASED ON PQL DETECTION LIMIT MULTIPLIER: (UG/L) X 1
1,2-TRICHLOROETHANE	BDL	1
RICHLOROETHENE	13	1
TRICHLOROFLUOROMETHANE	BDL	1
2,3-TRICHLOROPROPANE	BDL	1
INYL CHLORIDE	BDL	1
M/P-XYLENE	BDL	1
O-XYLENE	BDL	1
ETHYL-TERTIARY-BUTYL ETHER	5	1
ARBON DISULFIDE	BDL	1
-BUTYLBENZENE	BDL	1
c-BUTYLBENZENE	BDL	1
rt-BUTYLBENZENE	BDL	1
SOPROPYLBENZENE	BDL	1
ISOPROPYLTOLUENE	BDL	1
PROPYLBENZENE	BDL	1
,2,3-TRICHLOROBENZENE	BDL	1
2,4-TRICHLOROBENZENE	BDL	1
2,4-TRIMETHYLBENZENE	BDL	1
,3,5-TRIMETHYLBENZENE	BDL	1
NAPHTHALENE	BDL	1
CRYLONITRILE	BDL	1
EXACHLOROBUTADIENE	BDL	1
ETRAHYDROFURAN	BDL	5
IETHYL ETHER	BDL	5
HEXANONE	BDL	10
-METHYL-2-PENTANONE	BDL	10
BUTANONE	BDL	10
ETONE	BDL	15
-CHLOROETHYL VINYL ETHER	BDL	20
CROLEIN	BDL	50

SURROGATE	PERCENT RECOVERY	ACCEPTANCE LIMITS
DIBROMOFLUOROMETHANE	106%	76-115%
TOLUENE-D8	101%	76-115%
4-BROMOFLUOROBENZENE	103%	76-115%

BDL = BELOW DETECTION LIMIT

ANALYZED BY: CP

CHROMALYTIC

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL ASSOCIATES

LAB#: 99060126-04

SAMPLE LOCATION: LAWRENCE, MA

JOB#: 03014-99

SAMPLE IDENTITY: 03014-MW7-GW1

CONTROL#: 28831

DATE SAMPLED: 06/10/99

DATE REC'D: 06/11/99

DATE ANALYZED: 06/18/99

MATRIX: LIQUID

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT BASED ON PQL DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
BROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
BROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
CHLOROBENZENE	BDL	1
CHLOROETHANE	13	1
CHLOROFORM	BDL	1
CHLOROMETHANE	BDL	1
2-CHLOROTOLUENE	BDL	1
4-CHLOROTOLUENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
1,2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOMETHANE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
DICHLORODIFLUOROMETHANE	BDL	1
1,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
1,3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1,1-DICHLOROPROPENE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
METHYLENE CHLORIDE	BDL	1
STYRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
TOLUENE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1

CONTINUED: 1 OF 2 PAGES

EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL ASSOCIATES

LAB#: 99060126-04

SAMPLE LOCATION: LAWRENCE, MA

JOB#: 03014-99

SAMPLE IDENTITY: 03014-MW7-GW1

CONTROL#: 28831

DATE SAMPLED: 06/10/99

DATE REC'D: 06/11/99

DATE ANALYZED: 06/18/99

MATRIX: LIQUID

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT BASED ON PQL DETECTION LIMIT MULTIPLIER: (UG/L) X 1
1,1,2-TRICHLOROETHANE	BDL	1
TRICHLOROETHENE	BDL	1
TRICHLOROFLUOROMETHANE	BDL	1
1,2,3-TRICHLOROPROPANE	BDL	1
VINYL CHLORIDE	BDL	1
M/P-XYLENE	BDL	1
O-XYLENE	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
CARBON DISULFIDE	BDL	1
n-BUTYLBENZENE	BDL	1
sec-BUTYLBENZENE	BDL	1
tert-BUTYLBENZENE	BDL	1
ISOPROPYLBENZENE	BDL	1
4-ISOPROPYLTOLUENE	BDL	1
n-PROPYLBENZENE	BDL	1
1,2,3-TRICHLOROBENZENE	BDL	1
1,2,4-TRICHLOROBENZENE	BDL	1
1,2,4-TRIMETHYLBENZENE	BDL	1
1,3,5-TRIMETHYLBENZENE	BDL	1
NAPHTHALENE	BDL	1
ACRYLONITRILE	BDL	1
HEXACHLOROBUTADIENE	BDL	1
TETRAHYDROFURAN	BDL	5
DIETHYL ETHER	BDL	5
2-HEXANONE	BDL	10
4-METHYL-2-PENTANONE	BDL	10
2-BUTANONE	BDL	10
ACETONE	BDL	15
2-CHLOROETHYL VINYL ETHER	BDL	20
ACROLEIN	BDL	50

SURROGATE	PERCENT RECOVERY	ACCEPTANCE LIMITS
DIBROMOFLUOROMETHANE	103%	76-115%
TOLUENE-D8	100%	76-115%
4-BROMOFLUOROBENZENE	93%	76-115%

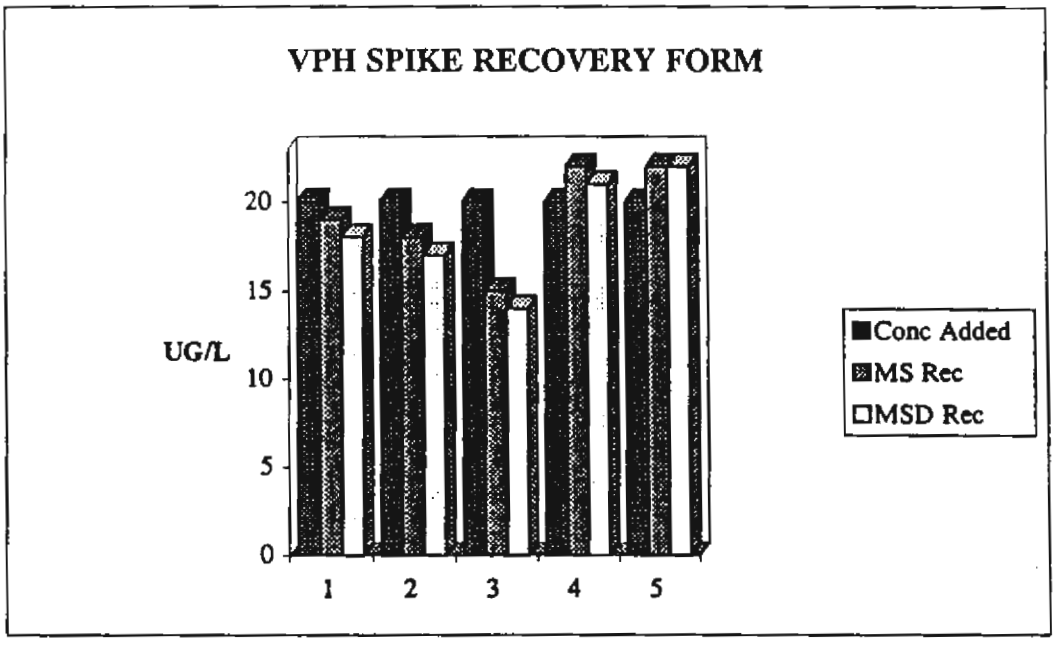
BDL = BELOW DETECTION LIMIT

ANALYZED BY: CP

MADEP VPH SPIKE DATA

ab ID:	99060126
ıte Analyzed:	06/18/99
ample Identity:	CONTROL SPIKES 06/18/99

Target Spiking Compounds	Conc Added (UG/L)	Amt Rec (UG/L)	Dup Amt Rec (UG/L)	%Rec	Dup %Rec	%Diff
entane	20	19	18	95%	90%	5%
2-Methylpentane	20	18	17	90%	85%	5%
onane	20	15	14	75%	70%	5%
enzene	20	22	21	110%	105%	5%
Toluene	20	22	22	110%	110%	0%

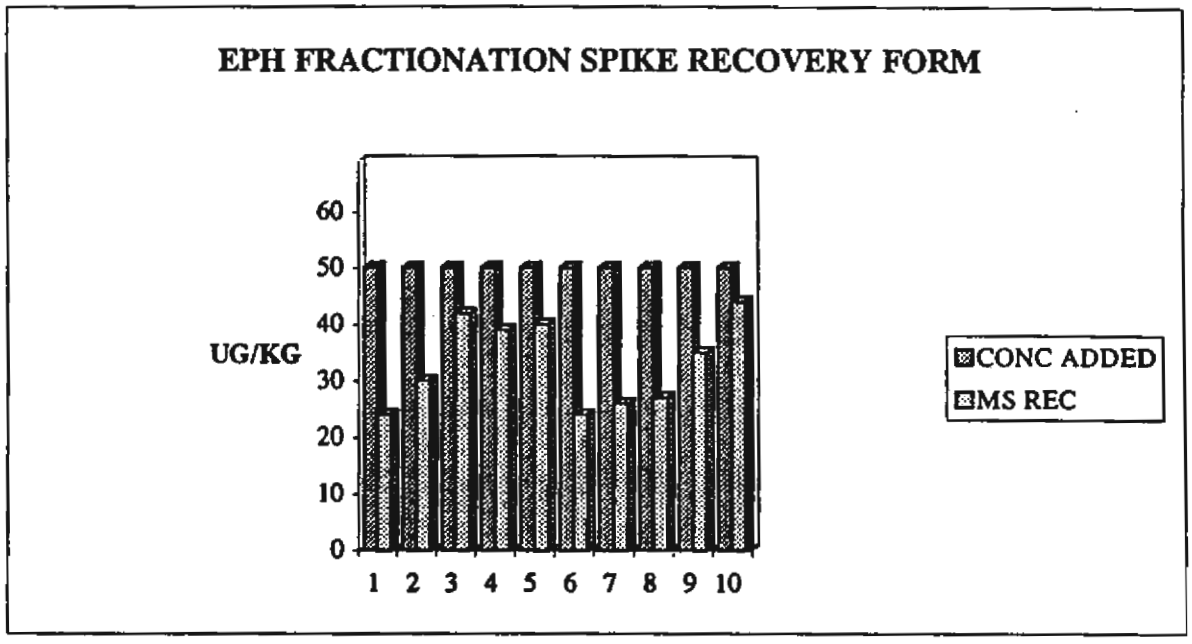


Spike Acceptance Range
65-135%

MADEP EPH SPIKE DATA

Lab ID:	99060126
Date Analyzed:	06/17/99
Sample Identity:	CONTROL SPIKE 06/16/99

Target Spiking Compounds	Concentration Added (UG/L)	Amount Recovered (UG/L)	%RECOVERY
Tetradecane	50	24	48%
Hexadecane	50	30	60%
Eicosane	50	42	84%
Tetracosane	50	39	78%
Octacosane	50	40	80%
2-Methylnaphthalene	50	24	48%
Acenaphthene	50	26	52%
Fluorene	50	27	54%
Phenanthrene	50	35	70%
Pyrene	50	44	88%



Spike Acceptance Range
40-140%

ChemServe

VOA SPIKE RECOVERY FORM
EPA METHOD 8260B

CUSTOMER: HIGGINS ENVIRONMENTAL ASSOCIATES

LAB#: 99060126

SAMPLE LOCATION: LAWRENCE, MA

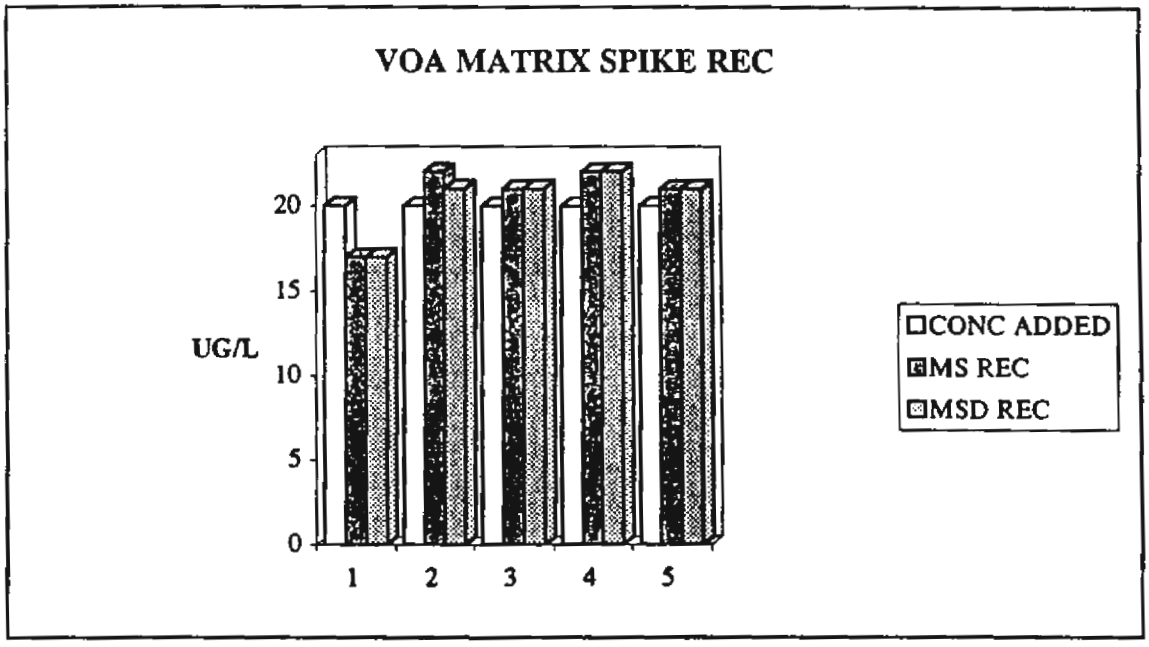
JOB#: 03014-99

SAMPLE IDENTITY: CONTROL SPIKES 06/18/99

CONTROL#: 28831

DATE ANALYZED: 06/18/

COMPOUND	CONC ADDED (UG/L)	AMT REC (UG/L)	DUP AMT REC (UG/L)	%REC	DUP % REC
1,1-DICHLOROETHENE	20	17	17	85%	85%
BENZENE	20	22	21	110%	105%
TRICHLOROETHENE	20	21	21	105%	105%
TOLUENE	20	22	22	110%	110%
CHLOROBENZENE	20	21	21	105%	105%



SPIKE RECOVERY LIMITS
75-115%

Chain of Custody No. 23831

Multiple COC's Yes (No)

ChemServe ENVIRONMENTAL ANALYSIS

317 Elm Street Milford, NH 03055
(603) 673-5440/ Fax (603) 673-0366

CHAIN OF CUSTODY

A CUSTOMER INFORMATION

CUSTOMER:

ADDRESS:

CITY/STATE/ZIP

TELEPHONE:

REPORT TO:

P O NUMBER:

B PROJECT INFORMATION

JOB NAME:

JOB NUMBER:

LOCATION:

TELEPHONE:

CONTACT:

QUOTE NUMBER:

C SAMPLE INFORMATION

TURNAROUND TIME: (CIRCLE ONE:)

STANDARD RUSH

RUSH T.A.T. _____ (CHECK w/LAB)

AMBER GLASS (AG) / GLASS (G) / PLASTIC (P)

STATION # D	SAMPLE IDENTIFICATION & LOCATION E	COLLECTED DATE F	COLLECTED TIME G	SAMPLE TYPE GRAB H	SAMPLE TYPE COMP H	MATRIX SOLID (S) LIQUID (L) COMBINED (C) HAZARD (H) I	# OF CONTAINERS J	CONTAINER AND PRESERVATIVE K	ANALYSIS L
1	OBSW-MW01-(GW)-2	6/10/03	1030	X		1	6	1 1 1	
2	OBSW-MW03-(GW)-1	6/10/03	1310	X		1	6	1 1 1	
3	OBSW-MW06-(GW)-1	6/10/03	1450	X		1	3	1 1	
4	OBSW-MW07-(GW)-1	6/10/03	1420	X		1	3	1 1	
		DATE	TIME						
		DATE	TIME						
		DATE	TIME						
		DATE	TIME						

M CUSTODY

SAMPLER: (print name)

SIGNATURE:

	DATE	MILITARY TIME
RELINQUISHED:	6/10/03	1815
RECEIVED:	DATE	TIME
RELINQUISHED:	DATE	TIME
RECEIVED FOR LAB:	DATE	TIME

SAMPLE CHECK LIST:

RECEIVED WITHIN HOLD TIME (YES) OR NO

RECEIVED IN GOOD CONDITION (YES) OR NO

TEMP BLANK _____ °C

SHIPPED OR HAND DELIVERED

SAMPLES WERE PROPERLY PRESERVED (YES) NO N/A

SAMPLES WERE FILTERED IN FIELD LAB (N/A)

IF NO EXPLAIN:

GROUP #

FIELD READING(S):

The Commonwealth of Massachusetts

Department of Environmental Protection

Division of Environmental Analysis
Senator William X. Wall Experiment Station

certifies

M-NH023 Chemserve
317 Elm Street
Milford, NH 03055

Laboratory Director: Jay W. Crystal

for the Chemical Analysis of Potable and Non-Potable Water

pursuant to 310 CMR 42.00

This certificate supersedes all previous Massachusetts certificates issued to this laboratory. The laboratory is regulated by and shall be responsible for being in compliance with Massachusetts regulations at 310 CMR 42.00.

This certificate is valid only when accompanied by the latest dated Certified Parameter List as issued by the Massachusetts D.E.P.

Certification is no guarantee of the validity of the data. This certification is subject to unannounced laboratory inspections.

Director, Division of Environmental Analysis

Issued: 07/01/98

Expires: 06/30/99

The Commonwealth of Massachusetts

Department of Environmental Protection

Division of Environmental Analysis
Senator William X. Wall Experiment Station

certifies

M-NH023 Chemserve
317 Elm Street
Milford, NH 03055

Laboratory Director: Jay W. Crystal

for the Microbiological Analysis of Water

pursuant to 310 CMR 42.00

This certificate supersedes all previous Massachusetts certificates issued to this laboratory. The laboratory is regulated by and shall be responsible for being in compliance with Massachusetts regulations at 310 CMR 42.00.

This certificate is valid only when accompanied by the latest dated Certified Parameter List as issued by the Massachusetts D.E.P.

Certification is no guarantee of the validity of the data. This certification is subject to unannounced laboratory inspections.

Director, Division of Environmental Analysis

Issued: 07/01/98

Expires: 06/30/99

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List

EFFECTIVE DATE: 07/01/98

EXPIRATION DATE: 06/30/99

M-NH023 Chemserve
Milford, NH

NON-POTABLE WATER

201 Aluminum
202 Antimony
203 Arsenic
204 Beryllium
205 Cadmium
206 Chromium
207 Cobalt
208 Copper
209 Iron
210 Lead
211 Manganese
• 212 Mercury
213 Molybdenum
214 Nickel
215 Selenium
216 Silver
218 Thallium
• 220 Vanadium
221 Zinc
222 pH
224 Total Dissolved Solids
225 Total Hardness (CaCO3)
226 Calcium
227 Magnesium
228 Sodium
229 Potassium
230 Total Alkalinity
231 Chloride
232 Fluoride
• 233 Sulfate
• 234 Ammonia-N
235 Nitrate-N
236 Kjeldahl-N
237 Orthophosphate
239 Chemical Oxygen Demand
240 Biochemical Oxygen Demand
242 Total Cyanide
243 Non-Filterable Residue
244 Total Residual Chlorine
245 Oil and Grease
246 Total Phenolics

• Provisional Certification

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List

EFFECTIVE DATE: 07/01/98

EXPIRATION DATE: 06/30/99

M-NH023 Chemserve
Milford, NH

NON-POTABLE WATER

247 Volatile Halocarbons
248 Volatile Aromatics
249 Chlordane
250 Aldrin
251 Dieldrin
252 DDD
253 DDE
254 DDT
255 Heptachlor
256 Heptachlor Epoxide
257 Polychlorinated Biphenyls (water)
258 Polychlorinated Biphenyls (oil)

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List

EFFECTIVE DATE: 06/07/99

EXPIRATION DATE: 06/30/99

M-NH023 Chemserve
Milford, NH

POTABLE WATER

* 101 Antimony
102 Arsenic
103 Barium
104 Beryllium
105 Cadmium
106 Chromium
107 Copper
108 Lead
109 Mercury
110 Nickel
111 Selenium
113 Thallium
114 Nitrate-N
115 Nitrite-N
116 Fluoride
117 Sodium
118 Sulfate
119 Cyanide
120 Turbidity
* 121 Residual Free Chlorine
122 Calcium
123 Total Alkalinity
124 Total Dissolved Solids
128 2,4-D
130 Dalapon
132 Pentachlorophenol
133 Picloram
134 Alachlor
135 Atrazine
136 Chlordane
137 Endrin
138 Heptachlor
139 Heptachlor Epoxide
140 Hexachlorobenzene
141 Hexachlorocyclopentadiene
142 Lindane
143 Methoxychlor
144 Simazine
145 Toxaphene
151 Polynuclear Aromatic Hydrocarbons
152 Adipates/Phthalates

* Provisional Certification

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List

EFFECTIVE DATE: 11/18/98

EXPIRATION DATE: 06/30/99

M-NH023 Chemserve
Milford, NH

MICROBIOLOGY

301 Total Coliform
302 Fecal Coliform
303 Heterotrophic Plate Count
304 E-Coli

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Certified Parameter List

EFFECTIVE DATE: 06/07/99

EXPIRATION DATE: 06/30/99

M-NH023 Chemserve
Milford, NH

POTABLE WATER

153 Trihalomethanes
154 Volatile Organic Compounds
155 1,2-Dibromoethane
156 1,2-Dibromo-3-chloropropane

H&A ANALYTICAL RESULTS
2001

SOIL

HALEY & ALDRICH ANALYTICAL RESULTS – 2001

SOIL

Available upon request.

WESTON ANALYTICAL DATA
FEBRUARY 2003

WESTON ANALYTICAL DATA
FEBRUARY 2003

This package contains the following data:

- Soil Sample Results
- Monitoring Well Sample Results
- Sediment Sample Results

ESS Laboratory

Division of Thielsch Engineering, Inc.

February 28, 2003

Jim Ricker
Weston Solutions, Inc.
One Wall Street
Manchester , NH 03101

Dear Jim Ricker:

We appreciate this opportunity to provide you with our analytical services. ESS Laboratory is committed to providing the highest quality service. Our dedication to each client includes responsiveness to emergencies, dependable, well-written reports, and client services, which include the availability of all analysts to answer your inquiries.

Enclosed is your data report. The invoice for this project is being forwarded to your Accounts Payable Department unless other arrangements have previously been made with the laboratory. Samples will be disposed of thirty days after the final report has been mailed. If you have any questions or concerns, please feel free to call our Customer Service Department. We value our continued relationship and look forward to hearing from you in the future.

Sincerely,

ESS LABORATORY

Laurel Stoddard
Laboratory Director

Enclosure

BLK

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

PROJECT NARRATIVE
PAGE ONE OF THREE

CLIENT: Weston Solutions, Inc.
CLIENT PROJECT ID: Tombarello
ESS PROJECT ID: 03020133

Sample Receipt
1 Aqueous sample, 5 Ground Water samples and 32 Soil samples were received on February 14, 2003 for the analysis specified on the enclosed Chain of Custody Record.

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

Metals Analysis (Soil)
ESS Laboratory utilized the established linear dynamic range to determine acceptable analytical results.
The batch duplicate was outside of the recommended range for Arsenic due to matrix interferences.
The batch Matrix Spike/Matrix Spike Duplicates were outside of the recommended ranges for Barium, Lead and Mercury due to matrix interferences.

Polychlorinated Biphenyls Analysis
Surrogates were diluted outside of the calibration ranges for samples 03020133-06, 03020133-07, 03020133-10, 03020133-11, 03020133-15, 03020133-20, 03020133-20MS, 03020133-20MSD and therefore could not be accurately quantitated.
The batch Matrix Spike/Matrix Spike Duplicate was outside of the recommended range for Arochlor 1016 due to matrix interferences. This analyte was biased high.
The batch Matrix Spike/Matrix Spike Duplicate was outside of the recommended range for Arochlor 1016/1260 due to dilution.
Surrogate recovery was outside of the recommended range for sample 03020133-29.
Surrogate in sample 03020133-36 was flagged with an "M" qualifier. This surrogate could not be accurately quantitated due to matrix interferences.

Continued

CERTIFICATE OF ANALYSIS

PROJECT NARRATIVE
PAGE TWO OF THREE

CLIENT: Weston Solutions, Inc.
CLIENT PROJECT ID: Tombarello
ESS PROJECT ID: 03020133

Volatile Organics Analysis
Blank Spike was outside of the recommended range for 2-Butanone and Vinyl Acetate. These analytes were biased high, however, samples were non detect for these analytes.
Blank Spike was outside of the recommended range for Acetone. This analyte was biased high.
The batch Matrix Spike/Matrix Spike Duplicate was outside of the recommended range for 2-Butanone, 2-Hexanone, 4-Methyl-2-Pentanone and Vinyl Acetate due to matrix interferences. These analytes were biased high, however, samples were non detect for these analytes.
The batch Matrix Spike was outside of the recommended range for Acetone and Methyl tert-butyl ether due to matrix interferences.

EPH Analysis
The following modification to the MASS EPH Method was performed: The Aromatic Fraction and Target PAH analytes were analyzed by GC/MS.
Nonane has proven to be a poor performer for this methodology. Laboratory generated limits are used to assess quality control data.
The batch Matrix Spike was outside of the recommended range for Nonane, Nonadecane and Naphthalene. These analytes were biased low.
The batch Matrix Spike was outside of the recommended range for Pyrene and Chrysene. These analytes were biased high.
Surrogate was diluted outside of the calibration range for samples 03020133-04, 03020133-21, 03020133-26, 03020133-29, 03020133-36 and therefore could not be accurately quantitated.

No other observations noted.

This signed Certificate of Analysis is our approved release of your analytical results. Beginning with this Project Narrative, the entire report has been paginated. The Chain of Custody is the final report page. This report should not be copied except in full without the approval of the laboratory.

Continued

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

PROJECT NARRATIVE
PAGE THREE OF THREE

CLIENT: Weston Solutions, Inc.
CLIENT PROJECT ID: Tombarello
ESS PROJECT ID: 03020133

CERTIFICATION

Were any significant modifications made to the MADEP VPH and EPH method?
__No X Yes – Details Above

Were all QA/QC procedures REQUIRED by the VPH and EPH method followed?
X Yes __ No – Details Above

Were all performance/acceptance standards for required QA/QC procedures achieved?
__Yes X No – Details Above

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

End of project narrative.

Laurel Stoddard/Eric Baanante
Laboratory Director/Operations Manager

2/28/03
Date

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB1-01-0203
Date Sampled: 2/12/03
Percent Solid: 92

ESS Project ID: 03020133
ESS Sample ID: 03020133-01
Units: mg/Kg dry weight
GFAA Information: 5/1.53/100
ICP1 Information: 1/1.53/100
Mercury Information: 10/0.61/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**6.1**	3.55	02/19/03	ML	6010
Barium	**106**	3.55	02/19/03	ML	6010
Cadmium	**4.01**	0.71	02/19/03	ML	6010
Chromium	**23.2**	1.42	02/19/03	ML	6010
Lead	**1180**	7.1	02/19/03	ML	6010
Mercury	**2.71 ***	0.356	02/20/03	ML	7471
Selenium	ND	7.1	02/19/03	ML	6010
Silver	ND	0.71	02/19/03	ML	6010

* = Result and MRL based on 10x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB1-01-0203
Date Sampled: 2/12/03
Analyst: VSC
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-01
Units: µg/Kg dry weight
Dilution: 4
Percent Solid: 92
Sample Amount: 29.9 g

Test Name	Result	MRL
Arochlor 1016	ND	145
Arochlor 1221	ND	145
Arochlor 1232	ND	145
Arochlor 1242	ND	145
Arochlor 1248	ND	145
Arochlor 1254	ND	145
Arochlor 1260	**1590**	145

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB1-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-01
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 92
Sample Amount: 30.1g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	27.1
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**123**	27.1
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**375**	27.1

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	51	40-140
O-Terphenyl	80	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	77	40-140
2-Fluorobiphenyl	70	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB1-03-0203
Date Sampled: 2/12/03
Percent Solid: 80

ESS Project ID: 03020133
ESS Sample ID: 03020133-02
Units: mg/Kg dry weight
ICP1 Information: 1/1.57/100
Mercury Information: 1/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**5.88**	3.98	02/19/03	ML	6010
Barium	**64**	3.98	02/19/03	ML	6010
Cadmium	ND	0.796	02/19/03	ML	6010
Chromium	**12.4**	1.59	02/19/03	ML	6010
Lead	**159**	7.96	02/19/03	ML	6010
Mercury	**0.145**	0.0417	02/20/03	ML	7471
Selenium	ND	7.96	02/19/03	ML	6010
Silver	ND	0.796	02/19/03	ML	6010

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB1-03-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/19/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-02
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 80
Sample Amount: 29.8 g

Test Name	Result	MRL
Arochlor 1016	ND	41.9
Arochlor 1221	ND	41.9
Arochlor 1232	ND	41.9
Arochlor 1242	ND	41.9
Arochlor 1248	ND	41.9
Arochlor 1254	ND	41.9
Arochlor 1260	**45.2**	41.9

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

008

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB1-03-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-02
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 80
Sample Amount: 29.9g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	31.4
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	ND	31.4
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	31.4

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	87	40-140
O-Terphenyl	98	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	85	40-140
2-Fluorobiphenyl	82	40-140

Approved By: CLB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB2-01-0203
Date Sampled: 2/12/03
Percent Solid: 93

ESS Project ID: 03020133
ESS Sample ID: 03020133-03
Units: mg/Kg dry weight
ICP1 Information: 1/1.56/100
Mercury Information: 5/0.65/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**7.42**	3.45	02/20/03	ML	6010
Barium	**107**	3.45	02/20/03	ML	6010
Cadmium	**716**	0.689	02/20/03	ML	6010
Chromium	**34.4**	1.38	02/20/03	ML	6010
Lead	**1330**	6.89	02/20/03	ML	6010
Mercury	**1.17 ***	0.165	02/20/03	ML	7471
Selenium	ND	6.89	02/20/03	ML	6010
Silver	ND	0.689	02/20/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

010

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB2-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-03
Units: µg/Kg dry weight
Dilution: 50
Percent Solid: 93
Sample Amount: 30.3 g

Test Name	Result	MRL
Arochlor 1016	ND	1770
Arochlor 1221	ND	1770
Arochlor 1232	ND	1770
Arochlor 1242	ND	1770
Arochlor 1248	ND	1770
Arochlor 1254	ND	1770
Arochlor 1260	**26400**	1770

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/27/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

011

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB2-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-03
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 93
Sample Amount: 29.8g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	**369**	81.2
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**1650**	81.2
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**983**	81.2

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	99	40-140
O-Terphenyl	90	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	81	40-140
2-Fluorobiphenyl	75	40-140

Approved By: CB Date: 2/25/03

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

MDP 012

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB2-03-0203
Date Sampled: 2/12/03
Percent Solid: 60

ESS Project ID: 03020133
ESS Sample ID: 03020133-04
Units: mg/Kg dry weight
ICP1 Information: 1/1.56/100
Mercury Information: 1/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**11**	5.34	02/19/03	ML	6010
Barium	**166**	5.34	02/19/03	ML	6010
Cadmium	**20**	1.07	02/19/03	ML	6010
Chromium	**220**	2.14	02/19/03	ML	6010
Lead	**168**	10.7	02/19/03	ML	6010
Mercury	**0.367**	0.0556	02/20/03	ML	7471
Selenium	ND	10.7	02/19/03	ML	6010
Silver	ND	1.07	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: m

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB2-03-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-04
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 60
Sample Amount: 30.4 g

Test Name	Result	MRL
Arochlor 1016	ND	54.8
Arochlor 1221	ND	54.8
Arochlor 1232	ND	54.8
Arochlor 1242	ND	54.8
Arochlor 1248	ND	54.8
Arochlor 1254	ND	54.8
Arochlor 1260	ND	54.8

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

014

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB2-03-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: CLB
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-04
Matrix: Soil
F1 Dilution: 5
F2 Dilution: 2
Percent Solid: 60
Sample Amount: 30.3g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	619
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**7300**	619
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**1670**	248

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	DL	40-140
O-Terphenyl	120	40-140

DL = Diluted out of sample.

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	68	40-140
2-Fluorobiphenyl	64	40-140

Approved By: CLB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB3-00-0203
Date Sampled: 2/12/03
Percent Solid: 84

ESS Project ID: 03020133
ESS Sample ID: 03020133-05
Units: mg/Kg dry weight
ICP1 Information: 1/1.5/100
Mercury Information: 10/0.69/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**5.49**	3.97	02/19/03	ML	6010
Barium	**74.4**	3.97	02/19/03	ML	6010
Cadmium	**1.82**	0.794	02/19/03	ML	6010
Chromium	**27.5**	1.59	02/19/03	ML	6010
Lead	**389**	7.94	02/19/03	ML	6010
Mercury	**3.07 ***	0.345	02/20/03	ML	7471
Selenium	ND	7.94	02/19/03	ML	6010
Silver	ND	0.794	02/19/03	ML	6010

* = Result and MRL based on 10x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB3-00-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/19/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-05
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 84
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	39.7
Arochlor 1221	ND	39.7
Arochlor 1232	ND	39.7
Arochlor 1242	ND	39.7
Arochlor 1248	ND	39.7
Arochlor 1254	ND	39.7
Arochlor 1260	**269**	39.7

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/19/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB3-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-05
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 84
Sample Amount: 30.6g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	29.2
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**545**	29.2
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**182**	29.2

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	50	40-140
O-Terphenyl	94	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	97	40-140
2-Fluorobiphenyl	87	40-140

Approved By: AB Date: 2/25/03

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

MDP 018

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB3-01-0203
Date Sampled: 2/12/03
Percent Solid: 90

ESS Project ID: 03020133
ESS Sample ID: 03020133-06
Units: mg/Kg dry weight
ICP1 Information: 1/1.56/100
Mercury Information: 10/0.61/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**6.75**	3.56	02/19/03	ML	6010
Barium	**142**	3.56	02/19/03	ML	6010
Cadmium	**3.86**	0.712	02/19/03	ML	6010
Chromium	**30.7**	1.42	02/19/03	ML	6010
Lead	**563**	7.12	02/19/03	ML	6010
Mercury	**2.42** *	0.364	02/20/03	ML	7471
Selenium	ND	7.12	02/19/03	ML	6010
Silver	ND	0.712	02/19/03	ML	6010

* = Result and MRL based on 10x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB3-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-06
Units: µg/Kg dry weight
Dilution: 50
Percent Solid: 90
Sample Amount: 30.1 g

Test Name	Result	MRL
Arochlor 1016	ND	1850
Arochlor 1221	ND	1850
Arochlor 1232	ND	1850
Arochlor 1242	ND	1850
Arochlor 1248	ND	1850
Arochlor 1254	ND	1850
Arochlor 1260	**21800**	1850

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

020

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB3-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-06
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 90
Sample Amount: 30.1g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	138
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**497**	138
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**1140**	138

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	110	40-140
O-Terphenyl	105	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	80	40-140
2-Fluorobiphenyl	74	40-140

Approved By: CB Date: 2/25/03

MDP 021

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB4-00-0203
Date Sampled: 2/12/03
Percent Solid: 91

ESS Project ID: 03020133
ESS Sample ID: 03020133-07
Units: mg/Kg dry weight
ICP1 Information: 1/1.6/100
Mercury Information: 5/0.61/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**8.97**	3.43	02/19/03	ML	6010
Barium	**156**	3.43	02/19/03	ML	6010
Cadmium	**2.88**	0.687	02/19/03	ML	6010
Chromium	**29.1**	1.37	02/19/03	ML	6010
Lead	**381**	6.87	02/19/03	ML	6010
Mercury	**0.912** *	0.18	02/20/03	ML	7471
Selenium	ND	6.87	02/19/03	ML	6010
Silver	ND	0.687	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: MM Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB4-00-0203
Date Sampled: 2/12/03
Analyst: VSC
Date Analyzed: 2/25/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-07
Units: µg/Kg dry weight
Dilution: 100
Percent Solid: 91
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	3660
Arochlor 1221	ND	3660
Arochlor 1232	ND	3660
Arochlor 1242	ND	3660
Arochlor 1248	ND	3660
Arochlor 1254	ND	3660
Arochlor 1260	**9770**	3660

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: VSC Date: 2/25/03 Revised

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB4-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-07
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 91
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	27.5
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**399**	27.5
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**150**	27.5

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	69	40-140
O-Terphenyl	103	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	85	40-140
2-Fluorobiphenyl	70	40-140

Approved By: CLB Date: 2/25/03

MDP 024

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB4-01-0203
Date Sampled: 2/12/03
Percent Solid: 81

ESS Project ID: 03020133
ESS Sample ID: 03020133-08
Units: mg/Kg dry weight
ICP1 Information: 1/1.55/100
Mercury Information: 1/0.63/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**15.6**	3.98	02/19/03	ML	6010
Barium	**52.9**	3.98	02/19/03	ML	6010
Cadmium	ND	0.796	02/19/03	ML	6010
Chromium	**15.5**	1.59	02/19/03	ML	6010
Lead	**30.2**	7.96	02/19/03	ML	6010
Mercury	ND	0.0392	02/20/03	ML	7471
Selenium	ND	7.96	02/19/03	ML	6010
Silver	ND	0.796	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: [signature] Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB4-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/19/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-08
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 81
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	41.2
Arochlor 1221	ND	41.2
Arochlor 1232	ND	41.2
Arochlor 1242	ND	41.2
Arochlor 1248	ND	41.2
Arochlor 1254	ND	41.2
Arochlor 1260	**254**	41.2

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/11/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB4-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-08
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 81
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	30.9
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	ND	30.9
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	30.9

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	67	40-140
O-Terphenyl	102	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	86	40-140
2-Fluorobiphenyl	77	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB5-00-0203
Date Sampled: 2/12/03
Percent Solid: 83

ESS Project ID: 03020133
ESS Sample ID: 03020133-09
Units: mg/Kg dry weight
ICP1 Information: 1/1.61/100
Mercury Information: 5/0.68/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**13.6**	3.74	02/19/03	ML	6010
Barium	**344**	3.74	02/19/03	ML	6010
Cadmium	**3.75**	0.748	02/19/03	ML	6010
Chromium	**40**	1.5	02/19/03	ML	6010
Lead	**2700 ***	37	02/21/03	ML	6010
Mercury	**1.07 ***	0.177	02/20/03	ML	7471
Selenium	ND	7.48	02/19/03	ML	6010
Silver	ND	0.748	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB5-00-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-09
Units: µg/Kg dry weight
Dilution: 10
Percent Solid: 83
Sample Amount: 30.3 g

Test Name	Result	MRL
Arochlor 1016	ND	398
Arochlor 1221	ND	398
Arochlor 1232	ND	398
Arochlor 1242	**1110**	398
Arochlor 1248	ND	398
Arochlor 1254	ND	398
Arochlor 1260	**816**	398

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

029

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB5-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-09
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 83
Sample Amount: 30.1g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	90.1
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**345**	90.1
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**968**	90.1

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	96	40-140
O-Terphenyl	84	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	76	40-140
2-Fluorobiphenyl	66	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB5-01-0203
Date Sampled: 2/12/03
Percent Solid: 76

ESS Project ID: 03020133
ESS Sample ID: 03020133-10
Units: mg/Kg dry weight
ICP1 Information: 1/1.52/100
Mercury Information: 5/0.62/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**14.2**	4.33	02/19/03	ML	6010
Barium	**867**	4.33	02/19/03	ML	6010
Cadmium	**5.77**	0.866	02/19/03	ML	6010
Chromium	**52.2**	1.73	02/19/03	ML	6010
Lead	**1260**	8.66	02/19/03	ML	6010
Mercury	**1.86 ***	0.212	02/20/03	ML	7471
Selenium	ND	8.66	02/19/03	ML	6010
Silver	ND	0.866	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB5-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-10
Units: µg/Kg dry weight
Dilution: 100
Percent Solid: 76
Sample Amount: 29.7 g

Test Name	Result	MRL
Arochlor 1016	ND	4430
Arochlor 1221	ND	4430
Arochlor 1232	ND	4430
Arochlor 1242	ND	4430
Arochlor 1248	ND	4430
Arochlor 1254	ND	4430
Arochlor 1260	**7020**	4430

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB5-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-10
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 76
Sample Amount: 30.1g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	164
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**812**	164
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**272**	164

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	110	40-140
O-Terphenyl	105	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	77	40-140
2-Fluorobiphenyl	69	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB6-00-0203
Date Sampled: 2/12/03
Percent Solid: 88

ESS Project ID: 03020133
ESS Sample ID: 03020133-11
Units: mg/Kg dry weight
ICP1 Information: 1/1.65/100
Mercury Information: 1/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**17.9**	3.44	02/19/03	ML	6010
Barium	**55.8**	3.44	02/19/03	ML	6010
Cadmium	**1.61**	0.689	02/19/03	ML	6010
Chromium	**29.6**	1.38	02/19/03	ML	6010
Lead	**92.2**	6.89	02/19/03	ML	6010
Mercury	**0.327**	0.0379	02/20/03	ML	7471
Selenium	ND	6.89	02/19/03	ML	6010
Silver	ND	0.689	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB6-00-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/23/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-11
Units: µg/Kg dry weight
Dilution: 5000
Percent Solid: 88
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	189000
Arochlor 1221	ND	189000
Arochlor 1232	ND	189000
Arochlor 1242	ND	189000
Arochlor 1248	ND	189000
Arochlor 1254	ND	189000
Arochlor 1260	**2700000**	189000

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

035

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB6-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-11
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 2
Percent Solid: 88
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	28.4
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**311**	28.4
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**527**	56.8

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	56	40-140
O-Terphenyl	110	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	96	40-140
2-Fluorobiphenyl	86	40-140

Approved By: CLB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB6-01-0203
Date Sampled: 2/12/03
Percent Solid: 78

ESS Project ID: 03020133
ESS Sample ID: 03020133-12
Units: mg/Kg dry weight
ICP1 Information: 1/1.6/100
Mercury Information: 1/0.62/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**8.52**	4.01	02/19/03	ML	6010
Barium	**19.4**	4.01	02/19/03	ML	6010
Cadmium	ND	0.801	02/19/03	ML	6010
Chromium	**12.6**	1.6	02/19/03	ML	6010
Lead	ND	8.01	02/19/03	ML	6010
Mercury	ND	0.0414	02/20/03	ML	7471
Selenium	ND	8.01	02/19/03	ML	6010
Silver	ND	0.801	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: [signature]

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB6-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/23/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-12
Units: µg/Kg dry weight
Dilution: 50
Percent Solid: 78
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	2140
Arochlor 1221	ND	2140
Arochlor 1232	ND	2140
Arochlor 1242	ND	2140
Arochlor 1248	ND	2140
Arochlor 1254	ND	2140
Arochlor 1260	**34000**	2140

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/27/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB6-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-12
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 78
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	32.1
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	ND	32.1
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	32.1

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	63	40-140
O-Terphenyl	93	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	62	40-140
2-Fluorobiphenyl	58	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB7-00-0203
Date Sampled: 2/12/03
Percent Solid: 90

ESS Project ID: 03020133
ESS Sample ID: 03020133-13
Units: mg/Kg dry weight
ICP1 Information: 1/1.56/100
Mercury Information: 5/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**9.89**	3.56	02/19/03	ML	6010
Barium	**70.6**	3.56	02/19/03	ML	6010
Cadmium	**2.3**	0.712	02/19/03	ML	6010
Chromium	**48.6**	1.42	02/19/03	ML	6010
Lead	**215**	7.12	02/19/03	ML	6010
Mercury	**1.39 ***	0.185	02/20/03	ML	7471
Selenium	ND	7.12	02/19/03	ML	6010
Silver	ND	0.712	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: [signature] Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB7-00-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-13
Units: µg/Kg dry weight
Dilution: 2
Percent Solid: 90
Sample Amount: 29.8 g

Test Name	Result	MRL
Arochlor 1016	ND	74.6
Arochlor 1221	ND	74.6
Arochlor 1232	ND	74.6
Arochlor 1242	ND	74.6
Arochlor 1248	ND	74.6
Arochlor 1254	ND	74.6
Arochlor 1260	**764**	74.6

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/21/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB7-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-13
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 90
Sample Amount: 29.9g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	27.9
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**582**	27.9
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**136**	27.9

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	70	40-140
O-Terphenyl	92	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	83	40-140
2-Fluorobiphenyl	73	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

042

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB7-01-0203
Date Sampled: 2/12/03
Percent Solid: 92

ESS Project ID: 03020133
ESS Sample ID: 03020133-14
Units: mg/Kg dry weight
ICP1 Information: 1/1.51/100
Mercury Information: 1/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**6.13**	3.6	02/19/03	ML	6010
Barium	**197**	3.6	02/19/03	ML	6010
Cadmium	**3.07**	0.72	02/19/03	ML	6010
Chromium	**28.9**	1.44	02/19/03	ML	6010
Lead	**517**	7.2	02/19/03	ML	6010
Mercury	**0.535**	0.0362	02/20/03	ML	7471
Selenium	ND	7.2	02/19/03	ML	6010
Silver	**1.62**	0.72	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: JM

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB7-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-14
Units: µg/Kg dry weight
Dilution: 20
Percent Solid: 92
Sample Amount: 30.1 g

Test Name	Result	MRL
Arochlor 1016	ND	722
Arochlor 1221	ND	722
Arochlor 1232	ND	722
Arochlor 1242	ND	722
Arochlor 1248	ND	722
Arochlor 1254	ND	722
Arochlor 1260	**7060**	722

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB7-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-14
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 92
Sample Amount: 29.6g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	27.5
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**126**	27.5
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**83.9**	27.5

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	79	40-140
O-Terphenyl	98	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	83	40-140
2-Fluorobiphenyl	74	40-140

Approved By: CLB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB8-01-0203
Date Sampled: 2/12/03
Percent Solid: 94

ESS Project ID: 03020133
ESS Sample ID: 03020133-15
Units: mg/Kg dry weight
ICP1 Information: 1/1.59/100
Mercury Information: 1/0.65/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**4.49**	3.34	02/19/03	ML	6010
Barium	**35.3**	3.34	02/19/03	ML	6010
Cadmium	ND	0.669	02/19/03	ML	6010
Chromium	**15.5**	1.34	02/19/03	ML	6010
Lead	**99.2**	6.69	02/19/03	ML	6010
Mercury	**0.401**	0.0327	02/20/03	ML	7471
Selenium	ND	6.69	02/19/03	ML	6010
Silver	ND	0.669	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: JM

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB8-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-15
Units: µg/Kg dry weight
Dilution: 100
Percent Solid: 94
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	3550
Arochlor 1221	ND	3550
Arochlor 1232	ND	3550
Arochlor 1242	ND	3550
Arochlor 1248	ND	3550
Arochlor 1254	ND	3550
Arochlor 1260	**7300**	3550

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB8-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-15
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 94
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	133
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**219**	133
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**240**	133

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	90	40-140
O-Terphenyl	105	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	83	40-140
2-Fluorobiphenyl	73	40-140

Approved By: AB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB8-03-0203
Date Sampled: 2/12/03
Percent Solid: 88

ESS Project ID: 03020133
ESS Sample ID: 03020133-16
Units: mg/Kg dry weight
ICP1 Information: 1/1.5/100
Mercury Information: 5/0.65/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**8.1**	3.79	02/19/03	ML	6010
Barium	**184**	3.79	02/19/03	ML	6010
Cadmium	**3.55**	0.758	02/19/03	ML	6010
Chromium	**35.5**	1.52	02/19/03	ML	6010
Lead	**464**	7.58	02/19/03	ML	6010
Mercury	**1.29 ***	0.175	02/20/03	ML	7471
Selenium	ND	7.58	02/19/03	ML	6010
Silver	ND	0.758	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: [signature]

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB8-03-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/19/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-16
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 88
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	37.9
Arochlor 1221	ND	37.9
Arochlor 1232	ND	37.9
Arochlor 1242	ND	37.9
Arochlor 1248	ND	37.9
Arochlor 1254	ND	37.9
Arochlor 1260	ND	37.9

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: D Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB8-03-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-16
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 88
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	**45**	28.4
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**826**	28.4
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**255**	28.4

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	67	40-140
O-Terphenyl	99	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	81	40-140
2-Fluorobiphenyl	71	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB9-00-0203
Date Sampled: 2/12/03
Percent Solid: 79

ESS Project ID: 03020133
ESS Sample ID: 03020133-17
Units: mg/Kg dry weight
ICP1 Information: 1/1.51/100
Mercury Information: 1/0.64/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**7.33**	4.19	02/19/03	ML	6010
Barium	**228**	4.19	02/19/03	ML	6010
Cadmium	**1.42**	0.838	02/19/03	ML	6010
Chromium	**20.6**	1.68	02/19/03	ML	6010
Lead	**94.9**	8.38	02/19/03	ML	6010
Mercury	**0.174**	0.0396	02/20/03	ML	7471
Selenium	ND	8.38	02/19/03	ML	6010
Silver	ND	0.838	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

052

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB9-00-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/19/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-17
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 79
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	42.2
Arochlor 1221	ND	42.2
Arochlor 1232	ND	42.2
Arochlor 1242	ND	42.2
Arochlor 1248	ND	42.2
Arochlor 1254	ND	42.2
Arochlor 1260	**359**	42.2

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/19/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB9-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-17
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 79
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	31.6
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**104**	31.6
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	31.6

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	86	40-140
O-Terphenyl	99	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	74	40-140
2-Fluorobiphenyl	71	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB9-01-0203
Date Sampled: 2/12/03
Percent Solid: 77

ESS Project ID: 03020133
ESS Sample ID: 03020133-18
Units: mg/Kg dry weight
ICP1 Information: 1/1.5/100
Mercury Information: 1/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**5.56**	4.33	02/19/03	ML	6010
Barium	**18.9**	4.33	02/19/03	ML	6010
Cadmium	ND	0.866	02/19/03	ML	6010
Chromium	**12.6**	1.73	02/19/03	ML	6010
Lead	ND	8.66	02/19/03	ML	6010
Mercury	ND	0.0433	02/20/03	ML	7471
Selenium	ND	8.66	02/19/03	ML	6010
Silver	ND	0.866	02/19/03	ML	6010

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: MM Date: 4/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB9-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/19/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-18
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 77
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	43.3
Arochlor 1221	ND	43.3
Arochlor 1232	ND	43.3
Arochlor 1242	ND	43.3
Arochlor 1248	ND	43.3
Arochlor 1254	ND	43.3
Arochlor 1260	ND	43.3

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB9-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-18
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 77
Sample Amount: 30.1g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	32.4
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	ND	32.4
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	32.4

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	83	40-140
O-Terphenyl	101	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	77	40-140
2-Fluorobiphenyl	73	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-00-0203
Date Sampled: 2/12/03
Percent Solid: 91

ESS Project ID: 03020133
ESS Sample ID: 03020133-19
Units: mg/Kg dry weight
ICP1 Information: 1/1.53/100
Mercury Information: 1/0.65/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**69.4**	3.59	02/19/03	ML	6010
Barium	**195**	3.59	02/19/03	ML	6010
Cadmium	**0.977**	0.718	02/19/03	ML	6010
Chromium	**40.1**	1.44	02/19/03	ML	6010
Lead	**789**	7.18	02/19/03	ML	6010
Mercury	**0.323**	0.0338	02/20/03	ML	7471
Selenium	ND	7.18	02/19/03	ML	6010
Silver	ND	0.718	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: [signature]

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-00-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/23/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-19
Units: µg/Kg dry weight
Dilution: 20
Percent Solid: 91
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	733
Arochlor 1221	ND	733
Arochlor 1232	ND	733
Arochlor 1242	**818**	733
Arochlor 1248	ND	733
Arochlor 1254	ND	733
Arochlor 1260	**4030**	733

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/10/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: CLB
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-19
Matrix: Soil
F1 Dilution: 5
F2 Dilution: 1
Percent Solid: 91
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	137
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**2310**	137
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**70.6**	27.5

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	90	40-140
O-Terphenyl	99	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	71	40-140
2-Fluorobiphenyl	65	40-140

Approved By: CLB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-01-0203
Date Sampled: 2/12/03
Percent Solid: 86

ESS Project ID: 03020133
ESS Sample ID: 03020133-20
Units: mg/Kg dry weight
ICP1 Information: 1/1.57/100
Mercury Information: 10/0.66/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**10.8**	3.7	02/19/03	ML	6010
Barium	**526**	3.7	02/19/03	ML	6010
Cadmium	**4.1**	0.741	02/19/03	ML	6010
Chromium	**47**	1.48	02/19/03	ML	6010
Lead	**1320**	7.41	02/19/03	ML	6010
Mercury	**2.08** *	0.352	02/20/03	ML	7471
Selenium	ND	7.41	02/19/03	ML	6010
Silver	ND	0.741	02/19/03	ML	6010

* = Result and MRL based on 10x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: m Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-20
Units: µg/Kg dry weight
Dilution: 500
Percent Solid: 86
Sample Amount: 30.1 g

Test Name	Result	MRL
Arochlor 1016	ND	19300
Arochlor 1221	ND	19300
Arochlor 1232	ND	19300
Arochlor 1242	ND	19300
Arochlor 1248	ND	19300
Arochlor 1254	ND	19300
Arochlor 1260	**26000**	19300

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/28

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

062

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-20
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 2
Percent Solid: 86
Sample Amount: 29.9g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	**63.5**	29.2
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**557**	29.2
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**214**	58.3

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	77	40-140
O-Terphenyl	94	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	56	40-140
2-Fluorobiphenyl	54	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB11-00-0203
Date Sampled: 2/12/03
Percent Solid: 87

ESS Project ID: 03020133
ESS Sample ID: 03020133-21
Units: mg/Kg dry weight
ICP1 Information: 1/1.53/100
Mercury Information: 5/0.64/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**6.04**	3.76	02/19/03	ML	6010
Barium	**82.3**	3.76	02/19/03	ML	6010
Cadmium	**1.68**	0.751	02/19/03	ML	6010
Chromium	**28.7**	1.5	02/19/03	ML	6010
Lead	**216**	7.51	02/19/03	ML	6010
Mercury	**0.661 ***	0.18	02/20/03	ML	7471
Selenium	ND	7.51	02/19/03	ML	6010
Silver	ND	0.751	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB11-00-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-21
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 87
Sample Amount: 29.8 g

Test Name	Result	MRL
Arochlor 1016	ND	38.6
Arochlor 1221	ND	38.6
Arochlor 1232	ND	38.6
Arochlor 1242	**77.1**	38.6
Arochlor 1248	ND	38.6
Arochlor 1254	ND	38.6
Arochlor 1260	**381**	38.6

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/15/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB11-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-21
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 4
Percent Solid: 87
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	144
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**361**	144
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**739**	575

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	60	40-140
O-Terphenyl	DL	40-140

DL = Diluted out of sample.

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	64	40-140
2-Fluorobiphenyl	52	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB11-01-0203
Date Sampled: 2/12/03
Percent Solid: 87

ESS Project ID: 03020133
ESS Sample ID: 03020133-22
Units: mg/Kg dry weight
ICP1 Information: 1/1.53/100
Mercury Information: 5/0.61/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**14.3**	3.76	02/19/03	ML	6010
Barium	**176**	3.76	02/19/03	ML	6010
Cadmium	**12.5**	0.751	02/19/03	ML	6010
Chromium	**57.9**	1.5	02/19/03	ML	6010
Lead	**709**	7.51	02/19/03	ML	6010
Mercury	**2.26 ***	0.188	02/20/03	ML	7471
Selenium	ND	7.51	02/19/03	ML	6010
Silver	ND	0.751	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: MM Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB11-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-22
Units: µg/Kg dry weight
Dilution: 20
Percent Solid: 87
Sample Amount: 29.9 g

Test Name	Result	MRL
Arochlor 1016	ND	769
Arochlor 1221	ND	769
Arochlor 1232	ND	769
Arochlor 1242	**1460**	769
Arochlor 1248	ND	769
Arochlor 1254	ND	769
Arochlor 1260	**3060**	769

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB11-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-22
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 87
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	144
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**918**	144
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**649**	144

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	90	40-140
O-Terphenyl	100	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	84	40-140
2-Fluorobiphenyl	86	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB12-00-0203
Date Sampled: 2/12/03
Percent Solid: 88

ESS Project ID: 03020133
ESS Sample ID: 03020133-23
Units: mg/Kg dry weight
ICP1 Information: 1/1.55/100
Mercury Information: 5/0.69/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**8.51**	3.67	02/19/03	ML	6010
Barium	**376**	3.67	02/19/03	ML	6010
Cadmium	**10.6**	0.733	02/19/03	ML	6010
Chromium	**40.7**	1.47	02/19/03	ML	6010
Lead	**652**	7.33	02/19/03	ML	6010
Mercury	**0.715** *	0.165	02/20/03	ML	7471
Selenium	ND	7.33	02/19/03	ML	6010
Silver	ND	0.733	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

070

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB12-00-0203
Date Sampled: 2/12/03
Analyst: VSC
Date Analyzed: 2/25/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-23
Units: µg/Kg dry weight
Dilution: 50
Percent Solid: 88
Sample Amount: 30.2 g

Test Name	Result	MRL
Arochlor 1016	ND	1880
Arochlor 1221	ND	1880
Arochlor 1232	ND	1880
Arochlor 1242	ND	1880
Arochlor 1248	ND	1880
Arochlor 1254	ND	1880
Arochlor 1260	**7140**	1880

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: VSC Date: 2/25/03 Revised MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB12-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-23
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 88
Sample Amount: 30.1g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	142
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**396**	142
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**156**	142

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	85	40-140
O-Terphenyl	85	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	44	40-140
2-Fluorobiphenyl	47	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB12-01-0203
Date Sampled: 2/12/03
Percent Solid: 83

ESS Project ID: 03020133
ESS Sample ID: 03020133-24
Units: mg/Kg dry weight
ICP1 Information: 1/1.54/100
Mercury Information: 1/0.63/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	3.91	02/19/03	ML	6010
Barium	**46.6**	3.91	02/19/03	ML	6010
Cadmium	ND	0.782	02/19/03	ML	6010
Chromium	**10.1**	1.56	02/19/03	ML	6010
Lead	**13.7**	7.82	02/19/03	ML	6010
Mercury	ND	0.0382	02/20/03	ML	7471
Selenium	ND	7.82	02/19/03	ML	6010
Silver	ND	0.782	02/19/03	ML	6010

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB12-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-24
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 83
Sample Amount: 30.4 g

Test Name	Result	MRL
Arochlor 1016	ND	39.6
Arochlor 1221	ND	39.6
Arochlor 1232	ND	39.6
Arochlor 1242	ND	39.6
Arochlor 1248	ND	39.6
Arochlor 1254	ND	39.6
Arochlor 1260	**88.2**	39.6

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB12-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-24
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 83
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	30.1
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	ND	30.1
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	30.1

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	91	40-140
O-Terphenyl	100	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	72	40-140
2-Fluorobiphenyl	94	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-00-0203
Date Sampled: 2/12/03
Percent Solid: 88

ESS Project ID: 03020133
ESS Sample ID: 03020133-25
Units: mg/Kg dry weight
ICP1 Information: 1/1.54/100
Mercury Information: 5/0.65/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	3.69	02/19/03	ML	6010
Barium	**45.8**	3.69	02/19/03	ML	6010
Cadmium	**2.11**	0.738	02/19/03	ML	6010
Chromium	**24.6**	1.48	02/19/03	ML	6010
Lead	**115**	7.38	02/19/03	ML	6010
Mercury	**1.28 ***	0.175	02/20/03	ML	7471
Selenium	ND	7.38	02/19/03	ML	6010
Silver	ND	0.738	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: MM Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-00-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-25
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 88
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	37.9
Arochlor 1221	ND	37.9
Arochlor 1232	ND	37.9
Arochlor 1242	**55**	37.9
Arochlor 1248	ND	37.9
Arochlor 1254	ND	37.9
Arochlor 1260	**103**	37.9

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

077

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-00-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-25
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 88
Sample Amount: 30.2g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	28.2
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**250**	28.2
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**72.1**	28.2

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	95	40-140
O-Terphenyl	95	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	65	40-140
2-Fluorobiphenyl	72	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-01-0203
Date Sampled: 2/12/03
Percent Solid: 86

ESS Project ID: 03020133
ESS Sample ID: 03020133-26
Units: mg/Kg dry weight
ICP1 Information: 1/1.51/100
Mercury Information: 5/0.61/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**15.5**	3.85	02/19/03	ML	6010
Barium	**915**	3.85	02/19/03	ML	6010
Cadmium	**6.59**	0.77	02/19/03	ML	6010
Chromium	**52.2**	1.54	02/19/03	ML	6010
Lead	**1390**	7.7	02/19/03	ML	6010
Mercury	**1.28 ***	0.191	02/20/03	ML	7471
Selenium	ND	7.7	02/19/03	ML	6010
Silver	**1.6**	0.77	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: JM Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-01-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-26
Units: µg/Kg dry weight
Dilution: 10
Percent Solid: 86
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	388
Arochlor 1221	ND	388
Arochlor 1232	ND	388
Arochlor 1242	**1650**	388
Arochlor 1248	ND	388
Arochlor 1254	ND	388
Arochlor 1260	**2360**	388

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

080

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: CLB
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-26
Matrix: Soil
F1 Dilution: 2
F2 Dilution: 1
Percent Solid: 86
Sample Amount: 30.1g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	**1950**	290
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**7390**	290
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**1740**	145

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	DL	40-140
O-Terphenyl	100	40-140

DL = Diluted out of sample.

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	60	40-140
2-Fluorobiphenyl	63	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-03-0203
Date Sampled: 2/12/03
Percent Solid: 82

ESS Project ID: 03020133
ESS Sample ID: 03020133-27
Units: mg/Kg dry weight
ICP1 Information: 1/1.51/100
Mercury Information: 1/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**10.7**	4.04	02/19/03	ML	6010
Barium	**1480**	4.04	02/19/03	ML	6010
Cadmium	ND	0.808	02/19/03	ML	6010
Chromium	**15.1**	1.62	02/19/03	ML	6010
Lead	**2230 ***	40	02/21/03	ML	6010
Mercury	**0.28**	0.0407	02/20/03	ML	7471
Selenium	ND	8.08	02/19/03	ML	6010
Silver	ND	0.808	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-03-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-27
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 82
Sample Amount: 30.1 g

Test Name	Result	MRL
Arochlor 1016	ND	40.5
Arochlor 1221	ND	40.5
Arochlor 1232	ND	40.5
Arochlor 1242	ND	40.5
Arochlor 1248	ND	40.5
Arochlor 1254	ND	40.5
Arochlor 1260	ND	40.5

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-03-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-27
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 82
Sample Amount: 29.9g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	30.6
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**77.6**	30.6
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	30.6

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	97	40-140
O-Terphenyl	93	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	63	40-140
2-Fluorobiphenyl	83	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-05-0203
Date Sampled: 2/12/03
Percent Solid: 81

ESS Project ID: 03020133
ESS Sample ID: 03020133-28
Units: mg/Kg dry weight
ICP1 Information: 1/1.57/100
Mercury Information: 1/0.62/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**4.66**	3.93	02/19/03	ML	6010
Barium	**18.1**	3.93	02/19/03	ML	6010
Cadmium	ND	0.786	02/19/03	ML	6010
Chromium	**8.34**	1.57	02/19/03	ML	6010
Lead	ND	7.86	02/19/03	ML	6010
Mercury	ND	0.0398	02/20/03	ML	7471
Selenium	ND	7.86	02/19/03	ML	6010
Silver	ND	0.786	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: [signature]

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-05-0203
Date Sampled: 2/12/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-28
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 81
Sample Amount: 30.1 g

Test Name	Result	MRL
Arochlor 1016	ND	41
Arochlor 1221	ND	41
Arochlor 1232	ND	41
Arochlor 1242	ND	41
Arochlor 1248	ND	41
Arochlor 1254	ND	41
Arochlor 1260	ND	41

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-05-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-28
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 81
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	30.9
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	ND	30.9
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	30.9

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	77	40-140
O-Terphenyl	98	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	76	40-140
2-Fluorobiphenyl	75	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-01-0203-E
Date Sampled: 2/12/03
Percent Solid: 87

ESS Project ID: 03020133
ESS Sample ID: 03020133-29
Units: mg/Kg dry weight
ICP1 Information: 1/1.55/100
Mercury Information: 5/0.63/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**12.6**	3.71	02/19/03	ML	6010
Barium	**615**	3.71	02/19/03	ML	6010
Cadmium	**5.9**	0.742	02/19/03	ML	6010
Chromium	**52.1**	1.48	02/19/03	ML	6010
Lead	**1090**	7.42	02/19/03	ML	6010
Mercury	**1.54 ***	0.182	02/20/03	ML	7471
Selenium	ND	7.42	02/19/03	ML	6010
Silver	ND	0.742	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: m Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

088

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-01-0203-E
Date Sampled: 2/12/03
Analyst: VSC
Date Analyzed: 2/25/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-29
Units: µg/Kg dry weight
Dilution: 10
Percent Solid: 87
Sample Amount: 29.9 g

Test Name	Result	MRL
Arochlor 1016	ND	384
Arochlor 1221	ND	384
Arochlor 1232	ND	384
Arochlor 1242	**4970**	384
Arochlor 1248	ND	384
Arochlor 1254	ND	384
Arochlor 1260	**6730**	384

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: VSC Date: 2/25/03 Revised MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-01-0203-E
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: CLB
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-29
Matrix: Soil
F1 Dilution: 5
F2 Dilution: 1
Percent Solid: 87
Sample Amount: 29.8g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	**1550**	723
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**6570**	723
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**2170**	145

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	DL	40-140
O-Terphenyl	85	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	78	40-140
2-Fluorobiphenyl	73	40-140

DL = Diluted out of sample.

Approved By: CLB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW 7-0203-E
Date Sampled: 2/13/03
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 03020133-30
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	0.05	02/19/03	ML	6010
Barium	ND	0.05	02/19/03	ML	6010
Cadmium	ND	0.005	02/19/03	ML	6010
Chromium	ND	0.02	02/19/03	ML	6010
Lead	ND	0.005	02/20/03	ML	7421
Mercury	ND	0.0005	02/24/03	ML	7470
Selenium	ND	0.01	02/21/03	ML	7740
Silver	ND	0.005	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

091

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW 7-0203-E
Date Sampled: 2/13/03
Analyst: SVD
Date Analyzed: 2/20/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-30
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Test Name	Result	MRL
1,1,1,2-Tetrachloroethane	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
1,1,2-Trichloroethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,3-Trichloropropane	ND	1
1,2,4-Trichlorobenzene	ND	1
1,2,4-Trimethylbenzene	**3.02**	1
1,2-Dibromo-3-Chloropropane	ND	5
1,2-Dibromoethane	ND	1
1,2-Dichlorobenzene	ND	1
1,2-Dichloroethane	ND	1
1,2-Dichloropropane	ND	1
1,3,5-Trimethylbenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,3-Dichloropropane	ND	1
1,4-Dichlorobenzene	ND	1
1-Chlorohexane	ND	1
2,2-Dichloropropane	ND	1
2-Butanone	ND	25
2-Chlorotoluene	ND	1
2-Hexanone	ND	10
4-Chlorotoluene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-Pentanone	**26.2**	10
Acetone	**134**	25
Benzene	**4.34**	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	2
Carbon Disulfide	ND	1
Carbon Tetrachloride	ND	1

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

MDP 092

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: MW 7-0203-E

ESS Project ID: 03020133
ESS Sample ID: 03020133-30

Test Name	Result	MRL
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	2
cis-1,2-Dichloroethene	**62.2**	1
cis-1,3-Dichloropropene	ND	0.5
Dibromochloromethane	ND	1
Dibromomethane	ND	1
Dichlorodifluoromethane	ND	2
Diethyl Ether	ND	1
Ethylbenzene	ND	1
Hexachlorobutadiene	ND	0.6
Isopropylbenzene	ND	1
Methyl tert-Butyl Ether	**1180 ***	100
Methylene Chloride	ND	2
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
Naphthalene	**3.34**	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
Tetrachloroethene	**42**	1
Tetrahydrofuran	ND	5
Toluene	ND	1
trans-1,2-Dichloroethene	ND	1
trans-1,3-Dichloropropene	ND	0.5
Trichloroethene	**18.8**	1
Trichlorofluoromethane	ND	2
Vinyl Acetate	ND	1
Vinyl Chloride	**4.96**	2
Xylenes (Total)	ND	2

* = Result and MRL based on 100x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: SD

Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW1-0203
Date Sampled: 2/13/03
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 03020133-31
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	0.05	02/19/03	ML	6010
Barium	ND	0.05	02/19/03	ML	6010
Cadmium	ND	0.005	02/19/03	ML	6010
Chromium	ND	0.02	02/19/03	ML	6010
Lead	ND	0.005	02/20/03	ML	7421
Mercury	ND	0.0005	02/24/03	ML	7470
Selenium	ND	0.01	02/21/03	ML	7740
Silver	ND	0.005	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: JM Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW1-0203
Date Sampled: 2/13/03
Analyst: SVD
Date Analyzed: 2/20/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-31
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Test Name	Result	MRL
1,1,1,2-Tetrachloroethane	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
1,1,2-Trichloroethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,3-Trichloropropane	ND	1
1,2,4-Trichlorobenzene	ND	1
1,2,4-Trimethylbenzene	ND	1
1,2-Dibromo-3-Chloropropane	ND	5
1,2-Dibromoethane	ND	1
1,2-Dichlorobenzene	ND	1
1,2-Dichloroethane	ND	1
1,2-Dichloropropane	ND	1
1,3,5-Trimethylbenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,3-Dichloropropane	ND	1
1,4-Dichlorobenzene	ND	1
1-Chlorohexane	ND	1
2,2-Dichloropropane	ND	1
2-Butanone	ND	25
2-Chlorotoluene	ND	1
2-Hexanone	ND	10
4-Chlorotoluene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-Pentanone	ND	10
Acetone	ND	25
Benzene	ND	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	2
Carbon Disulfide	ND	1
Carbon Tetrachloride	ND	1

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

MDP 095

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: MW1-0203

ESS Project ID: 03020133
ESS Sample ID: 03020133-31

Test Name	Result	MRL
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	2
cis-1,2-Dichloroethene	ND	1
cis-1,3-Dichloropropene	ND	0.5
Dibromochloromethane	ND	1
Dibromomethane	ND	1
Dichlorodifluoromethane	ND	2
Diethyl Ether	ND	1
Ethylbenzene	ND	1
Hexachlorobutadiene	ND	0.6
Isopropylbenzene	ND	1
Methyl tert-Butyl Ether	ND	1
Methylene Chloride	ND	2
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
Naphthalene	ND	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
Tetrachloroethene	ND	1
Tetrahydrofuran	ND	5
Toluene	ND	1
trans-1,2-Dichloroethene	ND	1
trans-1,3-Dichloropropene	ND	0.5
Trichloroethene	ND	1
Trichlorofluoromethane	ND	2
Vinyl Acetate	ND	1
Vinyl Chloride	ND	2
Xylenes (Total)	ND	2

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: SD

Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW5-0203
Date Sampled: 2/13/03
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 03020133-32
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	0.05	02/19/03	ML	6010
Barium	**0.07**	0.05	02/19/03	ML	6010
Cadmium	ND	0.005	02/19/03	ML	6010
Chromium	ND	0.02	02/19/03	ML	6010
Lead	**0.006**	0.005	02/21/03	ML	7421
Mercury	ND	0.0005	02/24/03	ML	7470
Selenium	ND	0.01	02/21/03	ML	7740
Silver	ND	0.005	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: m

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW5-0203
Date Sampled: 2/13/03
Analyst: SVD
Date Analyzed: 2/20/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-32
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Test Name	Result	MRL
1,1,1,2-Tetrachloroethane	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
1,1,2-Trichloroethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,3-Trichloropropane	ND	1
1,2,4-Trichlorobenzene	ND	1
1,2,4-Trimethylbenzene	**1.1**	1
1,2-Dibromo-3-Chloropropane	ND	5
1,2-Dibromoethane	ND	1
1,2-Dichlorobenzene	ND	1
1,2-Dichloroethane	ND	1
1,2-Dichloropropane	ND	1
1,3,5-Trimethylbenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,3-Dichloropropane	ND	1
1,4-Dichlorobenzene	ND	1
1-Chlorohexane	ND	1
2,2-Dichloropropane	ND	1
2-Butanone	ND	25
2-Chlorotoluene	ND	1
2-Hexanone	ND	10
4-Chlorotoluene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-Pentanone	ND	10
Acetone	ND	25
Benzene	ND	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	2
Carbon Disulfide	ND	1
Carbon Tetrachloride	ND	1

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

MDP 098

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: MW5-0203

ESS Project ID: 03020133
ESS Sample ID: 03020133-32

Test Name	Result	MRL
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	2
cis-1,2-Dichloroethene	ND	1
cis-1,3-Dichloropropene	ND	0.5
Dibromochloromethane	ND	1
Dibromomethane	ND	1
Dichlorodifluoromethane	ND	2
Diethyl Ether	ND	1
Ethylbenzene	ND	1
Hexachlorobutadiene	ND	0.6
Isopropylbenzene	ND	1
Methyl tert-Butyl Ether	**125 ***	10
Methylene Chloride	ND	2
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
Naphthalene	ND	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
Tetrachloroethene	**1.53**	1
Tetrahydrofuran	ND	5
Toluene	ND	1
trans-1,2-Dichloroethene	ND	1
trans-1,3-Dichloropropene	ND	0.5
Trichloroethene	ND	1
Trichlorofluoromethane	ND	2
Vinyl Acetate	ND	1
Vinyl Chloride	ND	2
Xylenes (Total)	**2.32**	2

* = Result and MRL based on 10x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: SVD

Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW6-0203
Date Sampled: 2/13/03
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 03020133-33
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	0.05	02/19/03	ML	6010
Barium	**0.07**	0.05	02/19/03	ML	6010
Cadmium	ND	0.005	02/19/03	ML	6010
Chromium	ND	0.02	02/19/03	ML	6010
Lead	ND	0.005	02/20/03	ML	7421
Mercury	ND	0.0005	02/24/03	ML	7470
Selenium	ND	0.01	02/21/03	ML	7740
Silver	ND	0.005	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: JM

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW6-0203
Date Sampled: 2/13/03
Analyst: SVD
Date Analyzed: 2/20/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-33
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Test Name	Result	MRL
1,1,1,2-Tetrachloroethane	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
1,1,2-Trichloroethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,3-Trichloropropane	ND	1
1,2,4-Trichlorobenzene	ND	1
1,2,4-Trimethylbenzene	**2.04**	1
1,2-Dibromo-3-Chloropropane	ND	5
1,2-Dibromoethane	ND	1
1,2-Dichlorobenzene	ND	1
1,2-Dichloroethane	ND	1
1,2-Dichloropropane	ND	1
1,3,5-Trimethylbenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,3-Dichloropropane	ND	1
1,4-Dichlorobenzene	ND	1
1-Chlorohexane	ND	1
2,2-Dichloropropane	ND	1
2-Butanone	ND	25
2-Chlorotoluene	ND	1
2-Hexanone	ND	10
4-Chlorotoluene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-Pentanone	ND	10
Acetone	ND	25
Benzene	ND	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	2
Carbon Disulfide	ND	1
Carbon Tetrachloride	ND	1

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

MDP 101

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: MW6-0203

ESS Project ID: 03020133
ESS Sample ID: 03020133-33

Test Name	Result	MRL
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	2
cis-1,2-Dichloroethene	ND	1
cis-1,3-Dichloropropene	ND	0.5
Dibromochloromethane	ND	1
Dibromomethane	ND	1
Dichlorodifluoromethane	ND	2
Diethyl Ether	ND	1
Ethylbenzene	ND	1
Hexachlorobutadiene	ND	0.6
Isopropylbenzene	ND	1
Methyl tert-Butyl Ether	**4.92**	1
Methylene Chloride	ND	2
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
Naphthalene	**3.97**	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
Tetrachloroethene	**3.61**	1
Tetrahydrofuran	ND	5
Toluene	ND	1
trans-1,2-Dichloroethene	ND	1
trans-1,3-Dichloropropene	ND	0.5
Trichloroethene	**56.8**	1
Trichlorofluoromethane	ND	2
Vinyl Acetate	ND	1
Vinyl Chloride	ND	2
Xylenes (Total)	**2.06**	2

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: SD

Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW7-0203
Date Sampled: 2/13/03
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 03020133-34
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	0.05	02/19/03	ML	6010
Barium	ND	0.05	02/19/03	ML	6010
Cadmium	ND	0.005	02/19/03	ML	6010
Chromium	ND	0.02	02/19/03	ML	6010
Lead	ND	0.005	02/20/03	ML	7421
Mercury	ND	0.0005	02/24/03	ML	7470
Selenium	ND	0.01	02/21/03	ML	7740
Silver	ND	0.005	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: [signature] Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: MW7-0203
Date Sampled: 2/13/03
Analyst: SVD
Date Analyzed: 2/20/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-34
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Test Name	Result	MRL
1,1,1,2-Tetrachloroethane	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
1,1,2-Trichloroethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,3-Trichloropropane	ND	1
1,2,4-Trichlorobenzene	ND	1
1,2,4-Trimethylbenzene	**2.83**	1
1,2-Dibromo-3-Chloropropane	ND	5
1,2-Dibromoethane	ND	1
1,2-Dichlorobenzene	ND	1
1,2-Dichloroethane	ND	1
1,2-Dichloropropane	ND	1
1,3,5-Trimethylbenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,3-Dichloropropane	ND	1
1,4-Dichlorobenzene	ND	1
1-Chlorohexane	ND	1
2,2-Dichloropropane	ND	1
2-Butanone	ND	25
2-Chlorotoluene	ND	1
2-Hexanone	ND	10
4-Chlorotoluene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-Pentanone	ND	10
Acetone	**140**	25
Benzene	**4.55**	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	2
Carbon Disulfide	ND	1
Carbon Tetrachloride	ND	1

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: MW7-0203

ESS Project ID: 03020133
ESS Sample ID: 03020133-34

Test Name	Result	MRL
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	2
cis-1,2-Dichloroethene	**57.6**	1
cis-1,3-Dichloropropene	ND	0.5
Dibromochloromethane	ND	1
Dibromomethane	ND	1
Dichlorodifluoromethane	ND	2
Diethyl Ether	ND	1
Ethylbenzene	ND	1
Hexachlorobutadiene	ND	0.6
Isopropylbenzene	ND	1
Methyl tert-Butyl Ether	**1320** *	100
Methylene Chloride	ND	5
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
Naphthalene	**3.27**	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
Tetrachloroethene	**38.2**	1
Tetrahydrofuran	ND	5
Toluene	ND	1
trans-1,2-Dichloroethene	ND	1
trans-1,3-Dichloropropene	ND	0.5
Trichloroethene	**17.6**	1
Trichlorofluoromethane	ND	2
Vinyl Acetate	ND	1
Vinyl Chloride	**4.66**	2
Xylenes (Total)	ND	2

* = Result and MRL based on 100x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: JVD

Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Trip Blank
Date Sampled: 2/13/03
Analyst: SVD
Date Analyzed: 2/20/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-35
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Test Name	Result	MRL
1,1,1,2-Tetrachloroethane	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
1,1,2-Trichloroethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,3-Trichloropropane	ND	1
1,2,4-Trichlorobenzene	ND	1
1,2,4-Trimethylbenzene	ND	1
1,2-Dibromo-3-Chloropropane	ND	5
1,2-Dibromoethane	ND	1
1,2-Dichlorobenzene	ND	1
1,2-Dichloroethane	ND	1
1,2-Dichloropropane	ND	1
1,3,5-Trimethylbenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,3-Dichloropropane	ND	1
1,4-Dichlorobenzene	ND	1
1-Chlorohexane	ND	1
2,2-Dichloropropane	ND	1
2-Butanone	ND	25
2-Chlorotoluene	ND	1
2-Hexanone	ND	10
4-Chlorotoluene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-Pentanone	ND	10
Acetone	ND	25
Benzene	ND	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	2
Carbon Disulfide	ND	1
Carbon Tetrachloride	ND	1

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: Trip Blank

ESS Project ID: 03020133
ESS Sample ID: 03020133-35

Test Name	Result	MRL
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	2
cis-1,2-Dichloroethene	ND	1
cis-1,3-Dichloropropene	ND	0.5
Dibromochloromethane	ND	1
Dibromomethane	ND	1
Dichlorodifluoromethane	ND	2
Diethyl Ether	ND	1
Ethylbenzene	ND	1
Hexachlorobutadiene	ND	0.6
Isopropylbenzene	ND	1
Methyl tert-Butyl Ether	ND	1
Methylene Chloride	ND	5
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
Naphthalene	ND	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
Tetrachloroethene	ND	1
Tetrahydrofuran	ND	5
Toluene	ND	1
trans-1,2-Dichloroethene	ND	1
trans-1,3-Dichloropropene	ND	0.5
Trichloroethene	ND	1
Trichlorofluoromethane	ND	2
Vinyl Acetate	ND	1
Vinyl Chloride	ND	2
Xylenes (Total)	ND	2

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: SD

Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: CB1-0203
Date Sampled: 2/13/03
Percent Solid: 62

ESS Project ID: 03020133
ESS Sample ID: 03020133-36
Units: mg/Kg dry weight
ICP1 Information: 1/1.52/100
Mercury Information: 10/0.64/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**16.9**	5.31	02/19/03	ML	6010
Barium	**598**	5.31	02/19/03	ML	6010
Cadmium	**8.96**	1.06	02/19/03	ML	6010
Chromium	**72.7**	2.12	02/19/03	ML	6010
Lead	**1480**	10.6	02/19/03	ML	6010
Mercury	**2.04 ***	0.504	02/20/03	ML	7471
Selenium	ND	10.6	02/19/03	ML	6010
Silver	**1.22**	1.06	02/19/03	ML	6010

* = Result and MRL based on 10x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: m Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: CB1-0203
Date Sampled: 2/13/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-36
Units: µg/Kg dry weight
Dilution: 10
Percent Solid: 62
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	538
Arochlor 1221	ND	538
Arochlor 1232	ND	538
Arochlor 1242	ND	538
Arochlor 1248	ND	538
Arochlor 1254	ND	538
Arochlor 1260	**1640**	538

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/28

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: CB1-0203
Date Sampled: 2/13/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: CLB
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-36
Matrix: Soil
F1 Dilution: 2
F2 Dilution: 1
Percent Solid: 62
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	403
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**4850**	403
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**2140**	202

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	DL	40-140
O-Terphenyl	105	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	91	40-140
2-Fluorobiphenyl	92	40-140

DL = Diluted out of sample.

Approved By: CLB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: OUTFALL1-0203

ESS Project ID: 03020133
ESS Sample ID: 03020133-37
Date Sampled: 2/13/03

Test Name	Result	Units	MRL	Date Analyzed	Method	Analyst
Total Organic Carbon	**4100 §**	mg/Kg	250	02/21/03	§	§

§ = Subcontracted laboratory, see attached report.
ND = Not Detected above MRL

MRL = Method Reporting Limit.

Approved By: KO

Date: 2/28/03

BLK

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS LABORATORY

Location Collected: 03020133
Date Sample Collected: 02/13/03
Sample Description: 03020133-37
EAS Sample Number: 03020169-01
LIMS ID Number: AE01497
Date Sample Received: 02/19/03

Parameter	Data	Detection Limit	Units	Analysis Date
Total Organic Carbon, Solid	4100	250	mg/kg	02/21/03

BDL = Below Detection Limit

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: OUTFALL1-0203
Date Sampled: 2/13/03
Percent Solid: 71

ESS Project ID: 03020133
ESS Sample ID: 03020133-37
Units: mg/Kg dry weight
ICP1 Information: 1/1.5/100
Mercury Information: 1/0.68/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	4.7	02/19/03	ML	6010
Barium	**73.3**	4.7	02/19/03	ML	6010
Cadmium	**2.28**	0.939	02/19/03	ML	6010
Chromium	**77.2**	1.88	02/19/03	ML	6010
Lead	**94.6**	9.39	02/19/03	ML	6010
Mercury	**0.235**	0.0414	02/20/03	ML	7471
Selenium	ND	9.39	02/19/03	ML	6010
Silver	**1.43**	0.939	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: JM

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: OUTFALL1-0203
Date Sampled: 2/13/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-37
Units: µg/Kg dry weight
Dilution: 10
Percent Solid: 71
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	470
Arochlor 1221	ND	470
Arochlor 1232	ND	470
Arochlor 1242	**3480**	470
Arochlor 1248	ND	470
Arochlor 1254	ND	470
Arochlor 1260	ND	470

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: EEB Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: OUTFALL1-0203
Date Sampled: 2/13/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-37
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 71
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	35.2
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**204**	35.2
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**107**	35.2

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	88	40-140
O-Terphenyl	88	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	55	40-140
2-Fluorobiphenyl	62	40-140

Approved By: CLB Date: 3/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: RSED1-0203

ESS Project ID: 03020133
ESS Sample ID: 03020133-38
Date Sampled: 2/13/03

Test Name	Result	Units	MRL	Date Analyzed	Method	Analyst
Total Organic Carbon	**26000 §**	mg/Kg	250	02/21/03	§	§

§ = Subcontracted laboratory, see attached report.
ND = Not Detected above MRL

MRL = Method Reporting Limit.

Approved By: KP

Date: 2/28/03

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

BLK

EAS LABORATORIES

ESS LABORATORY

Location Collected: 03020133
Date Sample Collected: 02/13/03
Sample Description: 03020133-38
EAS Sample Number: 03020169-02
LIMS ID Number: AE01498
Date Sample Received: 02/19/03

Parameter	Data	Detection Limit	Units	Analysis Date
Total Organic Carbon, Solid	26000	250	mg/kg	02/21/03

BDL = Below Detection Limit

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: RSED1-0203
Date Sampled: 2/13/03
Percent Solid: 65

ESS Project ID: 03020133
ESS Sample ID: 03020133-38
Units: mg/Kg dry weight
ICP1 Information: 1/1.54/100
Mercury Information: 5/0.61/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	**7.82**	5	02/19/03	ML	6010
Barium	**51.4**	5	02/19/03	ML	6010
Cadmium	**1.09**	0.999	02/19/03	ML	6010
Chromium	**77.8**	2	02/19/03	ML	6010
Lead	**120**	9.99	02/19/03	ML	6010
Mercury	**0.605 ***	0.252	02/21/03	ML	7471
Selenium	ND	9.99	02/19/03	ML	6010
Silver	ND	0.999	02/19/03	ML	6010

* = Result and MRL based on 5x dilution.
MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: m Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: RSED1-0203
Date Sampled: 2/13/03
Analyst: EEB
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: 03020133-38
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 65
Sample Amount: 30.1 g

Test Name	Result	MRL
Arochlor 1016	ND	51.1
Arochlor 1221	ND	51.1
Arochlor 1232	ND	51.1
Arochlor 1242	**66.8**	51.1
Arochlor 1248	ND	51.1
Arochlor 1254	ND	51.1
Arochlor 1260	ND	51.1

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: RSED1-0203
Date Sampled: 2/13/03
Date Extracted: 02/18/03
Date Analyzed: 02/21/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-38
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 65
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	192
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	**321**	192
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	**305**	192

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	70	40-140
O-Terphenyl	60	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	83	40-140
2-Fluorobiphenyl	82	40-140

Approved By: AB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

QUALITY CONTROL SECTION

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Percent Solid: 100

ESS Project ID: 03020133
ESS Sample ID: 030218pbs
Units: mg/Kg dry weight
GFAA Information: 1/1.5/100
ICP1 Information: 1/1.5/100
Mercury Information: 1/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	3.33	02/21/03	ML	6010
Barium	ND	3.33	02/21/03	ML	6010
Cadmium	ND	0.667	02/21/03	ML	6010
Chromium	ND	1.33	02/21/03	ML	6010
Lead	ND	6.67	02/21/03	ML	6010
Mercury	ND	0.0333	02/20/03	ML	7471
Selenium	ND	6.67	02/21/03	ML	6010
Silver	ND	0.667	02/21/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: hm Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Laboratory Control Sample
Date Sampled: N/A
Percent Solid: 100

ESS Project ID: 03020133
ESS Sample ID: 030218lcss
Units: mg/Kg dry weight
GFAA Information: 20/1.5/100
ICP1 Information: 1/1.5/100
Mercury Information: 1/0.6/40

Test Name	% Rec.	Limits	Date Analyzed	Analyst	Method
Arsenic	**100**	80-120	02/19/03	ML	6010
Barium	**101**	80-120	02/19/03	ML	6010
Cadmium	**96**	80-120	02/19/03	ML	6010
Chromium	**101**	80-120	02/19/03	ML	6010
Lead	**102**	80-120	02/19/03	ML	6010
Mercury	**102**	80-120	02/20/03	ML	7471
Selenium	**97**	80-120	02/19/03	ML	6010
Silver	**100**	80-120	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: JM

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Percent Solid: 100

ESS Project ID: 03020133
ESS Sample ID: 030218pbs2
Units: mg/Kg dry weight
ICP1 Information: 1/1.5/100
Mercury Information: 1/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	3.33	02/19/03	ML	6010
Barium	ND	3.33	02/19/03	ML	6010
Cadmium	ND	0.667	02/19/03	ML	6010
Chromium	ND	1.33	02/19/03	ML	6010
Lead	ND	6.67	02/19/03	ML	6010
Mercury	ND	0.0333	02/20/03	ML	7471
Selenium	ND	6.67	02/19/03	ML	6010
Silver	ND	0.667	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: [signature]

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Laboratory Control Sample
Date Sampled: N/A
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 030218lcss2
Units: mg/L
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	% Rec.	Limits	Date Analyzed	Analyst	Method
Arsenic	**102**	80-120	02/19/03	ML	6010
Barium	**102**	80-120	02/19/03	ML	6010
Cadmium	**95**	80-120	02/19/03	ML	6010
Chromium	**100**	80-120	02/19/03	ML	6010
Lead	**102**	80-120	02/19/03	ML	6010
Mercury	**109**	80-120	02/20/03	ML	7471
Selenium	**101**	80-120	02/19/03	ML	6010
Silver	**100**	80-120	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: KP

Date: 2/27/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Percent Solid: 100

ESS Project ID: 03020133
ESS Sample ID: 030219pbs
Units: mg/Kg dry weight
ICP1 Information: 1/1.5/100
Mercury Information: 1/0.6/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	3.33	02/19/03	ML	6010
Barium	ND	3.33	02/19/03	ML	6010
Cadmium	ND	0.667	02/19/03	ML	6010
Chromium	ND	1.33	02/19/03	ML	6010
Lead	ND	6.67	02/19/03	ML	6010
Mercury	ND	0.0333	02/21/03	ML	7471
Selenium	ND	6.67	02/19/03	ML	6010
Silver	ND	0.667	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: JM

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Laboratory Control Sample
Date Sampled: N/A
Percent Solid: 100

ESS Project ID: 03020133
ESS Sample ID: 030219lcss
Units: mg/Kg dry weight
ICP1 Information: 1/1.5/100
Mercury Information: 1/0.6/40

Test Name	% Rec.	Limits	Date Analyzed	Analyst	Method
Arsenic	**103**	80-120	02/19/03	ML	6010
Barium	**105**	80-120	02/19/03	ML	6010
Cadmium	**97**	80-120	02/19/03	ML	6010
Chromium	**104**	80-120	02/19/03	ML	6010
Lead	**104**	80-120	02/19/03	ML	6010
Mercury	**108**	80-120	02/21/03	ML	7471
Selenium	**101**	80-120	02/19/03	ML	6010
Silver	**104**	80-120	02/19/03	ML	6010

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: m Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Duplicate
Date Sampled: 2/12/03
Percent Solid: 92

ESS Project ID: 03020133
ESS Sample ID: 03020133-01 Dup
Units: mg/Kg dry weight
GFAA Information: 5/1.5/100
ICP1 Information: 1/1.5/100
Mercury Information: 10/0.66/40

Test Name	Sample Result	Duplicate Result	RPD	Limits	Date Analyzed	Method
Arsenic	**6.1**	**10**	48+	35	02/19/03	6010
Barium	**106**	**97**	9	35	02/19/03	6010
Cadmium	**4.01**	**4.6**	14	35	02/19/03	6010
Chromium	**23.2**	**28.8**	22	35	02/19/03	6010
Lead	**1180**	**1570**	28	35	02/19/03	6010
Mercury	**2.71**	**3.03**	11	35	02/20/03	7471
Selenium	ND	ND	0	35	02/19/03	6010
Silver	ND	ND	0	35	02/19/03	6010

+ = Outside QC Limits.
RPD = Relative Percent Deviation.
ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Matrix Spike
Date Sampled: 2/12/03
Percent Solid: 92

ESS Project ID: 03020133
ESS Sample ID: 03020133-01 MS
Units: mg/Kg dry weight
GFAA Information: 20/1.61/100
ICP1 Information: 1/1.61/100
Mercury Information: 10/0.62/40

Test Name	Sample Result	Matrix Spike Result	Spike Added	Percent Recovered	Limits	Method
Arsenic	**6.1**	**36.2**	33.8	**89**	75-125	6010
Barium	**106**	**119**	33.8	**39+**	75-125	6010
Cadmium	**4.01**	**17.8**	16.9	**82**	75-125	6010
Chromium	**23.2**	**55**	33.8	**94**	75-125	6010
Lead	**1180**	**1060**	33.8	**355+**	75-125	6010
Mercury	**2.71**	**3.38**	0.21	**318+**	75-125	7471
Selenium	ND	**59**	67.5	**87**	75-125	6010
Silver	ND	**16**	16.9	**95**	75-125	6010

+ = Outside QC Limits.

ND = Not Detected above MRL.

Approved By: m

Date: ~~2/25/03~~ 2/25/03 m 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Duplicate
Date Sampled: 2/12/03
Percent Solid: 88

ESS Project ID: 03020133
ESS Sample ID: 03020133-11 Dup
Units: mg/Kg dry weight
ICP1 Information: 1/1.53/100
Mercury Information: 1/0.6/40

Test Name	Sample Result	Duplicate Result	RPD	Limits	Date Analyzed	Method
Arsenic	**17.9**	**19**	6	35	02/19/03	6010
Barium	**55.8**	**48.4**	14	35	02/19/03	6010
Cadmium	**1.61**	**1.94**	19	35	02/19/03	6010
Chromium	**29.6**	**31**	5	35	02/19/03	6010
Lead	**92.2**	**89.1**	3	35	02/19/03	6010
Mercury	**0.327**	**0.354**	8	35	02/20/03	7471
Selenium	ND	ND	0	35	02/19/03	6010
Silver	ND	ND	0	35	02/19/03	6010

RPD = Relative Percent Deviation.

ND = Not Detected above MRL.

Approved By: [signature]

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Matrix Spike
Date Sampled: 2/12/03
Percent Solid: 88

ESS Project ID: 03020133
ESS Sample ID: 03020133-11 MS
Units: mg/Kg dry weight
ICP1 Information: 1/1.54/100
Mercury Information: 1/0.62/40

Test Name	Sample Result	Matrix Spike Result	Spike Added	Percent Recovered	Limits	Method
Arsenic	**17.9**	**52.2**	36.9	**93**	75-125	6010
Barium	**55.8**	**78.1**	36.9	**60+**	75-125	6010
Cadmium	**1.61**	**17.9**	18.4	**88**	75-125	6010
Chromium	**29.6**	**60.3**	36.9	**83**	75-125	6010
Lead	**92.2**	**130**	36.9	**102**	75-125	6010
Mercury	**0.327**	**0.6**	0.22	**124**	75-125	7471
Selenium	ND	**66.5**	73.8	**90**	75-125	6010
Silver	ND	**17.2**	18.4	**93**	75-125	6010

+ = Outside QC Limits.

ND = Not Detected above MRL.

Approved By: KD

Date: 2/27/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Duplicate
Date Sampled: 2/12/03
Percent Solid: 87

ESS Project ID: 03020133
ESS Sample ID: 03020133-21 Dup
Units: mg/Kg dry weight
ICP1 Information: 1/1.5/100
Mercury Information: 5/0.61/40

Test Name	Sample Result	Duplicate Result	RPD	Limits	Date Analyzed	Method
Arsenic	**6.04**	**5.35**	12	35	02/19/03	6010
Barium	**82.3**	**68.1**	19	35	02/19/03	6010
Cadmium	**1.68**	**1.41**	17	35	02/19/03	6010
Chromium	**28.7**	**25.5**	12	35	02/19/03	6010
Lead	**216**	**193**	11	35	02/19/03	6010
Mercury	**0.661**	**0.833**	23	35	02/20/03	7471
Selenium	ND	ND	0	35	02/19/03	6010
Silver	ND	ND	0	35	02/19/03	6010

RPD = Relative Percent Deviation.

ND = Not Detected above MRL.

Approved By: KD

Date: 2/27/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Matrix Spike
Date Sampled: 2/12/03
Percent Solid: 87

ESS Project ID: 03020133
ESS Sample ID: 03020133-21 MS
Units: mg/Kg dry weight
ICP1 Information: 1/1.58/100
Mercury Information: 5/0.62/40

Test Name	Sample Result	Matrix Spike Result	Spike Added	Percent Recovered	Limits	Method
Arsenic	**6.04**	**38.7**	36.4	**90**	75-125	6010
Barium	**82.3**	**106**	36.4	**65+**	75-125	6010
Cadmium	**1.68**	**17.1**	18.2	**85**	75-125	6010
Chromium	**28.7**	**61.5**	36.4	**90**	75-125	6010
Lead	**216**	**221**	36.4	**14+**	75-125	6010
Mercury	**0.661**	**0.908**	0.222	**111**	75-125	7471
Selenium	ND	**64.8**	72.7	**89**	75-125	6010
Silver	ND	**16.8**	18.2	**92**	75-125	6010

+ = Outside QC Limits.

ND = Not Detected above MRL.

Approved By: KW

Date: 2/27/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Matrix Spike
Date Sampled: 2/12/03
Percent Solid: 81

ESS Project ID: 03020133
ESS Sample ID: 03020133-28 MS
Units: mg/Kg dry weight
ICP1 Information: 1/1.6/100
Mercury Information: 1/0.62/40

Test Name	Sample Result	Matrix Spike Result	Spike Added	Percent Recovered	Limits	Method
Arsenic	**4.66**	**37.7**	38.6	**86**	75-125	6010
Barium	**18.1**	**52.5**	38.6	**89**	75-125	6010
Cadmium	ND	**18.8**	19.3	**97**	75-125	6010
Chromium	**8.34**	**42.5**	38.6	**89**	75-125	6010
Lead	ND	**40.2**	38.6	**104**	75-125	6010
Mercury	ND	**0.279**	0.239	**117**	75-125	7471
Selenium	ND	**67.2**	77.2	**87**	75-125	6010
Silver	ND	**16.8**	19.3	**87**	75-125	6010

ND = Not Detected above MRL.

Approved By: HJL Date: 2/27/03

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Duplicate
Date Sampled: 2/12/03
Percent Solid: 81

ESS Project ID: 03020133
ESS Sample ID: 03020133-28 Dup
Units: mg/Kg dry weight
ICP1 Information: 1/1.61/100
Mercury Information: 1/0.61/40

Test Name	Sample Result	Duplicate Result	RPD	Limits	Date Analyzed	Method
Arsenic	**4.66**	**5.17**	10	35	02/19/03	6010
Barium	**18.1**	**17.7**	2	35	02/19/03	6010
Cadmium	ND	ND	0	35	02/19/03	6010
Chromium	**8.34**	**8.56**	3	35	02/19/03	6010
Lead	ND	ND	0	35	02/19/03	6010
Mercury	ND	ND	0	35	02/20/03	7471
Selenium	ND	ND	0	35	02/19/03	6010
Silver	ND	ND	0	35	02/19/03	6010

RPD = Relative Percent Deviation.

ND = Not Detected above MRL.

Approved By: KW

Date: 2/27/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Duplicate
Date Sampled: 2/13/03
Percent Solid: 65

ESS Project ID: 03020133
ESS Sample ID: 03020133-38 Dup
Units: mg/Kg dry weight
ICP1 Information: 1/1.53/100
Mercury Information: 5/0.62/40

Test Name	Sample Result	Duplicate Result	RPD	Limits	Date Analyzed	Method
Arsenic	**7.82**	**7.04**	10	35	02/19/03	6010
Barium	**51.4**	**49**	5	35	02/19/03	6010
Cadmium	**1.09**	**1.14**	4	35	02/19/03	6010
Chromium	**77.8**	**77.8**	0	35	02/19/03	6010
Lead	**120**	**122**	2	35	02/19/03	6010
Mercury	**0.605**	**0.71**	16	35	02/21/03	7471
Selenium	ND	ND	0	35	02/19/03	6010
Silver	ND	ND	0	35	02/19/03	6010

RPD = Relative Percent Deviation.

ND = Not Detected above MRL.

Approved By: M

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Matrix Spike
Date Sampled: 2/13/03
Percent Solid: 65

ESS Project ID: 03020133
ESS Sample ID: 03020133-38 MS
Units: mg/Kg dry weight
ICP1 Information: 1/1.51/100
Mercury Information: 5/0.61/40

Test Name	Sample Result	Matrix Spike Result	Spike Added	Percent Recovered	Limits	Method
Arsenic	**7.82**	**53.2**	50.9	**89**	75-125	6010
Barium	**51.4**	**94.9**	50.9	**85**	75-125	6010
Cadmium	**1.09**	**23.4**	25.5	**88**	75-125	6010
Chromium	**77.8**	**118**	50.9	**79**	75-125	6010
Lead	**120**	**168**	50.9	**94**	75-125	6010
Mercury	**0.605**	**1.14**	0.303	**177+**	75-125	7471
Selenium	ND	**93.7**	101.9	**92**	75-125	6010
Silver	ND	**24.3**	25.5	**95**	75-125	6010

+ = Outside QC Limits.

ND = Not Detected above MRL.

Approved By: JM

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 030218pbw
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Arsenic	ND	0.05	02/19/03	ML	6010
Barium	ND	0.05	02/19/03	ML	6010
Cadmium	ND	0.005	02/19/03	ML	6010
Chromium	ND	0.02	02/19/03	ML	6010
Lead	ND	0.005	02/20/03	ML	7421
Selenium	ND	0.01	02/21/03	ML	7740
Silver	ND	0.005	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: m

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Laboratory Control Sample
Date Sampled: N/A
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 030218lcsw
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50

Test Name	% Rec.	Limits	Date Analyzed	Analyst	Method
Arsenic	**104**	80-120	02/19/03	ML	6010
Barium	**104**	80-120	02/19/03	ML	6010
Cadmium	**102**	80-120	02/19/03	ML	6010
Chromium	**104**	80-120	02/19/03	ML	6010
Lead	**105**	80-120	02/20/03	ML	7421
Selenium	**92**	80-120	02/21/03	ML	7740
Silver	**104**	80-120	02/19/03	ML	6010

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: [redacted] Date: 4/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 030220pbw
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	Result	MRL	Date Analyzed	Analyst	Method
Mercury	ND	0.0005	02/24/03	ML	7470

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: [signature] Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Laboratory Control Sample
Date Sampled: N/A
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 030220lcsw
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	% Rec.	Limits	Date Analyzed	Analyst	Method
Mercury	**105**	80-120	02/24/03	ML	7470

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: [redacted] Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Duplicate
Date Sampled: 2/13/03
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 03020133-30 Dup
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50

Test Name	Sample Result	Duplicate Result	RPD	Limits	Date Analyzed	Method
Arsenic	ND	ND	0	20	02/19/03	6010
Barium	ND	ND	0	20	02/19/03	6010
Cadmium	ND	ND	0	20	02/19/03	6010
Chromium	ND	ND	0	20	02/19/03	6010
Lead	ND	ND	0	20	02/20/03	7421
Selenium	ND	ND	0	20	02/21/03	7740
Silver	ND	ND	0	20	02/19/03	6010

RPD = Relative Percent Deviation.

ND = Not Detected above MRL.

Approved By: [signature]

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Matrix Spike
Date Sampled: 2/13/03
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 03020133-30 MS
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50

Test Name	Sample Result	Matrix Spike Result	Spike Added	Percent Recovered	Limits	Method
Arsenic	ND	**0.52**	0.5	**104**	75-125	6010
Barium	ND	**0.55**	0.5	**110**	75-125	6010
Cadmium	ND	**0.244**	0.25	**98**	75-125	6010
Chromium	ND	**0.51**	0.5	**102**	75-125	6010
Lead	ND	**0.022**	0.02	**110**	80-120	7421
Selenium	ND	**0.038**	0.04	**95**	80-120	7740
Silver	ND	**0.267**	0.25	**107**	75-125	6010

ND = Not Detected above MRL.

Approved By: M Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Duplicate
Date Sampled: 2/13/03
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 03020133-34 Dup
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	Sample Result	Duplicate Result	RPD	Limits	Date Analyzed	Method
Arsenic	ND	ND	0	20	02/19/03	6010
Barium	ND	ND	0	20	02/19/03	6010
Cadmium	ND	ND	0	20	02/19/03	6010
Chromium	ND	ND	0	20	02/19/03	6010
Lead	ND	ND	0	20	02/20/03	7421
Mercury	ND	ND	0	20	02/24/03	7470
Selenium	ND	ND	0	20	02/21/03	7740
Silver	ND	ND	0	20	02/19/03	6010

RPD = Relative Percent Deviation.

ND = Not Detected above MRL.

Approved By: lm

Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Total Metals

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Matrix Spike
Date Sampled: 2/13/03
Percent Solid: N/A

ESS Project ID: 03020133
ESS Sample ID: 03020133-34 MS
Units: mg/L
GFAA Information: 1/50/50
ICP1 Information: 1/50/50
Mercury Information: 1/20/40

Test Name	Sample Result	Matrix Spike Result	Spike Added	Percent Recovered	Limits	Method
Arsenic	ND	**0.55**	0.5	**110**	75-125	6010
Barium	ND	**0.55**	0.5	**110**	75-125	6010
Cadmium	ND	**0.248**	0.25	**99**	75-125	6010
Chromium	ND	**0.52**	0.5	**104**	75-125	6010
Lead	ND	**0.021**	0.02	**105**	80-120	7421
Mercury	ND	**0.00572**	0.006	**95**	75-125	7470
Selenium	ND	**0.039**	0.04	**98**	80-120	7740
Silver	ND	**0.273**	0.25	**109**	75-125	6010

ND = Not Detected above MRL.

Approved By: [redacted] Date: 2/25/03

HJL

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082 Surrogate Report

Client Name: Weston Solutions, Inc.

Client Project ID: Tombarello ESS Project ID: 03020133

Lab ID (Dilution Factor)	Tetrachloro-m-xylene	Decachlorobiphenyl
03020133-01 (4x)	81	243M+
03020133-02 (1x)	90	90
03020133-03 (50x)	82	228M+
03020133-04 (1x)	85	104
03020133-05 (1x)	87	71
03020133-06 (50x)	DL	DL
03020133-08 (1x)	101	89
03020133-09 (10x)	68	133
03020133-10 (100x)	DL	DL
03020133-11 (5000x)	DL	DL
03020133-12 (50x)	115	108
03020133-13 (2x)	90	67
03020133-14 (20x)	98	115
03020133-15 (100x)	DL	DL
03020133-16 (1x)	94	66
03020133-17 (1x)	101	77
03020133-18 (1x)	97	70
03020133-19 (20x)	102	124
03020133-28MS (1x)	112	75
03020133-28MSD (1x)	107	72
03020133-28 (1x)	140	71
PS021803B1 (1x)	97	71
PS021803B1BS (1x)	101	75

+ = Outside QC Limits. M = Matrix interferences.
DL = Diluted out of sample.

Surrogate	Limits
Tetrachloro-m-xylene	60 - 140
Decachlorobiphenyl	60 - 140

Approved by: KD Date: 2/27/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082 Surrogate Report

Client Name: Weston Solutions, Inc.

Client Project ID: Tombarello ESS Project ID: 03020133

Lab ID (Dilution Factor)	Tetrachloro-m-xylene	Decachlorobiphenyl
03020133-01 (4x)	89	84
03020133-02 (1x)	95	78
03020133-03 (50x)	86	131
03020133-04 (1x)	91	52+
03020133-05 (1x)	92	65
03020133-06 (50x)	DL	DL
03020133-08 (1x)	107	83
03020133-09 (10x)	64	103
03020133-10 (100x)	DL	DL
03020133-11 (5000x)	DL	DL
03020133-12 (50x)	125	116
03020133-13 (2x)	102	66
03020133-14 (20x)	111	122
03020133-15 (100x)	DL	DL
03020133-16 (1x)	96	77
03020133-17 (1x)	104	81
03020133-18 (1x)	100	77
03020133-19 (20x)	115	117
03020133-28MS (1x)	121	84
03020133-28MSD (1x)	117	80
03020133-28 (1x)	118	79
PS021803B1 (1x)	100	81
PS021803B1BS (1x)	105	86

+ = Outside QC Limits. DL = Diluted out of sample.

Surrogate	Limits
Tetrachloro-m-xylene	60 - 140
Decachlorobiphenyl	60 - 140

Approved by: KD Date: 2/27/03 MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082 Surrogate Report

Client Name: Weston Solutions, Inc.

Client Project ID: Tombarello

ESS Project ID: 03020133

Lab ID (Dilution Factor)	Tetrachloro-m-xylene	Decachlorobiphenyl
03020133-20MS (500x)	DL	DL
03020133-20MSD (500x)	DL	DL
03020133-20 (500x)	DL	DL
03020133-21 (1x)	88	59+
03020133-22 (20x)	94	92
03020133-24 (1x)	119	82
03020133-25 (1x)	93	67
03020133-26 (10x)	85	120
03020133-27 (1x)	118	82
03020133-36 (10x)	96	241M+
03020133-37 (10x)	122	86
03020133-38 (1x)	103	66
PS021803B2 (1x)	102	82
PS021803B2BS (1x)	102	81

+ = Outside QC Limits.
M = Matrix interferences.
DL = Diluted out of sample.

Surrogate	Limits
Tetrachloro-m-xylene	60 - 140
Decachlorobiphenyl	60 - 140

Approved by: KP

Date: 2/27/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082 Surrogate Report

Client Name: Weston Solutions, Inc.

Client Project ID: Tombarello

ESS Project ID: 03020133

Lab ID (Dilution Factor)	Tetrachloro-m-xylene	Decachlorobiphenyl
03020133-20MS (500x)	DL	DL
03020133-20MSD (500x)	DL	DL
03020133-20 (500x)	DL	DL
03020133-21 (1x)	77	60
03020133-22 (20x)	78	124
03020133-24 (1x)	106	86
03020133-25 (1x)	81	77
03020133-26 (10x)	74	157+
03020133-27 (1x)	106	78
03020133-36 (10x)	82	350M+
03020133-37 (10x)	105	99
03020133-38 (1x)	94	80
PS021803B2 (1x)	98	73
PS021803B2BS (1x)	96	72

+ = Outside QC Limits.
M = Matrix interferences.
DL = Diluted out of sample.

Surrogate	Limits
Tetrachloro-m-xylene	60 - 140
Decachlorobiphenyl	60 - 140

Approved by: _____ Date: 2/27/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Analyst: VSC
Date Analyzed: 2/19/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: PS021803B1
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	33.3
Arochlor 1221	ND	33.3
Arochlor 1232	ND	33.3
Arochlor 1242	ND	33.3
Arochlor 1248	ND	33.3
Arochlor 1254	ND	33.3
Arochlor 1260	ND	33.3

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: [signature] Date: 2/21/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082
Matrix Spike Duplicate Report

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-05-0203MSD

ESS Project ID: 03020133
ESS Sample ID: 03020133-28MSD
Units: µg/Kg dry weight

Compound Name	Sample Result	MSD Conc.	Spike Added	MSD % Recovery	RPD	Recovery Limits	RPD Limits
Arochlor 1016	ND	554	411	135	5	60-140	30
Arochlor 1260	ND	463	411	113	7	60-140	30

RPD = Relative Percent Deviation.

Approved By: _____ Date: 2/20/13

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Analyst: VSC
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: PS021803B2
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 30 g

Test Name	Result	MRL
Arochlor 1016	ND	33.3
Arochlor 1221	ND	33.3
Arochlor 1232	ND	33.3
Arochlor 1242	ND	33.3
Arochlor 1248	ND	33.3
Arochlor 1254	ND	33.3
Arochlor 1260	ND	33.3

MRL = Method Reporting Limit. ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Blank Spike
Date Sampled: N/A
Analyst: VSC
Date Analyzed: 2/22/03
Date Prepped: 2/18/03

ESS Project ID: 03020133
ESS Sample ID: PS021803B2BS
Units: µg/Kg dry weight
Dilution: 1
Percent Solid: 100
Sample Amount: 30 g

Compound	Spike Added	BS Concentration	BS Percent Recovery	QC Recovery Limits
Arochlor 1016	333	**356**	107	60-140
Arochlor 1260	333	**361**	108	60-140

ND = Not Detected above MRL.

Approved By: _____ Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082
Matrix Spike Report

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-01-0203MS

ESS Project ID: 03020133
ESS Sample ID: 03020133-20MS
Units: µg/Kg dry weight

Compound Name	Sample Result	MS Conc.	Spike Added	MS % Recovery	Recovery Limits
Arochlor 1016	ND	ND	387	0+	60-140
Arochlor 1260	26000	21000	387	0+	60-140

+ = Outside QC Limits.

Approved By: _____ Date: 2/10/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8082
Matrix Spike Duplicate Report

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-01-0203MSD

ESS Project ID: 03020133
ESS Sample ID: 03020133-20MSD
Units: µg/Kg dry weight

Compound Name	Sample Result	MSD Conc.	Spike Added	MSD % Recovery	RPD	Recovery Limits	RPD Limits
Arochlor 1016	ND	ND	387	0+	0	60-140	30
Arochlor 1260	26000	26800	387	207+	24	60-140	30

+ = Outside QC Limits.

RPD = Relative Percent Deviation.

Approved By: _____ Date: 4/15/3

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B Surrogate Report

Client Name: Weston Solutions, Inc.

Client Project ID: Tombarello ESS Project ID: 03020133

Lab ID (Dilution Factor)	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
03020133-30 (1x)	95	110	107
03020133-30 (100x)	92	109	107
03020133-31 (1x)	94	107	106
03020133-32 (1x)	95	110	108
03020133-32 (10x)	92	109	110
03020133-33 (1x)	93	110	110
03020133-34MS (1x)	100	114	112
03020133-34MSD (1x)	98	111	113
03020133-34 (1x)	92	108	110
03020133-34 (100x)	94	109	107
03020133-35 (1x)	94	108	109
VAMH022003B1 (1x)	92	108	107
VAMH022003C1 (1x)	94	99	98
VAMH022103B1 (1x)	99	102	108
VAMH022103C1 (1x)	93	101	100

Surrogate	Limits
1,2-Dichloroethane-d4	70 - 130
Toluene-d8	70 - 130
4-Bromofluorobenzene	70 - 130

Approved by: SVD Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Analyst: SVD
Date Analyzed: 2/20/03

ESS Project ID: 03020133
ESS Sample ID: VAMH022003B1
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Test Name	Result	MRL
1,1,1,2-Tetrachloroethane	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
1,1,2-Trichloroethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,3-Trichloropropane	ND	1
1,2,4-Trichlorobenzene	ND	1
1,2,4-Trimethylbenzene	ND	1
1,2-Dibromo-3-Chloropropane	ND	5
1,2-Dibromoethane	ND	1
1,2-Dichlorobenzene	ND	1
1,2-Dichloroethane	ND	1
1,2-Dichloropropane	ND	1
1,3,5-Trimethylbenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,3-Dichloropropane	ND	1
1,4-Dichlorobenzene	ND	1
1-Chlorohexane	ND	1
2,2-Dichloropropane	ND	1
2-Butanone	ND	25
2-Chlorotoluene	ND	1
2-Hexanone	ND	10
4-Chlorotoluene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-Pentanone	ND	10
Acetone	ND	25
Benzene	ND	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	2
Carbon Disulfide	ND	1
Carbon Tetrachloride	ND	1

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

MDP 159

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: Method Blank

ESS Project ID: 03020133
ESS Sample ID: VAMH022003B1

Test Name	Result	MRL
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	2
cis-1,2-Dichloroethene	ND	1
cis-1,3-Dichloropropene	ND	0.5
Dibromochloromethane	ND	1
Dibromomethane	ND	1
Dichlorodifluoromethane	ND	2
Diethyl Ether	ND	1
Ethylbenzene	ND	1
Hexachlorobutadiene	ND	0.6
Isopropylbenzene	ND	1
Methyl tert-Butyl Ether	ND	1
Methylene Chloride	ND	5
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
Naphthalene	ND	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
Tetrachloroethene	ND	1
Tetrahydrofuran	ND	5
Toluene	ND	1
trans-1,2-Dichloroethene	ND	1
trans-1,3-Dichloropropene	ND	0.5
Trichloroethene	ND	1
Trichlorofluoromethane	ND	2
Vinyl Acetate	ND	1
Vinyl Chloride	ND	2
Xylenes (Total)	ND	2

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: SD

Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Laboratory Control Sample
Date Sampled: N/A
Analyst: SVD
Date Analyzed: 2/20/03

ESS Project ID: 03020133
ESS Sample ID: VAMH022003C1
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Compound	Spike Added	LCS Concentration	LCS Percent Recovery	QC Recovery Limits
1,1,1,2-Tetrachloroethane	25	**24**	96	70-130
1,1,1-Trichloroethane	25	**25.3**	101	70-130
1,1,2,2-Tetrachloroethane	25	**27.3**	109	70-130
1,1,2-Trichloroethane	25	**26.3**	105	70-130
1,1-Dichloroethane	25	**23.9**	96	70-130
1,1-Dichloroethene	25	**26.9**	108	70-130
1,1-Dichloropropene	25	**26.7**	107	70-130
1,2,3-Trichlorobenzene	25	**25.3**	101	70-130
1,2,3-Trichloropropane	25	**25.9**	104	70-130
1,2,4-Trichlorobenzene	25	**24.2**	97	70-130
1,2,4-Trimethylbenzene	25	**24.8**	99	70-130
1,2-Dibromo-3-Chloropropane	25	**28.4**	114	70-130
1,2-Dibromoethane	25	**25**	100	70-130
1,2-Dichlorobenzene	25	**26.2**	105	70-130
1,2-Dichloroethane	25	**25**	100	70-130
1,2-Dichloropropane	25	**23.4**	94	70-130
1,3,5-Trimethylbenzene	25	**25.5**	102	70-130
1,3-Dichlorobenzene	25	**25.2**	101	70-130
1,3-Dichloropropane	25	**25.5**	102	70-130
1,4-Dichlorobenzene	25	**25.6**	102	70-130
1-Chlorohexane	25	**28.2**	113	70-130
2,2-Dichloropropane	25	**26.1**	104	70-130
2-Butanone	25	**33.3**	133+	70-130
2-Chlorotoluene	25	**22.1**	88	70-130
2-Hexanone	25	**30.2**	121	70-130
4-Chlorotoluene	25	**25.3**	101	70-130
4-Isopropyltoluene	25	**24.6**	98	70-130
4-Methyl-2-Pentanone	25	**30.4**	122	70-130
Acetone	25	**38.8**	155+	70-130
Benzene	25	**23.8**	95	70-130
Bromobenzene	25	**26.5**	106	70-130
Bromochloromethane	25	**26.4**	106	70-130
Bromodichloromethane	25	**26.2**	105	70-130
Bromoform	25	**24.7**	99	70-130
Bromomethane	25	**22.2**	89	70-130
Carbon Disulfide	25	**24.3**	97	70-130

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

MDP

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: Laboratory Control Sample

ESS Project ID: 03020133
ESS Sample ID: VAMH022003C1

Compound	Spike Added	LCS Concentration	LCS Percent Recovery	QC Recovery Limits
Carbon Tetrachloride	25	**24.6**	98	70-130
Chlorobenzene	25	**24.9**	100	70-130
Chloroethane	25	**26.6**	106	70-130
Chloroform	25	**24.4**	98	70-130
Chloromethane	25	**23.2**	93	70-130
cis-1,2-Dichloroethene	25	**25**	100	70-130
cis-1,3-Dichloropropene	25	**24.2**	97	70-130
Dibromochloromethane	25	**26**	104	70-130
Dibromomethane	25	**26**	104	70-130
Dichlorodifluoromethane	25	**23.7**	95	70-130
Ethylbenzene	25	**24.9**	100	70-130
Hexachlorobutadiene	25	**23.6**	94	70-130
Isopropylbenzene	25	**26.4**	106	70-130
Methyl tert-Butyl Ether	25	**27.3**	109	70-130
Methylene Chloride	25	**26.5**	106	70-130
n-Butylbenzene	25	**24**	96	70-130
n-Propylbenzene	25	**26.6**	106	70-130
Naphthalene	25	**23.1**	92	70-130
sec-Butylbenzene	25	**24.3**	97	70-130
Styrene	25	**25.8**	103	70-130
tert-Butylbenzene	25	**24.3**	97	70-130
Tetrachloroethene	25	**26.8**	107	70-130
Tetrahydrofuran	25	**29.3**	117	70-130
Toluene	25	**25.6**	102	70-130
trans-1,2-Dichloroethene	25	**26.3**	105	70-130
trans-1,3-Dichloropropene	25	**26.2**	105	70-130
Trichloroethene	25	**25**	100	70-130
Trichlorofluoromethane	25	**32**	128	70-130
Vinyl Acetate	25	**49.7**	199+	70-130
Vinyl Chloride	25	**27.6**	110	70-130
Xylenes (Total)	75	**78.7**	105	70-130

+ = Outside QC Limits.
MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Approved By: SJD Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Analyst: SVD
Date Analyzed: 2/21/03

ESS Project ID: 03020133
ESS Sample ID: VAMH022103B1
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Test Name	Result	MRL
1,1,1,2-Tetrachloroethane	ND	1
1,1,1-Trichloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
1,1,2-Trichloroethane	ND	1
1,1-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
1,1-Dichloropropene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,3-Trichloropropane	ND	1
1,2,4-Trichlorobenzene	ND	1
1,2,4-Trimethylbenzene	ND	1
1,2-Dibromo-3-Chloropropane	ND	5
1,2-Dibromoethane	ND	1
1,2-Dichlorobenzene	ND	1
1,2-Dichloroethane	ND	1
1,2-Dichloropropane	ND	1
1,3,5-Trimethylbenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,3-Dichloropropane	ND	1
1,4-Dichlorobenzene	ND	1
1-Chlorohexane	ND	1
2,2-Dichloropropane	ND	1
2-Butanone	ND	25
2-Chlorotoluene	ND	1
2-Hexanone	ND	10
4-Chlorotoluene	ND	1
4-Isopropyltoluene	ND	1
4-Methyl-2-Pentanone	ND	10
Acetone	ND	25
Benzene	ND	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	1
Bromomethane	ND	2
Carbon Disulfide	ND	1
Carbon Tetrachloride	ND	1

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

MDP 163

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: Method Blank

ESS Project ID: 03020133
ESS Sample ID: VAMH022103B1

Test Name	Result	MRL
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	2
cis-1,2-Dichloroethene	ND	1
cis-1,3-Dichloropropene	ND	0.5
Dibromochloromethane	ND	1
Dibromomethane	ND	1
Dichlorodifluoromethane	ND	2
Diethyl Ether	ND	1
Ethylbenzene	ND	1
Hexachlorobutadiene	ND	0.6
Isopropylbenzene	ND	1
Methyl tert-Butyl Ether	ND	1
Methylene Chloride	ND	5
n-Butylbenzene	ND	1
n-Propylbenzene	ND	1
Naphthalene	ND	1
sec-Butylbenzene	ND	1
Styrene	ND	1
tert-Butylbenzene	ND	1
Tetrachloroethene	ND	1
Tetrahydrofuran	ND	5
Toluene	ND	1
trans-1,2-Dichloroethene	ND	1
trans-1,3-Dichloropropene	ND	0.5
Trichloroethene	ND	1
Trichlorofluoromethane	ND	2
Vinyl Acetate	ND	1
Vinyl Chloride	ND	2
Xylenes (Total)	ND	2

MRL = Method Reporting Limit.

ND = Not Detected above MRL.

Approved By: SD

Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

EPA Method 8260B

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Laboratory Control Sample
Date Sampled: N/A
Analyst: SVD
Date Analyzed: 2/21/03

ESS Project ID: 03020133
ESS Sample ID: VAMH022103C1
Units: µg/L
Dilution: 1
Percent Solid: N/A
Sample Amount: 10 ml

Compound	Spike Added	LCS Concentration	LCS Percent Recovery	QC Recovery Limits
1,1,1,2-Tetrachloroethane	25	**23.8**	95	70-130
1,1,1-Trichloroethane	25	**25.2**	101	70-130
1,1,2,2-Tetrachloroethane	25	**26.6**	106	70-130
1,1,2-Trichloroethane	25	**25.6**	102	70-130
1,1-Dichloroethane	25	**23.8**	95	70-130
1,1-Dichloroethene	25	**26.8**	107	70-130
1,1-Dichloropropene	25	**25.6**	102	70-130
1,2,3-Trichlorobenzene	25	**27.8**	111	70-130
1,2,3-Trichloropropane	25	**25.5**	102	70-130
1,2,4-Trichlorobenzene	25	**26.3**	105	70-130
1,2,4-Trimethylbenzene	25	**24.7**	99	70-130
1,2-Dibromo-3-Chloropropane	25	**28.4**	114	70-130
1,2-Dibromoethane	25	**24**	96	70-130
1,2-Dichlorobenzene	25	**25.9**	104	70-130
1,2-Dichloroethane	25	**25.2**	101	70-130
1,2-Dichloropropane	25	**23**	92	70-130
1,3,5-Trimethylbenzene	25	**25.1**	100	70-130
1,3-Dichlorobenzene	25	**25.4**	102	70-130
1,3-Dichloropropane	25	**24.4**	98	70-130
1,4-Dichlorobenzene	25	**25.4**	102	70-130
1-Chlorohexane	25	**28.2**	113	70-130
2,2-Dichloropropane	25	**25.7**	103	70-130
2-Butanone	25	**31.8**	127	70-130
2-Chlorotoluene	25	**26**	104	70-130
2-Hexanone	25	**27.8**	111	70-130
4-Chlorotoluene	25	**24.9**	100	70-130
4-Isopropyltoluene	25	**24.4**	98	70-130
4-Methyl-2-Pentanone	25	**30.2**	121	70-130
Acetone	25	**33.5**	134+	70-130
Benzene	25	**24**	96	70-130
Bromobenzene	25	**25.9**	104	70-130
Bromochloromethane	25	**25.4**	102	70-130
Bromodichloromethane	25	**25.8**	103	70-130
Bromoform	25	**24.9**	100	70-130
Bromomethane	25	**25.5**	102	70-130
Carbon Disulfide	25	**24.2**	97	70-130

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Project ID: Tombarello
Client Sample ID: Laboratory Control Sample

ESS Project ID: 03020133
ESS Sample ID: VAMH022103C1

Compound	Spike Added	LCS Concentration	LCS Percent Recovery	QC Recovery Limits
Carbon Tetrachloride	25	**24.7**	99	70-130
Chlorobenzene	25	**24.9**	100	70-130
Chloroethane	25	**25.4**	102	70-130
Chloroform	25	**23.6**	94	70-130
Chloromethane	25	**22.7**	91	70-130
cis-1,2-Dichloroethene	25	**24.6**	98	70-130
cis-1,3-Dichloropropene	25	**23.8**	95	70-130
Dibromochloromethane	25	**25.7**	103	70-130
Dibromomethane	25	**25.6**	102	70-130
Dichlorodifluoromethane	25	**24**	96	70-130
Ethylbenzene	25	**24.5**	98	70-130
Hexachlorobutadiene	25	**25**	100	70-130
Isopropylbenzene	25	**26.4**	106	70-130
Methyl tert-Butyl Ether	25	**26.7**	107	70-130
Methylene Chloride	25	**26.1**	104	70-130
n-Butylbenzene	25	**24.4**	98	70-130
n-Propylbenzene	25	**22.6**	90	70-130
Naphthalene	25	**23.5**	94	70-130
sec-Butylbenzene	25	**24.3**	97	70-130
Styrene	25	**25.8**	103	70-130
tert-Butylbenzene	25	**24.4**	98	70-130
Tetrachloroethene	25	**27.9**	112	70-130
Tetrahydrofuran	25	**28.6**	114	70-130
Toluene	25	**25.4**	102	70-130
trans-1,2-Dichloroethene	25	**25.9**	104	70-130
trans-1,3-Dichloropropene	25	**25.9**	104	70-130
Trichloroethene	25	**24.5**	98	70-130
Trichlorofluoromethane	25	**31.7**	127	70-130
Vinyl Acetate	25	**47.4**	190+	70-130
Vinyl Chloride	25	**27.1**	108	70-130
Xylenes (Total)	75	**77.4**	103	70-130

+ = Outside QC Limits.
MDL = Method Detection Limit.
MRL = Method Reporting Limit.

ND = Not Detected above MDL.

Approved By: SVD Date: 2/24/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: ES021803B1
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 100
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	25
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	ND	25
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	25

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	76	40-140
O-Terphenyl	88	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	64	40-140
2-Fluorobiphenyl	64	40-140

Approved By: AB Date: 2/25/03

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com
An Equal Opportunity Employer

MDP 167

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1, Method For Target Analytes: 8270C

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Blank Spike
Date Sampled: N/A
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: ES021803B1BS
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 100
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Compound Name	Result	Recovery Limits
Nonane (C9)	**36**	16-39
Tetradecane (C14)	**59**	40-140
Nonadecane (C19)	**76**	40-140
Eicosane (C20)	**81**	40-140
Octacosane (C28)	**85**	40-140
Naphthalene	**44**	40-140
Acenaphthene	**50**	40-140
Anthracene	**77**	40-140
Pyrene	**69**	40-140
Chrysene	**72**	40-140

ND = Not Detected.

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-05-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: N/A
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-28DUP
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 81
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Sample Result	Duplicate Result	RPD	RPD Limit
C_9-C_{18} Aliphatic Hydrocarbons[1]	ND	ND	0	50
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	ND	ND	0	50
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	ND	0	50

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

RPD = Relative Percent Difference.
ND = Not Detected above MRL.

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1, Method For Target Analytes: 8270C

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB14-05-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-28MS
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 81
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Compound Name	Result	Recovery Limits
Nonane (C9)	**35**	16-39
Tetradecane (C14)	**57**	40-140
Nonadecane (C19)	**77**	40-140
Eicosane (C20)	**83**	40-140
Octacosane (C28)	**90**	40-140
Naphthalene	**58**	40-140
Acenaphthene	**66**	40-140
Anthracene	**96**	40-140
Pyrene	**86**	40-140
Chrysene	**89**	40-140

ND = Not Detected.

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Method Blank
Date Sampled: N/A
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: ES021803B2
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 100
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Result	MRL
C_9-C_{18} Aliphatic Hydrocarbons[2]	ND	25
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	ND	25
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	ND	25

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

MRL = Method Reporting Limit.
ND = Not Detected above MRL.

Extraction Surrogate ID: WHY120902A

Extraction Surrogate	% Rec.	Limits
1-Chlorooctadecane	92	40-140
O-Terphenyl	80	40-140

Fractionation Surrogate ID: WHY011703A

Fractionation Surrogate	% Rec.	Limits
2-Bromonaphthalene	51	40-140
2-Fluorobiphenyl	57	40-140

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1, Method For Target Analytes: 8270C

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: Blank Spike
Date Sampled: N/A
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: ES021803B2BS
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 1
Percent Solid: 100
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Compound Name	Result	Recovery Limits
Nonane (C9)	**33**	16-39
Tetradecane (C14)	**58**	40-140
Nonadecane (C19)	**72**	40-140
Eicosane (C20)	**78**	40-140
Octacosane (C28)	**84**	40-140
Naphthalene	**54**	40-140
Acenaphthene	**53**	40-140
Anthracene	**82**	40-140
Pyrene	**78**	40-140
Chrysene	**92**	40-140

ND = Not Detected.

Approved By: CLB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: N/A
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-20DUP
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 2
Percent Solid: 86
Sample Amount: 30g
Temperature: See Chain
Extraction Method: 3550B

Range Name	Sample Result	Duplicate Result	RPD	RPD Limit
C_9-C_{18} Aliphatic Hydrocarbons[1]	63.5	**43.6**	37	50
C_{19}-C_{36} Aliphatic Hydrocarbons[1]	557	**403**	32	50
C_{11}-C_{22} Unadjusted Aromatic Hydrocarbons[1]	214	**311**	37	50

[1] = Range result excludes concentrations of surrogates and internal standards eluting in that range.
[2] = Range result excludes concentrations of target analytes eluting in that range.

RPD = Relative Percent Difference.
ND = Not Detected above MRL.

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Extractable Petroleum Hydrocarbon (EPH) Analysis
Method For Ranges: MADEP EPH 98-1, Method For Target Analytes: 8270C

Client Name: Weston Solutions, Inc.
Client Project ID: Tombarello
Client Sample ID: WSB10-01-0203
Date Sampled: 2/12/03
Date Extracted: 02/18/03
Date Analyzed: 02/20/03
Analyst: EP
Container: Satisfactory
Preservative: None
Units: mg/Kg dry weight

ESS Project ID: 03020133
ESS Sample ID: 03020133-20MS
Matrix: Soil
F1 Dilution: 1
F2 Dilution: 2
Percent Solid: 86
Sample Amount: 29.8g
Temperature: See Chain
Extraction Method: 3550B

Compound Name	Result	Recovery Limits
Nonane (C9)	ND+	16-39
Tetradecane (C14)	**54**	40-140
Nonadecane (C19)	**36+**	40-140
Eicosane (C20)	**40**	40-140
Octacosane (C28)	**96**	40-140
Naphthalene	**30+**	40-140
Acenaphthene	**57**	40-140
Anthracene	**107**	40-140
Pyrene	**261+**	40-140
Chrysene	**141+**	40-140

ND = Not Detected. + = Outside QC Limits.

Approved By: CB Date: 2/25/03

MDP

185 Frances Avenue, Cranston, RI 02910-2211 Tel.: 401-461-7181 Fax: 401-461-4486 http://www.thielsch.com

ESS LABORATORY CERTIFICATIONS

U.S. Army Corps of Engineers
Soil and Water

Navy Installation Restoration QA Program
Soil and Water

Connecticut: PH-0750

Maine: RI002

Maryland: 301
Potable Water

Massachusetts: M-RI002

New Hampshire (NELAP):
Drinking Water: 242400-C
Wastewater: 242400-D

New Jersey (NELAP) RI002
Potable Water
Non Potable Water
Solid and Hazardous Waste

New York (NELAP): 11313
Potable Water
Non Potable Water
Solid and Hazardous Waste

North Carolina: 44701
Potable Water(Organics)

Pennsylvania: 68-934

Rhode Island: 179

United States Department of Agriculture
Soil Permit: S-54210

ESS Laboratory

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

CHAIN OF CUSTODY

Page 1 of 4

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

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

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

Reporting Limits: as per contract

ESS LAB PROJECT ID: 03020133

Electronic Deliverable: ___ Yes X No Format ____

Co. Name	Project #	Project Name (20 Char. or less)
Weston Solutions		Tombarello

Contact Person	Address
Jim Ricker	One Wall Street

City	State	Zip	PO#
Manchester	NH	03101	37055

Telephone #	Fax #	Email Address
603 656-5400	603 656-5401	

ESS LAB Sample#	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Number of Containers	Type of Containers	8260 624 524.2 / 8021 MTBE/BTEX	VPH 8015 GRO	8100 TPH / 8015 DRO (No Targets) (EPH)	8081 Pesticides / 8082 PCB (608 PCB)	608 Pesticides	PAH only 8270 625	RCRA5 (RCRA8)	PP13 TAL23	TCLP8 MCP MCPw/Hg NBC7
1	2/12/03	1520	X		S	WSB1-01-0203	1	G			X	X			X		
2		1523	X			WSB1-03-0203	1				X	X			X		
3		1447	X			WSB2-01-0203	1				X	X			X		
4		1450	X			WSB2-03-0203	1				X	X			X		
5		1422	X			WSB3-00-0203	1				X	X			X		
6		1425	X			WSB3-01-0203	1				X	X			X		
7		0915	X			WSB4-00-0203	1				X	X			X		
8		0920	X			WSB4-01-0203	1				X	X			X		
9		1410	X			WSB5-00-0203	1				X	X			X		
10		1412	X			WSB5-01-0203	1				X	X			X		

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

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

Cooler Present: ✓ Yes ___ No
Seals Intact: ___ Yes ___ No NA: ✓
Cooler Temp: 4.6°C

Internal Use Only
[ ] Pickup
[ ] Technicians ____

Comments: PCB via 8082; RCRA 8 via 6010A + 7471A
EPH via MADEP

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	2/14/03 1530		2/14/03 15:30		2/14/03 15:45		2/14/03 1645
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*MADEP requires that all additional calibrated analytes found during analysis be disclosed

Please fax all changes to Chain of Custody in writing.

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

ESS Laboratory
Guide to Sample Handling and Preparation
Revised 01/08/02

All Samples Should Be Cooled to ≤6C

P=Poly
G=Glass
V=Vial
S = Sterile Container
NP = No Preservative
NA = Not Applicable

H_2S0_4=Sulfuric Acid to < 2 pH
1:1 HCl=Hydrochloric Acid to < 2 pH
HNO_3=Nitric Acid to < 2 pH
NaOH=Sodium Hydroxide to > 12 pH
MeOH=15mL Methanol
Zn Acetate=4 drops zinc acetate/100mL

		Standard Volume		Preservative		Water	Soil	pH check	Direct Delivery	
Analysis	Method Number	Aqueous	Soil	Aqueous	Soil	Hold Time	Hold Time	Required	Required	Notes
Acidity	305.1	250 mL, P,G	8 oz G	NP	NP	14 days				
Alkalinity	301.1	250 mL, P,G	8 oz G	NP	NP	14 days				
Ammonia	350.2	1000 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Asbestos	NA	NA	8 oz G	NP	NP	28 days				Subcontracted
Base Neutrals	8270/625	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
BOD - 5 day	405.1	1000 mL,P,G	8 oz G	NP	NP	48 hours			Yes	
Bromide	320.1	250 mL, P,G	8 oz G	NP	NP	28 days				
Chloride	325.3/4500	250 mL, P,G	8 oz G	NP	NP	28 days				
Chlorine (TRC)	330.5	250 mL, P,G	8 oz G	NP	NP	Immediate			Yes	
Chromium (VI)	7196A/3500	250 mL, P,G	NA	NP	NP	24 hours	1 month		Yes	4 day hold after extraction
COD	410.4	250 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Coliform	9221B	sterile cup	sterile cup	NP	NP	24 hours	24 hours		Yes	
Color	110.2	250 mL, P,G	NA	NP	NP	48 hours			Yes	
Conductance	120.1	250 mL, P,G	8 oz G	NP	NP	28 days				
Cyanide (Amenable)	335.1	1000 mL, P,G	8 oz G	NaOH	NP	14 days	14 days	Yes		
Cyanide (Total)	9010/335.2	1000 mL, P,G	8 oz G	NaOH	NP	14 days	14 days	Yes		
Dissolved Oxygen	360.1	500 mL, G*	NA	NP	NP	Immediate			Yes	* Glass only
EDB & DBCP	504/8011	3x40 mL, V	NA	NP/HCL	NP	28 days	28 days			No head space/air bubbles
EPH	MASS EPH	1000 mL, G	8 oz G	HCl	NP	14 days	7 days	Yes		40 day hold after extraction
Flash Point	1010	40 mL	2 oz G	NP	NP	7 days	7 days			
Fluoride	340.2	1000 mL, P,G	8 oz G	NP	NP	28 days				
Grain Size	NA	NA	8 oz G	NA	NP	NA				
GRO	8015/ME	3x40 mL, V	40 ml V	HCl	MeOH	14 days	14 days	Yes		No head space/air bubbles
Haloacetic Acids	552.2	3x40 mL, V	NA	NH4Cl	N/A	14 days				7 day hold after extraction
Hardness	200.7	250 mL, P,G	8 oz G	HNO3	NP	6 months		Yes		
Herbicides	8151	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Iodide	345.1	250 mL, P,G	8 oz G	NP	NP	24 hours				
Kjeldahl Nitrogen (Total)	351.3	1000 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Mercury (Dissolved)	7471/245.1	250 mL, P,G	8 oz G	NP	NP	28 days		Yes	Yes*	Filtered in Field, * if not filtered in field
Mercury (Total)	7471/245.1	250 mL, P,G	8 oz G	HNO_3	NP	28 days	28 days	Yes		
Metals (Dissolved)	6010/200.7/200.9	250 mL, P,G	8 oz G	NP	NP	6 months		Yes	Yes*	Filtered in Field, * if not filtered in field
Metals (Total)	6010/200.7/200.9	250 mL, P,G	8 oz G	HNO_3	NP	6 months	6 months	Yes		
Nitrate	353.2	250 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
Nitrate-Nitrite	353.2/353.3	250 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Nitrite	353.3	250 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
Odor	140.1	250 mL,G*	8 oz G	NP	NP	24 hours			Yes	* Glass only
Oil & Grease	1664	1000 mL, G*	NA	H2S04	NP	28 days	28 days	Yes		* Glass only
Orthophosphate	365.3	1000 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
PAH	8270	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Paint Filter	9095	NA	8 oz G	NP	NP	28 days				
PCB	8082/608	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
PCB (Oil)	8082	NA	2 oz G	NP	NP	14 days				40 day hold after extraction
PCB (Wipe)	8082	NA	wipe kit	Hexane	NA	14 days				10 cm^2 template/gauze
PCB/Pesticides	608	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Pesticides	8081/608	2000 mL, G	8 oz G	NP	NP	7 days	14 days	Yes		pH 5-9 recquired
pH	9040/150.1/9045	250 mL, P,G	8 oz G	NP	NP	Immediate	ASAP		Yes	Done in the field
Phenol	5530/9065/420.1	1000 mL, G*	8 oz G	H_2SO_4	NP	28 days		Yes		* Glass only
Phosphorous (Hydrolyz)	365.3	1000 mL, G	8 oz G	H_2SO_4	NP	28 days		Yes		
Phosphorous (Total)	365.3	1000 mL, G	8 oz G	H_2SO_4	NP	28 days		Yes		
Salinity	2520	250 mL, G	8 oz G	NP	NP	28 days				
Settleable Solids	160.5	1000 mL, P,G	NA	NP	NP	48 hours			Yes	
Silica	370.1	250 mL, P*	8 oz G	NP	NP	28 days				* Plastic only
Siloxane	NA	50 mL, P	NA	MeOH	NP	21 days		Yes		Done on air samples only
SPLP	1312	4000 mL, G	16 oz G	NP	NP	14 days	14 day			
Sulfide	376.2	500 mL, P	8 oz G	Zn Ace*, NaOH	NP	7 days	7 days	Yes		NaOH pH >9
Sulfite	377.1	250 mL, P,G	8 oz G	NP	NP	Immediate			Yes	Done in the field
Sulfate	375.4	250 mL, P	8 oz G	NP	NP	28 days				
Surfactants (MBAS)	425.1	250 mL, P,G	NA	NP	NP	48 hours			Yes	
SVOA	8270/625	2000 mL, G	8 oz G	NP	NP	7 days	14 days			40 day hold after extraction
TCLP (Full)	1311	4000 mL, G	16 oz G	NP	NP	14 days	14 days			SVOA hold 7 days after spin
TDS	160.1	250 mL, P,G	NA	NP	NP	7 days	NA			
THM	524.2	3x40 mL, V	NA	Na2S2O3	NA	14 days	NA			
TOC	415.2	2x40 mL, V	2 oz G	H_2SO_4	NP	28 days				Subcontracted
TOX	450.1	2x40 mL, V	NA	H_2SO_4	NP	7 days				Subcontracted
TPH :GC FID	8100M	1000 mL, G	8 oz G	NP/HCL/H_2SO_4	NP	7 days	14 days	Yes		Glass only
TPH :Method	1664	1000 mL, G	8 oz G	HCL/H_2SO_4	NP	28 days	28 days	Yes		Glass only
TS	160.3	250 mL, P	NA	NP	NP	7 days				
TSS	160.2	250 mL, P	NA	NP	NP	7 days				
Turbidity	180.1	250mL,P,G	NA	NP	NP	48 hr			Yes	
TVS	160.4	250 mL, P	NA	NP	NP	7 days				
TX Total Halogens	9076	2 oz G	2 oz G	NP	NP	28 days	28 days			
Volatile Organics	8260/8021/624	3x40 mL, V	2 oz G	HCL	NP	14 days	14 days		Yes*	No hs/air bubbles, * Unpreserved VOC only
VPH	Mass VPH	3x40 mL, V	40 mL V	HCL	MeOH	14 days	28 days			Aq-No hs/air bubbles,Soil-Include NP %solids
5035/8260	5035/8260	NA	40 mL V	NA	MeOH	NA	14 days			Must include NP %solids VOA

ESS Laboratory

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

CHAIN OF CUSTODY

Turn Time: X Standard Other _____
If faster than 5 days, prior approval by laboratory is required # _____

State where samples were collected from:
(MA) RI CT NH NJ NY ME Other _____

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

Reporting Limits

ESS LAB PROJECT ID: 02-JJM2/14/03

Electronic Deliverable: ___ Yes ___ No
03020135
Format _____

Co. Name	Project #	Project Name (20 Char. or less)
Weston Solutions		TOMbarello

Contact Person	Address
JIM Ricker	One Wall St

City	State	Zip	PO#
Manchester	NH	03101	037055

Telephone #	Fax #	Email Address
603 656-5400	603 656-5401	

Circle and/or Write Required Analysis

ESS LAB Sample#	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Number of Containers	Type of Containers	8260 624 524.2	8021 MTBE/BTEX 8015 GRO VPH	8100 TPH 8015 DRO (EPH) No Targets	8081 Pesticides 8082 PCB 608 Pesticides 608 PCB	8270 625 PAH only	RCRA5 RCRA8 PP13 TAL23	TCLP8 MCP MCPw/Hg NBC7
11	2/12/03	0952	X		S	WSB6-00-0203	1	G			X	X		X	
12		0954	X			WSB6-01-0203	1				X	X		X	
13		1005	X			WSB7-00-0203	1				X	X		X	
14		1008	X			WSB7-01-0203	1				X	X		X	
15		1114	X			WSB8-01-0203	1				X	X		X	
16		1116	X			WSB8-03-0203	1				X	X		X	
11		1015	X			WSB9-00-0203	1				X	X		X	
18		1017	X			WSB9-01-0203	1				X	X		X	
19		1052	X			WSB10-00-0203	1				X	X		X	
20		1055	X			WSB10-01-0203	1				X	X		X	

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

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

Cooler Present: ✓ Yes ___ No
Seals Intact: ___ Yes ___ No NA ✓
Cooler Temp: 4.6°C

Internal Use Only
[ ] Pickup
[ ] Technicians _____

Comments: PCBs via 8082; RCRA 8 via 6010A + 7471A
EPH via MADEP

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	2/14/03 1530		2/14/03 1535		2/14/03 1545		1545 2/14/03
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*MADEP requires that all additional calibrated analytes found during analysis be disclosed

Please fax all changes to Chain of Custody in writing.

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

ESS Laboratory
Guide to Sample Handling and Preparation
Revised 01/08/02

All Samples Should Be Cooled to 4°C

P=Poly
G=Glass
V=Vial
S = Sterile Container
NP = No Preservative
NA = Not Applicable

H_2SO_4=Sulfuric Acid to < 2 pH
1:1 HCl=Hydrochloric Acid to < 2 pH
HNO_3=Nitric Acid to < 2 pH
NaOH=Sodium Hydroxide to > 12 pH
MeOH=15mL Methanol
Zn Acetate=4 drops zinc acetate/100mL

		Standard Volume		Preservative		Water	Soil	pH check	Direct Delivery	
Analysis	Method Number	Aqueous	Soil	Aqueous	Soil	Hold Time	Hold Time	Required	Required	Notes
Acidity	305.1	250 mL, P,G	8 oz G	NP	NP	14 days				
Alkalinity	301.1	250 mL, P,G	8 oz G	NP	NP	14 days				
Ammonia	350.2	1000 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Asbestos	NA	NA	8 oz G	NP	NP	28 days				Subcontracted
Base Neutrals	8270/625	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
BOD - 5 day	405.1	1000 mL P,G	8 oz G	NP	NP	48 hours			Yes	
Bromide	320.1	250 mL, P,G	8 oz G	NP	NP	28 days				
Chloride	325.3/4500	250 mL, P,G	8 oz G	NP	NP	28 days				
Chlorine (TRC)	330.5	250 mL, P,G	8 oz G	NP	NP	Immediate			Yes	
Chromium (VI)	7196A/3500	250 mL, P,G	NA	NP	NP	24 hours	1 month		Yes	4 day hold after extraction
COD	410.4	250 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Coliform	9221B	sterile cup	sterile cup	NP	NP	24 hours	24 hours		Yes	
Color	110.2	250 mL, P,G	NA	NP	NP	48 hours			Yes	
Conductance	120.1	250 mL, P,G	8 oz G	NP	NP	28 days				
Cyanide (Amenable)	335.1	1000 mL, P,G	8 oz G	NaOH	NP	14 days	14 days	Yes		
Cyanide (Total)	9010/335.2	1000 mL, P,G	8 oz G	NaOH	NP	14 days	14 days	Yes		
Dissolved Oxygen	360.1	500 mL, G*	NA	NP	NP	Immediate			Yes	* Glass only
EDB & DBCP	504/8011	3x40 mL, V	NA	NP/HCL	NP	28 days	28 days			No head space/air bubbles
EPH	MASS EPH	1000 mL, G	8 oz G	HCl	NP	14 days	7 days	Yes		40 day hold after extraction
Flash Point	1010	40 mL	2 oz G	NP	NP	7 days	7 days			
Fluoride	340.2	1000 mL, P,G	8 oz G	NP	NP	28 days				
Grain Size	NA	NA	8 oz G	NA	NP	NA				
GRO	8015/ME	3x40 mL, V	40 ml V	HCl	MeOH	14 days	14 days	Yes		No head space/air bubbles
Haloacetic Acids	552.2	3x40 mL, V	NA	NH4Cl	N/A	14 days				7 day hold after extraction
Hardness	200.7	250 mL, P,G	8 oz G	HNO3	NP	6 months		Yes		
Herbicides	8151	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Iodide	345.1	250 mL, P,G	8 oz G	NP	NP	24 hours				
Kjeldahl Nitrogen (Total)	351.3	1000 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Mercury (Dissolved)	7471/245.1	250 mL, P,G	8 oz G	NP	NP	28 days		Yes	Yes*	Filtered in Field, * if not filtered in field
Mercury (Total)	7471/245.1	250 mL, P,G	8 oz G	HNO_3	NP	28 days	28 days	Yes		
Metals (Dissolved)	6010/200.7/200.9	250 mL, P,G	8 oz G	NP	NP	6 months		Yes	Yes*	Filtered in Field, * if not filtered in field
Metals (Total)	6010/200.7/200.9	250 mL, P,G	8 oz G	HNO_3	NP	6 months	6 months	Yes		
Nitrate	353.2	250 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
Nitrate-Nitrite	353.2/353.3	250 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Nitrite	353.3	250 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
Odor	140.1	250 mL,G*	8 oz G	NP	NP	24 hours			Yes	* Glass only
Oil & Grease	1664	1000 mL, G*	NA	H2S04	NP	28 days	28 days	Yes		* Glass only
Orthophosphate	365.3	1000 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
PAH	8270	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Paint Filter	9095	NA	8 oz G	NP	NP	28 days				
PCB	8082/608	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
PCB (Oil)	8082	NA	2 oz G	NP	NP	14 days				40 day hold after extraction
PCB (Wipe)	8082	NA	wipe kit	Hexane	NA	14 days				10 cm^2 template/gauze
PCB/Pesticides	608	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Pesticides	8081/608	2000 mL, G	8 oz G	NP	NP	7 days	14 days	Yes		pH 5-9 recquired
pH	9040/150.1/9045	250 mL, P,G	8 oz G	NP	NP	Immediate	ASAP		Yes	Done in the field
Phenol	5530/9065/420.1	1000 mL, G*	8 oz G	H_2SO_4	NP	28 days		Yes		* Glass only
Phosphorous (Hydrolyz)	365.3	1000 mL, G	8 oz G	H_2SO_4	NP	28 days		Yes		
Phosphorous (Total)	365.3	1000 mL, G	8 oz G	H_2SO_4	NP	28 days		Yes		
Salinity	2520	250 mL, G	8 oz G	NP	NP	28 days				
Settleable Solids	160.5	1000 mL, P,G	NA	NP	NP	48 hours			Yes	
Silica	370.1	250 mL, P*	8 oz G	NP	NP	28 days				* Plastic only
Siloxane	NA	50 mL, P	NA	MeOH	NP	21 days		Yes		Done on air samples only
SPLP	1312	4000 mL, G	16 oz G	NP	NP	14 days	14 day			
Sulfide	376.2	500 mL, P	8 oz G	Zn Ace*, NaOH	NP	7 days	7 days	Yes		NaOH pH >9
Sulfite	377.1	250 mL, P,G	8 oz G	NP	NP	Immediate			Yes	Done in the field
Sulfate	375.4	250 mL, P	8 oz G	NP	NP	28 days				
Surfactants (MBAS)	425.1	250 mL, P,G	NA	NP	NP	48 hours			Yes	
SVOA	8270/625	2000 mL, G	8 oz G	NP	NP	7 days	14 days			40 day hold after extraction
TCLP (Full)	1311	4000 mL, G	16 oz G	NP	NP	14 days	14 days			SVOA hold 7 days after spin
TDS	160.1	250 mL, P,G	NA	NP	NP	7 days	NA			
THM	524.2	3x40 mL, V	NA	Na2S2O3	NA	14 days	NA			
TOC	415.2	2x40 mL, V	2 oz G	H_2SO_4	NP	28 days				Subcontracted
TOX	450.1	2x40 mL, V	NA	H_2SO_4	NP	7 days				Subcontracted
TPH GC FID	8100M	1000 mL, G	8 oz G	NP/HCL/H_2SO_4	NP	7 days	14 days	Yes		Glass only
TPH Method	1664	1000 mL, G	8 oz G	HCL/H_2SO_4	NP	28 days	28 days	Yes		Glass only
TS	160.3	250 mL, P	NA	NP	NP	7 days				
TSS	160.2	250 mL, P	NA	NP	NP	7 days				
Turbidity	180.1	250mL,P,G	NA	NP	NP	48 hr			Yes	
TVS	160.4	250 mL, P	NA	NP	NP	7 days				
TX Total Halogens	9076	2 oz G	2 oz G	NP	NP	28 days	28 days			
Volatile Organics	8260/8021/624	3x40 mL, V	2 oz G	HCL	NP	14 days	14 days		Yes*	No hs/air bubbles, * Unpreserved VOC only
VPH	Mass VPH	3x40 mL, V	40 mL V	HCL	MeOH	14 days	28 days			Aq-No hs/air bubbles,Soil-Include NP %solids
5035/8260	5035/8260	NA	40 mL V	NA	MeOH	NA	14 days			Must include NP %solids VOA

ESS Laboratory

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

CHAIN OF CUSTODY

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

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

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

Reporting Limits

ESS LAB PROJECT ID: 03c2c133

Electronic Deliverable: ___ Yes ___ No Format ____

Co. Name	Project #	Project Name (20 Char. or less)
Weston Solutions		Tombarello

Contact Person	Address
Jim Ricker	One Wall St

City	State	Zip	PO#
Manchester	NH	03101	

Telephone #	Fax #	Email Address
603 656-5400	603 656-5401	37055

ESS LAB Sample#	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Number of Containers	Type of Containers	Circle and/or Write Required Analysis
21	2/12/03	1137	X		S	WSB11-00-0203	1	G	X X X X
22		1142	X			WSB11-01-0203	1		X X X
23		1212	X			WSB12-00-0203	1		X X X
24		1215	X			WSB12-01-0203	1		X X X
25		1317	X			WSB14-00-0203	1		X X X
26		1320	X			WSB14-01-0203	1		X X X
27		1325	X			WSB14-03-0203	1		X X X
28		1330	X			WSB14-05-0203	7		X X X (MS/MSD)
29		1320	X			WSB14-01-0203-E	1		X X X
									X X X (TCLP)

Circle and/or Write Required Analysis: 524.2 / 624 / 8260; VPH / 8015 GRO / 8021 MTBE/BTEX; No Targets; EPH; 8015 DRO; 8100 TPH; 608 PCB; 608 Pesticides; 8082 PCB; 8081 Pesticides; PAH only; 625; 8270; TAL23; PP13; RCRA8; RCRA5; NBC7; MCPw/Hg; MCP; TCLP8

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

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

Cooler Present: Yes ___ No
Seals Intact: ___ Yes ___ No NA: ✓
Cooler Temp: 4.6°C

Internal Use Only: [ ] Pickup [ ] Technicians ____

Comments: PCBs via 8082; RCRA 8 via 6010A + 7471A
EPH via MADEP

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	2/14/03 1530	[signature]	2/14/03 15:20	[signature]	2/14/03 15:45	[signature]	14:45 2/14/03
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*MADEP requires that all additional calibrated analytes found during analysis be disclosed.

Please fax all changes to Chain of Custody in writing.

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

ESS Laboratory
Guide to Sample Handling and Preparation
Revised 01/08/02

All Samples Should Be Cooled to 4°C

P=Poly
G=Glass
V=Vial
S = Sterile Container
NP = No Preservative
NA = Not Applicable

H_2S0_4=Sulfuric Acid to < 2 pH
1:1 HCl=Hydrochloric Acid to < 2 pH
HNO_3=Nitric Acid to < 2 pH
NaOH=Sodium Hydroxide to > 12 pH
MeOH=15mL Methanol
Zn Acetate=4 drops zinc acetate/100mL

		Standard Volume		Preservative		Water	Soil	pH check	Direct Delivery	
Analysis	Method Number	Aqueous	Soil	Aqueous	Soil	Hold Time	Hold Time	Required	Required	Notes
Acidity	305.1	250 mL, P,G	8 oz G	NP	NP	14 days				
Alkalinity	301.1	250 mL, P,G	8 oz G	NP	NP	14 days				
Ammonia	350.2	1000 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Asbestos	NA	NA	8 oz G	NP	NP	28 days				Subcontracted
Base Neutrals	8270/625	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
BOD - 5 day	405.1	1000 mL,P,G	8 oz G	NP	NP	48 hours			Yes	
Bromide	320.1	250 mL, P,G	8 oz G	NP	NP	28 days				
Chloride	325.3/4500	250 mL, P,G	8 oz G	NP	NP	28 days				
Chlorine (TRC)	330.5	250 mL, P,G	8 oz G	NP	NP	Immediate			Yes	
Chromium (VI)	7196A/3500	250 mL, P,G	NA	NP	NP	24 hours	1 month		Yes	4 day hold after extraction
COD	410.4	250 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Coliform	9221B	sterile cup	sterile cup	NP	NP	24 hours	24 hours		Yes	
Color	110.2	250 mL, P,G	NA	NP	NP	48 hours			Yes	
Conductance	120.1	250 mL, P,G	8 oz G	NP	NP	28 days				
Cyanide (Amenable)	335.1	1000 mL, P,G	8 oz G	NaOH	NP	14 days	14 days	Yes		
Cyanide (Total)	9010/335.2	1000 mL, P,G	8 oz G	NaOH	NP	14 days	14 days	Yes		
Dissolved Oxygen	360.1	500 mL, G*	NA	NP	NP	Immediate			Yes	* Glass only
EDB & DBCP	504/8011	3x40 mL, V	NA	NP/HCL	NP	28 days	28 days			No head space/air bubbles
EPH	MASS EPH	1000 mL, G	8 oz G	HCl	NP	14 days	7 days	Yes		40 day hold after extraction
Flash Point	1010	40 mL	2 oz G	NP	NP	7 days	7 days			
Fluoride	340.2	1000 mL, P,G	8 oz G	NP	NP	28 days				
Grain Size	NA	NA	8 oz G	NA	NP	NA				
GRO	8015/ME	3x40 mL, V	40 ml V	HCl	MeOH	14 days	14 days	Yes		No head space/air bubbles
Haloacetic Acids	552.2	3x40 mL, V	NA	NH4Cl	N/A	14 days				7 day hold after extraction
Hardness	200.7	250 mL, P,G	8 oz G	HNO3	NP	6 months		Yes		
Herbicides	8151	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Iodide	345.1	250 mL, P,G	8 oz G	NP	NP	24 hours				
Kjeldahl Nitrogen (Total)	351.3	1000 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Mercury (Dissolved)	7471/245.1	250 mL, P,G	8 oz G	NP	NP	28 days		Yes	Yes*	Filtered in Field, * if not filtered in field
Mercury (Total)	7471/245.1	250 mL, P,G	8 oz G	HNO_3	NP	28 days	28 days	Yes		
Metals (Dissolved)	6010/200.7/200.9	250 mL, P,G	8 oz G	NP	NP	6 months		Yes	Yes*	Filtered in Field, * if not filtered in field
Metals (Total)	6010/200.7/200.9	250 mL, P,G	8 oz G	HNO_3	NP	6 months	6 months	Yes		
Nitrate	353.2	250 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
Nitrate-Nitrite	353.2/353.3	250 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Nitrite	353.3	250 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
Odor	140.1	250 mL,G*	8 oz G	NP	NP	24 hours			Yes	* Glass only
Oil & Grease	1664	1000 mL, G*	NA	H2S04	NP	28 days	28 days	Yes		* Glass only
Orthophosphate	365.3	1000 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
PAH	8270	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Paint Filter	9095	NA	8 oz G	NP	NP	28 days				
PCB	8082/608	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
PCB (Oil)	8082	NA	2 oz G	NP	NP	14 days				40 day hold after extraction
PCB (Wipe)	8082	NA	wipe kit	Hexane	NA	14 days				10 cm^2 template/gauze
PCB/Pesticides	608	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Pesticides	8081/608	2000 mL, G	8 oz G	NP	NP	7 days	14 days	Yes		pH 5-9 required
pH	9040/150.1/9045	250 mL, P,G	8 oz G	NP	NP	Immediate	ASAP		Yes	Done in the field
Phenol	5530/9065/420.1	1000 mL, G*	8 oz G	H_2SO_4	NP	28 days		Yes		* Glass only
Phosphorous (Hydrolyz)	365.3	1000 mL, G	8 oz G	H_2SO_4	NP	28 days		Yes		
Phosphorous (Total)	365.3	1000 mL, G	8 oz G	H_2SO_4	NP	28 days		Yes		
Salinity	2520	250 mL, G	8 oz G	NP	NP	28 days				
Settleable Solids	160.5	1000 mL, P,G	NA	NP	NP	48 hours			Yes	
Silica	370.1	250 mL, P*	8 oz G	NP	NP	28 days				* Plastic only
Siloxane	NA	50 mL, P	NA	MeOH	NP	21 days		Yes		Done on air samples only
SPLP	1312	4000 mL, G	16 oz G	NP	NP	14 days	14 day			
Sulfide	376.2	500 mL, P	8 oz G	Zn Ace*, NaOH	NP	7 days	7 days	Yes		NaOH pH >9
Sulfite	377.1	250 mL, P,G	8 oz G	NP	NP	Immediate			Yes	Done in the field
Sulfate	375.4	250 mL, P	8 oz G	NP	NP	28 days				
Surfactants (MBAS)	425.1	250 mL, P,G	NA	NP	NP	48 hours			Yes	
SVOA	8270/625	2000 mL, G	8 oz G	NP	NP	7 days	14 days			40 day hold after extraction
TCLP (Full)	1311	4000 mL, G	16 oz G	NP	NP	14 days	14 days			SVOA hold 7 days after spin
TDS	160.1	250 mL, P,G	NA	NP	NP	7 days	NA			
THM	524.2	3x40 mL, V	NA	Na2S2O3	NA	14 days	NA			
TOC	415.2	2x40 mL, V	2 oz G	H_2SO_4	NP	28 days				Subcontracted
TOX	450.1	2x40 mL, V	NA	H_2SO_4	NP	7 days				Subcontracted
TPH :GC FID	8100M	1000 mL, G	8 oz G	NP/HCL/H_2SO_4	NP	7 days	14 days	Yes		Glass only
TPH :Method	1664	1000 mL, G	8 oz G	HCL/H_2SO_4	NP	28 days	28 days	Yes		Glass only
TS	160.3	250 mL, P	NA	NP	NP	7 days				
TSS	160.2	250 mL, P	NA	NP	NP	7 days				
Turbidity	180.1	250mL,P,G	NA	NP	NP	48 hr			Yes	
TVS	160.4	250 mL, P	NA	NP	NP	7 days				
TX Total Halogens	9076	2 oz G	2 oz G	NP	NP	28 days	28 days			
Volatile Organics	8260/8021/624	3x40 mL, V	2 oz G	HCL	NP	14 days	14 days		Yes*	No hs/air bubbles, * Unpreserved VOC only
VPH	Mass VPH	3x40 mL, V	40 mL V	HCL	MeOH	14 days	28 days			Aq-No hs/air bubbles.Soil-Include NP %solids
5035/8260	5035/8260	NA	40 mL V	NA	MeOH	NA	14 days			Must include NP %solids VOA

ESS Laboratory

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

CHAIN OF CUSTODY

Page 4 of 4

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

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

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

Reporting Limits

ESS LAB PROJECT ID: 0302c133

Electronic Deliverable: ___ Yes ___ No Format ____

Co. Name	Project #	Project Name (20 Char. or less)
Weston Solutions		Tombarello

Contact Person	Address
Jim Ricker	One Wall Street

City	State	Zip	PO#
Manchester	NH	03101	37055

Telephone #	Fax #	Email Address

ESS LAB Sample#	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Number of Containers	Type of Containers	Circle and/or Write Required Analysis: 524.2 / 624 / 8260	VPH / 8015 GRO / 8021 MTBE/BTEX	No Targets / EPH / 8015 DRO / 8100 TPH	608 Pesticides, PCB / 8082 PCB / 8081 Pesticides	PAH only / 625 / 8270	PP13 TAL23 / RCRA8 / RCRA5	MCPw/Hg NBC7 / MCP / TCLP8	TOC						
30	2/13/03	1010 ~~0850~~		X	GW	MW7-0203-E	4	P,V	X					X								
31		0850		X		MW1-0203	4	P,V	X					X								
32		0940		X		MW5-0203	4	P,V	X					X								
33		1045		X		MW6-0203	4	P,V	X					X								
34		1010		X		MW7-0203	8	P,V	X					X			(MS/MSD)					
35		0700		X	W	TRIPBLANK	1	V	X													
36		0745		X	S	CB1-0203	1	G			X	X		X								
37		1330		X	S	OUTFALL1-0203	2	G			X	X		X		X						
38		1345		X	S	RSED1-0203	2	G			X	X		X		X						

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

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

Cooler Present ✓ Yes ___ No
Seals Intact ___ Yes ___ No NA: —
Cooler Temp: 4.6°C

Internal Use Only
[ ] Pickup
[ ] Technicians ____

Comments: VOCs 8260B, PCBs via 8082, TOC 415.1 or 9060
RCRA 8 via 6010A + 7471A (GW was field filtered)
EPH via MADEP

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	2/14/03 1530		2/14/03 15:30		2/14/03 18:46		2/14/03 1846
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*MADEP requires that all additional calibrated analytes found during analysis be disclosed

Please fax all changes to Chain of Custody in writing.

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

ESS Laboratory
Guide to Sample Handling and Preparation
Revised 01/08/02

All Samples Should Be Cooled to 4°C

P=Poly
G=Glass
V=Vial
S = Sterile Container
NP = No Preservative
NA = Not Applicable

H_2SO_4=Sulfuric Acid to < 2 pH
1:1 HCl=Hydrochloric Acid to < 2 pH
HNO_3=Nitric Acid to < 2 pH
NaOH=Sodium Hydroxide to > 12 pH
MeOH=15mL Methanol
Zn Acetate=4 drops zinc acetate/100mL

		Standard Volume		Preservative		Water	Soil	pH check	Direct Delivery	
Analysis	Method Number	Aqueous	Soil	Aqueous	Soil	Hold Time	Hold Time	Required	Required	Notes
Acidity	305.1	250 mL, P,G	8 oz G	NP	NP	14 days				
Alkalinity	301.1	250 mL, P,G	8 oz G	NP	NP	14 days				
Ammonia	350.2	1000 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Asbestos	NA	NA	8 oz G	NP	NP	28 days				Subcontracted
Base Neutrals	8270/625	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
BOD - 5 day	405.1	1000 mL,P,G	8 oz G	NP	NP	48 hours			Yes	
Bromide	320.1	250 mL, P,G	8 oz G	NP	NP	28 days				
Chloride	325.3/4500	250 mL, P,G	8 oz G	NP	NP	28 days				
Chlorine (TRC)	330.5	250 mL, P,G	8 oz G	NP	NP	Immediate			Yes	
Chromium (VI)	7196A/3500	250 mL, P,G	NA	NP	NP	24 hours	1 month		Yes	4 day hold after extraction
COD	410.4	250 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Coliform	9221B	sterile cup	sterile cup	NP	NP	24 hours	24 hours		Yes	
Color	110.2	250 mL, P,G	NA	NP	NP	48 hours			Yes	
Conductance	120.1	250 mL, P,G	8 oz G	NP	NP	28 days				
Cyanide (Amenable)	335.1	1000 mL, P,G	8 oz G	NaOH	NP	14 days	14 days	Yes		
Cyanide (Total)	9010/335.2	1000 mL, P,G	8 oz G	NaOH	NP	14 days	14 days	Yes		
Dissolved Oxygen	360.1	500 mL, G*	NA	NP	NP	Immediate			Yes	* Glass only
EDB & DBCP	504/8011	3x40 mL, V	NA	NP/HCL	NP	28 days	28 days			No head space/air bubbles
EPH	MASS EPH	1000 mL, G	8 oz G	HCl	NP	14 days	7 days	Yes		40 day hold after extraction
Flash Point	1010	40 mL	2 oz G	NP	NP	7 days	7 days			
Fluoride	340.2	1000 mL, P,G	8 oz G	NP	NP	28 days				
Grain Size	NA	NA	8 oz G	NA	NP	NA				
GRO	8015/ME	3x40 mL, V	40 ml V	HCl	MeOH	14 days	14 days	Yes		No head space/air bubbles
Haloacetic Acids	552.2	3x40 mL, V	NA	NH4Cl	N/A	14 days				7 day hold after extraction
Hardness	200.7	250 mL, P,G	8 oz G	HNO3	NP	6 months		Yes		
Herbicides	8151	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Iodide	345.1	250 mL, P,G	8 oz G	NP	NP	24 hours				
Kjeldahl Nitrogen (Total)	351.3	1000 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Mercury (Dissolved)	7471/245.1	250 mL, P,G	8 oz G	NP	NP	28 days		Yes	Yes*	Filtered in Field, * if not filtered in field
Mercury (Total)	7471/245.1	250 mL, P,G	8 oz G	HNO_3	NP	28 days	28 days	Yes		
Metals (Dissolved)	6010/200.7/200.9	250 mL, P,G	8 oz G	NP	NP	6 months		Yes	Yes*	Filtered in Field, * if not filtered in field
Metals (Total)	6010/200.7/200.9	250 mL, P,G	8 oz G	HNO_3	NP	6 months	6 months	Yes		
Nitrate	353.2	250 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
Nitrate-Nitrite	353.2/353.3	250 mL, P,G	8 oz G	H_2SO_4	NP	28 days		Yes		
Nitrite	353.3	250 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
Odor	140.1	250 mL,G*	8 oz G	NP	NP	24 hours			Yes	* Glass only
Oil & Grease	1664	1000 mL, G*	NA	H2S04	NP	28 days	28 days	Yes		* Glass only
Orthophosphate	365.3	1000 mL, P,G	8 oz G	NP	NP	48 hours			Yes	
PAH	8270	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Paint Filter	9095	NA	8 oz G	NP	NP	28 days				
PCB	8082/608	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
PCB (Oil)	8082	NA	2 oz G	NP	NP	14 days				40 day hold after extraction
PCB (Wipe)	8082	NA	wipe kit	Hexane	NA	14 days				10 cm^2 template/gauze
PCB/Pesticides	608	2000 mL, G	8 oz G	NP	NP	7 days	14 days			
Pesticides	8081/608	2000 mL, G	8 oz G	NP	NP	7 days	14 days	Yes		pH 5-9 required
pH	9040/150.1/9045	250 mL, P,G	8 oz G	NP	NP	Immediate	ASAP		Yes	Done in the field
Phenol	5530/9065/420.1	1000 mL, G*	8 oz G	H_2SO_4	NP	28 days		Yes		* Glass only
Phosphorous (Hydrolyz)	365.3	1000 mL, G	8 oz G	H_2SO_4	NP	28 days		Yes		
Phosphorous (Total)	365.3	1000 mL, G	8 oz G	H_2SO_4	NP	28 days		Yes		
Salinity	2520	250 mL, G	8 oz G	NP	NP	28 days				
Settleable Solids	160.5	1000 mL, P,G	NA	NP	NP	48 hours			Yes	
Silica	370.1	250 mL, P*	8 oz G	NP	NP	28 days				* Plastic only
Siloxane	NA	50 mL, P	NA	MeOH	NP	21 days		Yes		Done on air samples only
SPLP	1312	4000 mL, G	16 oz G	NP	NP	14 days	14 day			
Sulfide	376.2	500 mL, P	8 oz G	Zn Ace*, NaOH	NP	7 days	7 days	Yes		NaOH pH >9
Sulfite	377.1	250 mL, P,G	8 oz G	NP	NP	Immediate			Yes	Done in the field
Sulfate	375.4	250 mL, P	8 oz G	NP	NP	28 days				
Surfactants (MBAS)	425.1	250 mL, P,G	NA	NP	NP	48 hours			Yes	
SVOA	8270/625	2000 mL, G	8 oz G	NP	NP	7 days	14 days			40 day hold after extraction
TCLP (Full)	1311	4000 mL, G	16 oz G	NP	NP	14 days	14 days			SVOA hold 7 days after spin
TDS	160.1	250 mL, P,G	NA	NP	NP	7 days	NA			
THM	524.2	3x40 mL, V	NA	Na2S2O3	NA	14 days	NA			
TOC	415.2	2x40 mL, V	2 oz G	H_2SO_4	NP	28 days				Subcontracted
TOX	450.1	2x40 mL, V	NA	H_2SO_4	NP	7 days				Subcontracted
TPH :GC FID	8100M	1000 mL, G	8 oz G	NP/HCL/H_2SO_4	NP	7 days	14 days	Yes		Glass only
TPH :Method	1664	1000 mL, G	8 oz G	HCL/H_2SO_4	NP	28 days	28 days	Yes		Glass only
TS	160.3	250 mL, P	NA	NP	NP	7 days				
TSS	160.2	250 mL, P	NA	NP	NP	7 days				
Turbidity	180.1	250mL,P,G	NA	NP	NP	48 hr			Yes	
TVS	160.4	250 mL, P	NA	NP	NP	7 days				
TX Total Halogens	9076	2 oz G	2 oz G	NP	NP	28 days	28 days			
Volatile Organics	8260/8021/624	3x40 mL, V	2 oz G	HCL	NP	14 days	14 days		Yes*	No hs/air bubbles, * Unpreserved VOC only
VPH	Mass VPH	3x40 mL, V	40 mL V	HCL	MeOH	14 days	28 days			Aq-No hs/air bubbles,Soil-Include NP %solids
5035/8260	5035/8260	NA	40 mL V	NA	MeOH	NA	14 days			Must include NP %solids VOA

ESS Laboratory

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

CHAIN OF CUSTODY

Page _____ of _____

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

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

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

Reporting Limits

ESS LAB PROJECT ID

Electronic Deliverable
___ Yes ___ No Format _____

Co. Name	Project #	Project Name (20 Char. or less)
ESS Lab		03020 133

Contact Person	Address
Peter Burnstingle	

City	State	Zip	PO#

Telephone #	Fax #	Email Address

Circle and/or Write Required Analysis

ESS LAB Sample#	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Number of Containers	Type of Containers	8260 624 524.2	8021 MTBE BTEX	8100 TPH	8015 DRO	8015 CRO VPH	EPH No Targets	8081 Pesticides	8082 PCB	608 Pesticides	608 PCB	8270 625	PAH only	RCRA8	RCRA3 PP13 TAL25	TCLP8 MCP MCPw/Hg NBCT	TOC							
1	2/13	1330		X	S	03020 133-137	1	G																X							
2	2/13	1345		X	S	-230	1	G																X							A
						Per Peter 2/19/03																									

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

Cooler Present ___ Yes ___ No
Seals Intact ___ Yes ___ No NA: _____
Cooler Temp: 5.6°C

Internal Use Only
[ ] Pickup
[ ] Technicians _____

Comments:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	2/19/03 1730						
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
						[signature]	2/19/03 1314

*MA DEP requires that all additional calibrated analytes found during analysis be disclosed.

Please fax all changes to Chain of Custody in writing.

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

WESTON ANALYTICAL DATA
JULY 2003

SOIL

RL Resource Laboratories

124 Heritage Avenue Unit 10
Portsmouth, NH 03801

Voice: 603-436-2001
FAX: 603-430-2100

Laboratory Report

James Ricker
Weston Solutions, Inc.
1 Wall Street
Manchester, NH 03102

PO Number: None
Lab Number: 5965
Date Received: 07/15/03

Project: Former Tombarello+ Sons Site

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, all test methods met the requirements of Resource Laboratories, LLC (RL) Quality Assurance Plan, Standard Operating Procedures (SOP) and the National Environmental Laboratory Accreditation Conference (NELAC). Any footnotes included to describe the results provided are described in the attached report.

Resource Laboratories, LLC maintains certification with the agencies listed below.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Resource Laboratories, LLC

Susan Sylvester
Principal, General Manager

8/5/03
Date

Total number of pages 92

Resource Laboratories, LLC Certifications

State of New Hampshire	NH902	State of Connecticut	PH-0146
State of Maine	NH903	Commonwealth of Massachusetts	M-NH902

Lab Number:	5965-01
Sample Designation:	LM24-1
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	18	0.6
PCB-1260	7.7	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	118	30-150
decachlorobiphenyl	125	30-150

U = Below quantitation limit

Lab Number:	5965-02
Sample Designation:	LM24-2
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	91	30-150
decachlorobiphenyl	103	30-150

U = Below quantitation limit

Lab Number:	5965-03
Sample Designation:	KL24-1
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/22/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	4.9	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	100	30-150
decachlorobiphenyl	108	30-150

U = Below quantitation limit

Lab Number:	5965-04
Sample Designation:	KL24-2
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	0.8	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	5.1	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	87	30-150
decachlorobiphenyl	96	30-150

U = Below quantitation limit

Lab Number:	5965-05
Sample Designation:	JK24-1
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition: Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.7
PCB-1242	3.4	0.7
PCB-1221	U	0.7
PCB-1232	U	0.7
PCB-1248	U	0.7
PCB-1254	U	0.7
PCB-1260	3.6	0.7

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	100	30-150
decachlorobiphenyl	106	30-150

U = Below quantitation limit

Lab Number:	5965-06
Sample Designation:	JK24-2
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	3.5	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	84	30-150
decachlorobiphenyl	90	30-150

U = Below quantitation limit

Lab Number:	5965-07
Sample Designation:	JK40-1
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	8.8	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	15	0.5
PCB-1260	14	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	81	30-150
decachlorobiphenyl	87	30-150

U = Below quantitation limit

Lab Number:	5965-08
Sample Designation:	JK46-2
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	4	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	87	30-150
decachlorobiphenyl	99	30-150

U = Below quantitation limit

Lab Number:	5965-09
Sample Designation:	IJ46-1
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	6.4	0.6
PCB-1260	8.8	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	91	30-150
decachlorobiphenyl	96	30-150

U = Below quantitation limit

Lab Number:	5965-10
Sample Designation:	IJ46-1-E
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/22/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	1.2	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	8.4	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	92	30-150
decachlorobiphenyl	104	30-150

U = Below quantitation limit

Lab Number:	5965-11
Sample Designation:	IJ46-2
Date Sampled:	7/14/03
Date Extracted:	7/20/03
Date Analyzed:	7/22/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	95	30-150
decachlorobiphenyl	105	30-150

U = Below quantitation limit

Lab Number:	5965-12
Sample Designation:	IJ24-1
Date Sampled:	7/14/03
Date Extracted:	7/19/03
Date Analyzed:	7/23/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	7.5	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	7.6	0.5
PCB-1260	5	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	118	30-150
decachlorobiphenyl	124	30-150

U = Below quantitation limit

Lab Number:	5965-13
Sample Designation:	IJ24-2
Date Sampled:	7/14/03
Date Extracted:	7/20/03
Date Analyzed:	7/22/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	112	30-150
decachlorobiphenyl	122	30-150

U = Below quantitation limit

Lab Number:	5965-14
Sample Designation:	HI24-1
Date Sampled:	7/14/03
Date Extracted:	7/20/03
Date Analyzed:	7/23/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	2.8	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	81	30-150
decachlorobiphenyl	91	30-150

U = Below quantitation limit

Lab Number:	5965-15
Sample Designation:	HI24-2
Date Sampled:	7/14/03
Date Extracted:	7/20/03
Date Analyzed:	7/22/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	81	30-150
decachlorobiphenyl	89	30-150

U = Below quantitation limit

Lab Number:	5965-16
Sample Designation:	HI46-1
Date Sampled:	7/14/03
Date Extracted:	7/20/03
Date Analyzed:	7/22/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.7
PCB-1242	U	0.7
PCB-1221	U	0.7
PCB-1232	U	0.7
PCB-1248	U	0.7
PCB-1254	5.6	0.7
PCB-1260	5.8	0.7

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	86	30-150
decachlorobiphenyl	88	30-150

U = Below quantitation limit

Lab Number:	5965-17
Sample Designation:	HI46-2
Date Sampled:	7/14/03
Date Extracted:	7/20/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	1.5	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	118	30-150
decachlorobiphenyl	132	30-150

U = Below quantitation limit

Lab Number:	5965-18
Sample Designation:	GH46-1
Date Sampled:	7/14/03
Date Extracted:	7/21/03
Date Analyzed:	7/25/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	3	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	11	0.6
PCB-1260	14	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	110	30-150
decachlorobiphenyl	110	30-150

U = Below quantitation limit

Lab Number:	5965-19
Sample Designation:	GH46-2
Date Sampled:	7/14/03
Date Extracted:	12/10/02
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	U	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	89	30-150
decachlorobiphenyl	82	30-150

U = Below quantitation limit

Lab Number:	5965-20
Sample Designation:	GH24-1
Date Sampled:	7/14/03
Date Extracted:	7/21/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	3.7	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	119	30-150
decachlorobiphenyl	113	30-150

U = Below quantitation limit

Lab Number:	5965-21
Sample Designation:	GH24-2
Date Sampled:	7/14/03
Date Extracted	7/21/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	118	30-150
decachlorobiphenyl	120	30-150

U = Below quantitation limit

Lab Number:	5965-22
Sample Designation:	GH24-2-E
Date Sampled:	7/14/03
Date Extracted:	7/21/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	113	30-150
decachlorobiphenyl	111	30-150

U = Below quantitation limit

Lab Number:	5965-23
Sample Designation:	FG13-1
Date Sampled:	7/14/03
Date Extracted:	7/21/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	1
PCB-1242	U	1
PCB-1221	U	1
PCB-1232	U	1
PCB-1248	U	1
PCB-1254	U	1
PCB-1260	38	1

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	129	30-150
decachlorobiphenyl	118	30-150

U = Below quantitation limit

Lab Number:	5965-24
Sample Designation:	FG13-2
Date Sampled:	7/14/03
Date Extracted:	7/21/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	111	30-150
decachlorobiphenyl	105	30-150

U = Below quantitation limit

Lab Number:	5965-25
Sample Designation:	FG35-1
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	8/1/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	2
PCB-1242	U	2
PCB-1221	U	2
PCB-1232	U	2
PCB-1248	U	2
PCB-1254	U	2
PCB-1260	66	2

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	126	30-150
decachlorobiphenyl	126	30-150

U = Below quantitation limit

Lab Number:	5965-26
Sample Designation:	FG35-2
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	119	30-150
decachlorobiphenyl	121	30-150

U = Below quantitation limit

Lab Number:	5965-27
Sample Designation:	EF13-1
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	8/1/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	11	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	120	30-150
decachlorobiphenyl	112	30-150

U = Below quantitation limit

Lab Number:	5965-28
Sample Designation:	EF13-2
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	8/1/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	112	30-150
decachlorobiphenyl	106	30-150

U = Below quantitation limit

Lab Number:	5965-29
Sample Designation:	DE13-1
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	1
PCB-1242	3	1
PCB-1221	U	1
PCB-1232	U	1
PCB-1248	U	1
PCB-1254	U	1
PCB-1260	42	1

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	101	30-150
decachlorobiphenyl	108	30-150

U = Below quantitation limit

Lab Number:	5965-30
Sample Designation:	DE13-2
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	7/25/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference. EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	97	30-150
decachlorobiphenyl	104	30-150

U = Below quantitation limit

Lab Number:	5965-31
Sample Designation:	DF13-2-E
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	7/25/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	105	30-150
decachlorobiphenyl	109	30-150

U = Below quantitation limit

Lab Number:	5965-32
Sample Designation:	CD13-1
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	7/25/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846. 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	7.4	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	5.4	0.5
PCB-1260	9.3	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	106	30-150
decachlorobiphenyl	111	30-150

U = Below quantitation limit

Lab Number:	5965-33
Sample Designation:	CD13-2
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	7/25/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	127	30-150
decachlorobiphenyl	130	30-150

U = Below quantitation limit

Lab Number:	5965-34
Sample Designation:	BC13-1
Date Sampled:	7/14/03
Date Extracted:	7/22/03
Date Analyzed:	7/25/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	2.7	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	7.5	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	113	30-150
decachlorobiphenyl	119	30-150

U = Below quantitation limit

Lab Number:	5965-35
Sample Designation:	BC13-2
Date Sampled:	7/14/03
Date Extracted:	7/23/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	1.2	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	95	30-150
decachlorobiphenyl	99	30-150

U = Below quantitation limit

Lab Number:	5965-36
Sample Designation:	AB13-1
Date Sampled:	7/14/03
Date Extracted:	7/23/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	1.1	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	95	30-150
decachlorobiphenyl	96	30-150

U = Below quantitation limit

Lab Number:	5965-37
Sample Designation:	AB13-2
Date Sampled:	7/14/03
Date Extracted:	7/23/03
Date Analyzed:	7/26/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	116	30-150
decachlorobiphenyl	113	30-150

U = Below quantitation limit

Lab Number:	5965-38
Sample Designation:	WSB16-1
Date Sampled:	7/14/03
Date Extracted:	7/16/03
Date Analyzed:	7/17/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	3.1	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	74	30-150
decachlorobiphenyl	91	30-150

U = Below quantitation limit

Lab Number:	5965-39
Sample Designation:	WSB16-2
Date Sampled:	7/14/03
Date Extracted:	7/16/03
Date Analyzed:	7/23/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	U	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	58	30-150
decachlorobiphenyl	88	30-150

U = Below quantitation limit

Lab Number:	5965-40
Sample Designation:	WSB16-3
Date Sampled:	7/14/03
Date Extracted:	7/16/03
Date Analyzed:	7/23/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	61	30-150
decachlorobiphenyl	85	30-150

U = Below quantitation limit

Lab Number:	5965-41
Sample Designation:	WSB17-1
Date Sampled:	7/14/03
Date Extracted:	7/23/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	2.5	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	100	30-150
decachlorobiphenyl	103	30-150

U = Below quantitation limit

Lab Number:	5965-42
Sample Designation:	WSB17-1-E
Date Sampled:	7/14/03
Date Extracted:	7/23/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	3.7	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	114	30-150
decachlorobiphenyl	121	30-150

U = Below quantitation limit

Lab Number:	5965-43
Sample Designation:	WSB17-2
Date Sampled:	7/14/03
Date Extracted:	7/23/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	J	0.6
PCB-1242	J	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	95	30-150
decachlorobiphenyl	102	30-150

U = Below quantitation limit

Lab Number:	5965-44
Sample Designation:	WSB17-3
Date Sampled:	7/14/03
Date Extracted:	7/24/03
Date Analyzed:	7/25/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	111	30-150
decachlorobiphenyl	105	30-150

U = Below quantitation limit

Lab Number:	5965-45
Sample Designation:	WSB18-1
Date Sampled:	7/14/03
Date Extracted:	7/16/03
Date Analyzed:	7/17/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846 3rd Edition Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	1.7	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	87	30-150
decachlorobiphenyl	95	30-150

U = Below quantitation limit

Lab Number:	5965-46
Sample Designation:	WSB18-2
Date Sampled:	7/14/03
Date Extracted:	7/16/03
Date Analyzed:	7/17/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	58	30-150
decachlorobiphenyl	83	30-150

U = Below quantitation limit

Lab Number:	5965-47
Sample Designation:	WSB18-3
Date Sampled:	7/14/03
Date Extracted:	7/16/03
Date Analyzed:	7/17/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	63	30-150
decachlorobiphenyl	88	30-150

U = Below quantitation limit

Lab Number:	5965-48
Sample Designation:	WSB21-1
Date Sampled:	7/14/03
Date Extracted:	7/16/03
Date Analyzed:	7/17/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	2.2	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	16	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	78	30-150
decachlorobiphenyl	89	30-150

U = Below quantitation limit

Lab Number:	5965-49
Sample Designation:	WSB21-2
Date Sampled:	7/14/03
Date Extracted:	7/16/03
Date Analyzed:	7/17/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	59	30-150
decachlorobiphenyl	85	30-150

U = Below quantitation limit

Lab Number:	5965-50
Sample Designation:	WSB21-3
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/23/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	63	30-150
decachlorobiphenyl	86	30-150

U = Below quantitation limit

Lab Number:	5965-51
Sample Designation:	WSB22-1
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	17	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	78	30-150
decachlorobiphenyl	93	30-150

U = Below quantitation limit

Lab Number:	5965-52
Sample Designation:	WSB22-2
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	59	30-150
decachlorobiphenyl	89	30-150

U = Below quantitation limit

Lab Number:	5965-53
Sample Designation:	WSB22-3
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/23/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	78	30-150
decachlorobiphenyl	89	30-150

U = Below quantitation limit

Lab Number:	5965-54
Sample Designation:	WSB25-1
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	0.9	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	14	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	73	30-150
decachlorobiphenyl	87	30-150

U = Below quantitation limit

Lab Number:	5965-55
Sample Designation:	WSB25-2
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	69	30-150
decachlorobiphenyl	92	30-150

U = Below quantitation limit

0 0056

Lab Number:	5965-56
Sample Designation:	WSB25-3
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	68	30-150
decachlorobiphenyl	84	30-150

U = Below quantitation limit

Lab Number:	5965-57
Sample Designation:	WSB26-1
Date Sampled:	7/14/03
Date Extracted:	7/24/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	1
PCB-1242	U	1
PCB-1221	U	1
PCB-1232	U	1
PCB-1248	U	1
PCB-1254	U	1
PCB-1260	39	1

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	109	30-150
decachlorobiphenyl	111	30-150

U = Below quantitation limit

0 0056

Lab Number:	5965-58
Sample Designation:	WSB26-1-E
Date Sampled:	7/14/03
Date Extracted:	7/24/03
Date Analyzed:	8/1/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	2
PCB-1242	U	2
PCB-1221	U	2
PCB-1232	U	2
PCB-1248	U	2
PCB-1254	U	2
PCB-1260	50	2

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	122	30-150
decachlorobiphenyl	115	30-150

U = Below quantitation limit

Lab Number:	5965-59
Sample Designation:	WSB26-2
Date Sampled:	7/14/03
Date Extracted:	7/24/03
Date Analyzed:	8/1/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	30
PCB-1242	U	30
PCB-1221	U	30
PCB-1232	U	30
PCB-1248	U	30
PCB-1254	U	30
PCB-1260	510	30

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	81	30-150
decachlorobiphenyl	132	30-150

U = Below quantitation limit

Lab Number:	5965-60
Sample Designation:	WSB26-3
Date Sampled:	7/14/03
Date Extracted:	7/24/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	7.1	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	106	30-150
decachlorobiphenyl	104	30-150

U = Below quantitation limit

Lab Number:	5965-61
Sample Designation:	WSB27-1
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	24	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	77	30-150
decachlorobiphenyl	89	30-150

U = Below quantitation limit

Lab Number:	5965-62
Sample Designation:	WSB27-2
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	59	30-150
decachlorobiphenyl	82	30-150

U = Below quantitation limit

Lab Number:	5965-63
Sample Designation:	WSB27-3
Date Sampled:	7/14/03
Date Extracted:	7/17/03
Date Analyzed:	7/21/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	54	30-150
decachlorobiphenyl	78	30-150

U = Below quantitation limit

Lab Number:	5965-64
Sample Designation:	WSB30-1
Date Sampled:	7/14/03
Date Extracted:	7/18/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	20
PCB-1242	U	20
PCB-1221	U	20
PCB-1232	U	20
PCB-1248	U	20
PCB-1254	U	20
PCB-1260	U	20

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	126	30-150
decachlorobiphenyl	175 #	30-150

U = Below quantitation limit

Note: Sample was diluted due to violent reaction which occurred during the acid clean up. Sample matrix interference suspected.

Lab Number:	5965-65
Sample Designation:	WSB30-2
Date Sampled:	7/14/03
Date Extracted:	7/18/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	20
PCB-1242	U	20
PCB-1221	U	20
PCB-1232	U	20
PCB-1248	U	20
PCB-1254	U	20
PCB-1260	U	20

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	77	30-150
decachlorobiphenyl	112	30-150

U = Below quantitation limit

Note: Sample was diluted due to violent reaction which occurred during the acid clean up. Sample matrix interference suspected.

Lab Number:	5965-66
Sample Designation:	WSB30-3
Date Sampled:	7/14/03
Date Extracted:	7/18/03
Date Analyzed:	7/22/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	97	30-150
decachlorobiphenyl	110	30-150

U = Below quantitation limit

Lab Number:	5965-67
Sample Designation:	WSB31-1
Date Sampled:	7/14/03
Date Extracted:	7/18/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition: Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	500
PCB-1242	U	500
PCB-1221	U	500
PCB-1232	U	500
PCB-1248	U	500
PCB-1254	U	500
PCB-1260	13000	500

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	diluted out	30-150
decachlorobiphenyl	diluted out	30-150

U = Below quantitation limit

Lab Number:	5965-68
Sample Designation:	WSB31-2
Date Sampled:	7/14/03
Date Extracted:	7/18/03
Date Analyzed:	7/22/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	2.7	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	105	30-150
decachlorobiphenyl	77	30-150

U = Below quantitation limit

Lab Number:	5965-69
Sample Designation:	WSB31-3
Date Sampled:	7/14/03
Date Extracted:	7/18/03
Date Analyzed:	7/22/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	75	30-150
decachlorobiphenyl	88	30-150

U = Below quantitation limit

Lab Number:	5965-70
Sample Designation:	AB35-1
Date Sampled:	7/15/03
Date Extracted:	7/24/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	12	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	5.2	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	104	30-150
decachlorobiphenyl	99	30-150

U = Below quantitation limit

Lab Number:	5965-71
Sample Designation:	AB35-2
Date Sampled:	7/15/03
Date Extracted:	7/25/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.7
PCB-1242	U	0.7
PCB-1221	U	0.7
PCB-1232	U	0.7
PCB-1248	U	0.7
PCB-1254	U	0.7
PCB-1260	U	0.7

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	111	30-150
decachlorobiphenyl	109	30-150

U = Below quantitation limit

0 0072

Lab Number:	5965-72
Sample Designation:	BC35-1
Date Sampled:	7/15/03
Date Extracted:	7/25/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	3.9	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	100	30-150
decachlorobiphenyl	105	30-150

U = Below quantitation limit

Lab Number:	5965-73
Sample Designation:	BC35-1-E
Date Sampled:	7/15/03
Date Extracted:	7/25/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	3.6	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	109	30-150
decachlorobiphenyl	110	30-150

U = Below quantitation limit

Lab Number:	5965-74
Sample Designation:	BC35-2
Date Sampled:	7/15/03
Date Extracted:	7/25/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.7
PCB-1242	U	0.7
PCB-1221	U	0.7
PCB-1232	U	0.7
PCB-1248	U	0.7
PCB-1254	U	0.7
PCB-1260	U	0.7

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	112	30-150
decachlorobiphenyl	111	30-150

U = Below quantitation limit

Lab Number:	5965-75
Sample Designation:	CD35-1
Date Sampled:	7/15/03
Date Extracted:	7/25/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	2.3	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	103	30-150
decachlorobiphenyl	95	30-150

U = Below quantitation limit

0076

Lab Number:	5965-76
Sample Designation:	CD35-2
Date Sampled:	7/15/03
Date Extracted:	7/25/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	6
PCB-1242	U	6
PCB-1221	U	6
PCB-1232	U	6
PCB-1248	U	6
PCB-1254	200	6
PCB-1260	U	6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	99	30-150
decachlorobiphenyl	118	30-150

U = Below quantitation limit

Lab Number:	5965-77
Sample Designation:	EF35-1
Date Sampled:	7/15/03
Date Extracted:	7/26/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	20	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	107	30-150
decachlorobiphenyl	106	30-150

U = Below quantitation limit

0 0078

Lab Number:	5965-78
Sample Designation:	EF35-1-E
Date Sampled:	7/15/03
Date Extracted:	7/26/03
Date Analyzed:	7/30/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	29	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	85	30-150
decachlorobiphenyl	81	30-150

U = Below quantitation limit

Lab Number:	5965-79
Sample Designation:	EF35-2
Date Sampled:	7/15/03
Date Extracted:	7/26/03
Date Analyzed:	7/30/03
Matrix	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	7.8	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	108	30-150
decachlorobiphenyl	105	30-150

U = Below quantitation limit

Lab Number:	5965-80
Sample Designation:	DE35-1
Date Sampled:	7/15/03
Date Extracted:	7/26/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	3.4	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	96	30-150
decachlorobiphenyl	93	30-150

U = Below quantitation limit

Lab Number:	5965-81
Sample Designation:	DE35-2
Date Sampled:	7/15/03
Date Extracted:	7/26/03
Date Analyzed	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	106	30-150
decachlorobiphenyl	112	30-150

U = Below quantitation limit

0 0082

Lab Number:	5965-82
Sample Designation:	LM24-2-E
Date Sampled:	7/14/03
Date Extracted:	12/10/02
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition. Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	106	30-150
decachlorobiphenyl	102	30-150

U = Below quantitation limit

Lab Number:	5965-83
Sample Designation:	JK24-1-E
Date Sampled:	7/14/03
Date Extracted	7/24/03
Date Analyzed:	7/31/03
Matrix:	Solid

SEMIVOLATILE ORGANICS

Method Reference: EPA SW 846, 3rd Edition, Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	2.3	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	2.2	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	96	30-150
decachlorobiphenyl	92	30-150

U = Below quantitation limit

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-2001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

5965 (1 0085)

Company Name: | Phone #: (603) 642-5461
FAX #: (603) 642-5471
Company Address: | Site Location (City, State): [illegible] NH
Project Manager: | Project ID / Name: [illegible]
PO#:
Invoice To: | Protocol: RCRA SDWA NPDES MCP NHDES OTHER

ANALYSIS REQUEST

☐ 8260 ☐ 624 ☐ 8021B/TEX/MBE ☐ 8021BTEX/MBE ☐ TPH 8100 ☐ DRO8015 ☐ EPH ☐ 608 ☐ 8081Pesticides ☐ 8082PCB ☐ PCB Congeners ☐ 625 ☐ 8270 ☐ ABN ☐ PAH only ☐ BN Only ☐ RCRA Metals ☐ PP Metals ☐ TAL Metals ☐ Metals-list ☐ O&G 1664 ☐ O&G SM5520F ☐ pH ☐ Conductivity ☐ BOD ☐ TSS ☐ TDS ☐ TS ☐ Nitrate ☐ Sulfate ☐ Chloride ☐ Nitrite ☐ Bromide ☐ Ortho-P ☐ Ammonia ☐ T-Phosphate ☐ Phenol ☐ COD ☐ Cyanide ☐ Sulfide ☐ Grain Size ☐ Compositing ☐ Reactive CN ☐ Reactive S ☐ Ignitability ☐ Grab ☐ Composite

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	ICE	MeOH	OTHER (Specify)	Sampling: DATE	TIME
5965-01	LM24-1	1		X					X			7/14/03	0830
-02	LM24-2	1		X					X				0835
-03	KL24-1	1		X					X				0840
-04	KL24-2	1		X					X				0845
-05	JL24-1	1		X					X				0850
-06	JK24-2	1		X					X				0855
-07	JK46-1	1		X					X				0900
-08	JK46-2	1		X					X				0905
~~-01~~	~~JK46-2~~	~~3~~											
09-10	IJ46-1	1		X					X			7/14/03	0910
10-11	IJ46-1-E	1		X					X				0910

TAT REQUESTED
Priority (24 hr) ☐
Expedited (48 hr) ☐
10 Business Days ☐
Other ☐ 5+1

E-Mail Address:
Quote #:

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS
☒ FAX ☒ EDD ☒ OTHER (specify) Hard copy / SAC

RECEIVED ON ICE ☒ YES ☐ NO
TEMPERATURE 12 °C

Lab Use Only

CUSTODY RECORD

	Date	Time		Date	Time
Relinquished by Sampler: [signature]	7/15/03	3:50	Received by: [signature]	7/15/03	3:50
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by Laboratory: Way Bill#:	Date	Time

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-2001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Weston Solutions
Phone #: (603) 656-5400
FAX #: (603) 656-5401
Company Address: 1 Wall St. Manchester NH
Site Location (City, State): Lawrence, MA
Project Manager: Jim Ricker
Project ID / Name: Former Tombarello and Sons Site
PO#:
Invoice To: Jim Ricker
Protocol: RCRA SDWA NPDES MCP NHDES OTHER

ANALYSIS REQUEST: ☐ 8260 ☐ 624 ☐ 524.2 ☐ Oxygenates ☐ TICS | ☐ 8021BTEX/MIBE ☐ 8015GRO ☐ 8021Halo ☐ VPH ☐ No Targets | ☐ TPH 8100 ☐ DRO8015 ☐ EPH ☐ No Targets | ☐ 608 ☐ 8081Pesticides ☒ 8082PCB ☐ PCB Congeners | ☐ 625 ☐ 8270 ☐ ABN ☐ PAH only ☐ BN Only | ☐ RCRA Metals ☐ PP Metals ☐ TAL Metals | ☐ Metals-list | ☐ O&G 1664 ☐ O&G SM5520F | ☐ pH ☐ Conductivity ☐ BOD | ☐ TSS ☐ TDS ☐ TS | ☐ Nitrate ☐ Sulfate ☐ Chloride ☐ Nitrite | ☐ Bromide ☐ Ortho-P | ☐ Ammonia ☐ T. Phosphate | ☐ Phenol ☐ COD | ☐ Cyanide | ☐ Sulfide | ☐ Grab ☐ Composite

Lab Sample ID (Lab Use Only)	Field ID	# Containers	Matrix: Water	Matrix: Solid	Matrix: Other	HCl	HNO₃	H_2SO_4	Ice	MeOH	Other (Specify)	Date	Time	8082PCB
5065-12 11	IJ46-3	1		X					X			7/4/03	0915	X
12	IJ24-1	1		X					X				0920	X
13	IJ24-2	1		X					X				0925	X
14	HI24-1	1		X					X				0930	X
15	HI21-2	1		X					X				0935	X
16	HI46-1	1		X					X				0940	X
17	HI46-2	1		X					X				0945	X
18	GH46-1	1		X					X				0950	X
19	GH46-2	1		X					X				0955	X
-20	GH24-1	1		X					X				1000	X
-21	GH24-2	1		X					X				1005	X

TAT REQUESTED
Priority (24 hr)
Expedited (48 hr)
10 Business Days
Other: Std

E-Mail Address
Quote #

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS
☒ FAX ☒ EDD ☒ OTHER (specify) Hard copy (SAC)

RECEIVED ON ICE ☒ YES NO
TEMPERATURE 12 °C

Lab Use Only

CUSTODY RECORD

Relinquished by	Date	Time	Received by	Date	Time
Relinquished by Sampler: [signature]	7/15/03	3:50	Received by: Megan Taylor	7/15/03	3:50
Relinquished by:			Received by:		
Relinquished by:			Received by Laboratory: Way Bill#:		

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-2001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Weston Solutions
Phone #: (603) 656-5400
FAX #: (603) 656-5401
Company Address: 1 Wall St. Manchester, NH
Site Location (City, State): Lawrence, MA
Project Manager: Jim Rider
Project ID / Name: Former Tombarello & Sons Site
PO#:
Invoice To: Jim Rider
Protocol: RCRA SDWA NPDES MCP NHDES OTHER

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	ICE	MeOH	OTHER (Specify)	Sampling: DATE	TIME
5465-22	CH24-2-E	1		X					X			7/14/03	1005
-23	FE13-1	1		X					X				1020
-24	FE13-2	1		X					X				1025
-25	FE35-1	1		X					X				1040
-26	FE35-2	1		X					X				1045
-27	EF13-1	1		X					X				1100
-28	EF13-2	1		X					X				1105
-29	DE13-1	1		X					X				1125
-30	DE13-2	1		X					X				1130
-31	DE13-2-E	1		X					X				1130
-32	CD13-1	1		X					X				1145

ANALYSIS REQUEST

8260	624	524.2	Oxygenates	TICS
8021BTEX/MtBE	8015GRO	8021Halo	VPH	No Targets
TPH 8100	DRO8015	EPH	No Targets	
608	8081Pesticides	8082PCB	PCB Congeners	
625	8270	ABN	PAH only	BN Only
RCRA Metals	PP Metals	TAL Metals		
Metals-list				
O&G 1664	O&G SM5520F			
pH	Conductivity	BOD		
TSS	TDS	TS		
Nitrate	Sulfate	Chloride	Nitrite	
Bromide	Ortho-P			
Ammonia	T-Phosphate			
Phenol	COD			
Cyanide				
Sulfide				
Grab	Composite			

TAT REQUESTED
Priority (24 hr)
Expedited (48 hr)
10 Business Days
Other 5 Days

E-Mail Address
Quote #

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS
X FAX X EDD X OTHER (specify) Hardcopy / EDF

RECEIVED ON ICE X YES NO
TEMPERATURE 12 °C

Lab Use Only

CUSTODY RECORD

Relinquished by Sampler:	Date	Time	Received by:	Date	Time
	7/15/03	3:50		7/15/03	3:50
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by Laboratory: Way Bill#:	Date	Time

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-8001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: [illegible] Phone #: (603) 656-5400
FAX #: (603) 656-5401
Company Address: [illegible] Site Location (City, State): Lawrence, MA
Project Manager: [illegible] Project ID / Name: Former Tom Lueller Gas Site
PO#:
Invoice To: [illegible] Protocol: RCRA SDWA NPDES MCP NHDES OTHER

ANALYSIS REQUEST

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO3	H2SO4	ICE	MeOH	OTHER (Specify)	Sampling: DATE	TIME	8260	624	524.2	Oxygenates	TICS	8021BTEX/MBE	8015GRO	8021Halo	VPH	No Targets	TPH 8100	DRO8015	EPH	Ne Targets	608	8081 Pesticides	8082PCB	PCB Congeners	625	8270	ABN	PAH only	RCRA Metals	PP Metals	TAL Metals	Metals list	0345 1664	0345 SM5520F	Cyanide	Sulfide	Chloride	Nitrate	Fluoride	Bromide	Phosphate	Arsenic	Lead	Perchlorate
[illegible] 33	CB13-S	1		X					X			7/14/03	1150															X																					
34	BC13-1	1		X					X				1200																X																					
35	BC13-2	1		X					X				1205																X																					
36	AC13-1	1		X					X				1220																X																					
37	AC13-2	1		X					X				1225																X																					
38	(illegible)	1		X					X				1315																X																					
39	(illegible)	1		X					X				1320																X																					
40	[illegible]	1		X					X				1325																X																					
41	[illegible]	1		X					X				1330																X																					
42	[illegible]	1		X					X				1330																X																					
43	[illegible]	1		X					X				1335																X																					

TAT REQUESTED
Priority (24 hr)
Expedited (48 hr)
10 Business Days
Other: 5 day

E Mail Address

Quote #

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS
X FAX X EDD _ OTHER (specify)

RECEIVED ON ICE X YES NO
TEMPERATURE 12 °C

Lab Use Only

CUSTODY RECORD

	Relinquished by Supplier	Date	Time	Received by:	Date	Time
	[signature]	7/15/03	3:50	[signature]	7/15/03	3:50
	Relinquished by:	Date	Time	Received by:	Date	Time
	Relinquished by	Date	Time	Received by Laboratory: Way Bill#:	Date	Time

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-2001 • Fax: 603-430-2109

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Weston Solutions
Phone #: (603) 656-5400
FAX #: (603) 656-5401
Company Address: 117 Flanders Rd Westborough
Site Location (City, State): Lawrence MA
Project Manager: Tom Richter
Project ID / Name: Former Tombere Mow Scrap Site
PO#:
Invoice To: Tom Richter
Protocol: RCRA SDWA NPDES MCP NHDES OTHER

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	ICE	MeOH	OTHER (Specify)	Sampling: DATE	TIME	ANALYSIS REQUEST: 8260	624	524.2	Oxygenates	TICS	8021BTEX/MBE	8015GRO	8021Halo	VPH	No Targets	TPH 8100	DRO8015	EPH	No Targets	608	8081Pesticides	8082PCB	PCB Congeners	625	8270	ABN	PAH only	BN Only	RCRA Metals	PP Metals	TAL Metals	Metals-list	OSG 1664	OSG SIM5520	pH	Conductivity	BOD	TSS	TDS	TC	Nitrate	Solids	Odorous	Nitrite	Phosphate	Sulfide	Ammonia	Phenols	Sulfate	Cyanide	Chloride	Gas	Carbonate
SWS 44	WS B17-3	1		X					X			7/14/03	1340															X																																				
45	WS B18-1	1		X					X				1345															X																																				
46	WS B18-2	1		X					X				1350															X																																			
47	WS B18-3	1		X					X				1355															X																																			
48	WS B21-1	1		X					X				1430															X																																			
49	WS B21-2	1		X					X				1435															X																																			
50	WS B21-3	1		X					X				1440															X																																			
51	WS B22-1	1		X					X				1445															X																																			
52	WS B22-2	1		X					X				1450															X																																			
53	WS B22-3	1		X					X				1455															X																																			
54	WS B23-1	1		X					X				1530															X																																			

TAT REQUESTED
Priority (24 hr)
Expedited (48 hr)
10 Business Days
Other 5d

E-Mail Address
Quote #

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS
X FAX X EDD ☐ OTHER (specify)

RECEIVED ON ICE ☑ YES ☐ NO
TEMPERATURE 12 °C

Lab Use Only

CUSTODY RECORD

	Date	Time		Date	Time
Relinquished by Sampler:	7/15/03	350	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by Laboratory:		
			Way Bill#:		

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-2001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Weston Solutions
Phone #: (603) 656-3400
FAX #: (603) 656-7401
Company Address: 1 Wall St Manchester NH
Site Location (City, State): Lawrence, MA
Project Manager: Jim Reed
Project ID / Name: Former Tom Barth + Sons Site
PO#:
Invoice To: Jim Reed
Protocol: RCRA SDWA NPDES MCP NHDES OTHER

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	Matrix: SOLID	Matrix: OTHER	Preservation Method: HCl	HNO3	H2SO4	ICE	MeOH	OTHER (Specify)	Sampling: DATE	Sampling: TIME	8082PCB
59165-55	WSB25-2	1		X					X			7/14/03	1535	X
56	WSB25-3	1		X					X				1540	X
57	WSB26-1	1		X					X				1545	X
58	WSB26-1-E	1		X					X				1545	X
59	WSB26-2	1		X					X				1550	X
60	WSB26-3	1		X					X				1555	X
61	WSB27-1	1		X					X				1600	X
62	WSB27-2	1		X					X				1605	X
63	WSB27-3	1		X					X				1610	X
64	WSB30-1	1		X					X				1635	X
65	WSB30-2	1		X					X				1640	X

Analysis Request: ☐ Oxygenates ☐ TICS ☐ 524.2 ☐ 8260 ☐ 624 ☐ 8021BTEX/MBE ☐ 8015GRO ☐ 8021Halo ☐ VPH ☐ No Targets ☐ 1PH 8100 ☐ DRO8015 ☐ EPH ☐ No Targets ☐ 8081 Pesticides ☐ 8082PCB ☐ PCB Congeners ☐ 606 ☐ 8270 ☐ ABN ☐ PAH only ☐ BN Only ☐ 625 ☐ 8270 ☐ ABN ☐ PAH only ☐ BN Only ☐ RCRA Metals ☐ PP Metals ☐ TAL Metals ☐ Metals only

TAT REQUESTED
Priority (24 hr)
Expedited (48 hr)
10 Business Days
Other 5-21

E-Mail Address

Quote #

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS
X FAX ☐ EDD , OTHER (specify)

RECEIVED ON ICE X YES NO
TEMPERATURE 10 °C

Lab Use Only

CUSTODY RECORD

	Relinquished by Sampler:	Date	Time	Received by:	Date	Time
		7/15/03	3:50		7/15/03	3:50
	Relinquished by:	Date	Time	Received by:	Date	Time
	Relinquished by:	Date	Time	Received by Laboratory: Way Bill#:	Date	Time

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-2001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Weston Solutions
Phone #:
FAX #:
Company Address: 1 Wall St. Manchester, NH
Site Location (City, State): Lawrence, MA
Project Manager: Jim Rieder
Project ID / Name:
PO#:
Invoice To: Jim Rieder
Protocol: RCRA SDWA NPDES MCP NHDES OTHER

ANALYSIS REQUIRED

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	Matrix: SOLID	Matrix: OTHER	Preservation Method: HCl	Preservation Method: HNO_3	Preservation Method: H_2SO_4	Preservation Method: ICE	Preservation Method: MeOH	Preservation Method: OTHER (Specify)	Sampling: DATE	Sampling: TIME
5465 66	WSB30-3	1		X					X			7/4/03	1645
67	WSB31-1	1		X					X				1650
68	WSB31-2	1		X					X				1655
69	WSB31-3	1		X					X				1700
70	AB35-1	1		X					X			7/1/03	0945
71	AB35-2	1		X					X				0950
72	BC35-1	1		X					X				1000
73	BC35-1-E	1		X					X				1000
74	BC35-2	1		X					X				1005
75	CD35-1	1		X					X				1010
76	CD35-2	1		X					X				1015

TCLP: ☐ 8260 ☐ 624 ☐ 524.2 ☐ Oxygenates ☐ TICS
☐ 8021BTEX/MBE ☐ 8015GRO ☐ 8021Halo ☐ VPH ☐ No Targets
☐ TPH 8100 ☐ DRO8015 ☐ EPH ☐ No Targets
☐ 608 ☐ 608/PCB ☒ 8082PCB ☐ PCB Congeners
☐ 625 ☐ 8270 ☐ ABN ☐ PAH only ☐ BN Only
☐ RCRA Metals ☐ PP Metals ☐ TAL Metals
☐ Metals-list
☐ O&G 1664 ☐ O&G SM5520F
☐ BOD
☐ TSS ☐ TDS
☐ Nitrate ☐ Sulfate ☐ Chloride ☐ Alkalinity
☐ Bromide ☐ Fluoride ☐ Ortho P
☐ Aluminum ☐ Iron ☐ Manganese ☐ Sodium
☐ Phenols
☐ Sulfide
☐ Cyanide
☐ EDB
☐ Composite ☐ Grab

TAT REQUESTED
Priority (24 hr)
Expedited (48 hr)
10 Business Days
Other 5-1

E-Mail Address:
Quote #:

SPECIAL INSTRUCTIONS:

REPORTING INSTRUCTIONS
☒ FAX ☒ EDD ☐ OTHER (specify)

RECEIVED ON ICE ☒ YES NO
TEMPERATURE 12 °C

Lab Use Only

CUSTODY RECORD

	Relinquished by Sampler:	Date	Time	Received by:	Date	Time
		7/5/03	3:50		7/5/03	3:50
	Relinquished by:	Date	Time	Received by:	Date	Time
	Relinquished by:	Date	Time	Received by Laboratory:	Date	Time
				Way Bill#:		

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-430-2001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: Weston Solutions
Phone #: (603) 656-5400
Company Address: 1 Wall St Manchester
FAX #: (603) 656-5401
Site Location (City, State): Lawrence MA
Project Manager: Jim Rader
Project ID / Name: Former Tomasello Sons Site
PO#:
Invoice To: Jim Rader
Protocol: RCRA SDWA NPDES MCP NHDES OTHER

ANALYSIS REQUEST

☐ 624 ☐ 524.2 ☐ Oxygenates ☐ TICS
☐ 8260 ☐ 8021BTEX/MTBE ☐ 8015GRO ☐ 8021Halo ☐ VPH ☐ No Targets
☐ TPH 8100 ☐ CROGRO ☐ EPH ☐ No Targets
☐ 608 ☐ 8081Pesticides ☐ 8082PCB ☐ PCB Congeners
☐ 625 ☐ 8270 ☐ ABN ☐ PAH only ☐ BN Only
☐ 8270 SIM ☐ PP Metals ☐ TAL Metals
☐ Metals (list)
☐ 5665 1664 ☐ 5665 SGT-HEM
☐ 608 ☐ 600
☐ Grab ☐ Composite

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	ICE	MeOH	OTHER (Specify)	Sampling: DATE	TIME
5965-77	EF35-1	1		X					X			7/13/03	1020
-78	EF35-1-E	1		X					X				1020
-79	EF35-2	1		X					X				1025
-80	DE35-1	1		X					X				1030
-81	DE35-2	1		X					X				1035
-82	LM24-2-E	1		X					X			7/14/03	0835
-83	JK24-1-E	1		X					X				0850

TAT REQUESTED
Priority (24 hr)
Expedited (48 hr)
10 Business Days
Other Std

E-Mail Address:
Quote #:

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS
X FAX X EDD OTHER (specify)

RECEIVED ON ICE X YES NO
TEMPERATURE 12 °C

Lab Use Only

CUSTODY RECORD

Relinquished by Sampler:	Date	Time	Received by:	Date	Time
	7/15/03	3:50		7/15/03	3:50
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by Laboratory: Way Bill#:	Date	Time

WESTON ANALYTICAL DATA
SEPTEMBER 2003

RL Resource Laboratories

124 Heritage Avenue Unit 10
Portsmouth, NH 03801

Voice: 603-436-2001
FAX: 603-430-2100

Laboratory Report

Jim Ricker
Weston Solutions, Inc.
1 Wall Street
Manchester, NH 03102

PO Number: None
Lab Number: 6166
Date Received: 09/03/03

Project: Former Tombarello & Sons Site

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, all test methods met the requirements of Resource Laboratories, LLC (RL) Quality Assurance Plan, Standard Operating Procedures (SOP) and the National Environmental Laboratory Accreditation Conference (NELAC). Any footnotes included to describe the results provided are described in the attached report.

Resource Laboratories, LLC maintains certification with the agencies listed below.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Resource Laboratories, LLC

Susan Sylvester
Principal, General Manager

9/26/03
Date

Total number of pages 45

Resource Laboratories, LLC Certifications

State of New Hampshire	NH902	State of Connecticut	PH-0146
State of Maine	NH903	Commonwealth of Massachusetts	M-NH902

Lab Number:	6166-01
Sample Designation:	WSB35-1
Date Sampled:	9/2/03
Date Extracted:	9/4/03
Date Analyzed:	9/9/03
Matrix:	Solid
Dilution Factor:	2
Analyst:	WHW
Percent Solids:	87.1%

POLYCHLORINATED BIPHENYLS

SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	15	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	23	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	117	30-150
decachlorobiphenyl	129	30-150

U = Below quantitation limit

Lab Number:	6166-02
Sample Designation:	WSB35-2
Date Sampled:	9/2/03
Date Extracted:	9/4/03
Date Analyzed:	9/9/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	93.1%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	1.9	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	98	30-150
decachlorobiphenyl	112	30-150

U = Below quantitation limit

Lab Number:	6166-03
Sample Designation:	WSB35-3
Date Sampled:	9/2/03
Date Extracted:	9/4/03
Date Analyzed:	9/9/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	76.6%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	92	30-150
decachlorobiphenyl	120	30-150

U = Below quantitation limit

Lab Number:	6166-04
Sample Designation:	WS841-1
Date Sampled:	9/2/03
Date Extracted:	9/4/03
Date Analyzed:	9/9/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	75.7%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	6.3	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	10	0.5
PCB-1260	U	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	114	30-150
decachlorobiphenyl	133	30-150

U = Below quantitation limit

Lab Number:	6166-05
Sample Designation:	WSB41-2
Date Sampled:	9/2/03
Date Extracted:	9/4/03
Date Analyzed:	9/9/03
Matrix:	Solid
Dilution Factor:	2
Analyst:	WHW
Percent Solids:	89.5%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	1
PCB-1242	17	1
PCB-1221	U	1
PCB-1232	U	1
PCB-1248	U	1
PCB-1254	U	1
PCB-1260	24	1

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	66	30-150
decachlorobiphenyl	79	30-150

U = Below quantitation limit

Lab Number:	6166-06
Sample Designation:	WSB41-3
Date Sampled:	9/2/03
Date Extracted:	9/4/03
Date Analyzed:	9/9/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	80.2%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	U	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	111	30-150
decachlorobiphenyl	136	30-150

U = Below quantitation limit

Lab Number:	6166-07
Sample Designation:	WSB45-1
Date Sampled:	9/2/03
Date Extracted:	9/4/03
Date Analyzed:	9/9/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	90.1%

POLYCHLORINATED BIPHENYLS

SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	16	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	121	30-150
decachlorobiphenyl	130	30-150

U = Below quantitation limit

Lab Number:	6166-08
Sample Designation:	WSB45-2
Date Sampled:	9/2/03
Date Extracted:	9/4/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	81.3%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	101	30-150
decachlorobiphenyl	121	30-150

U = Below quantitation limit

Lab Number:	6166-09
Sample Designation:	WSB45-3
Date Sampled:	9/2/03
Date Extracted:	9/4/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	80.4%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	101	30-150
decachlorobiphenyl	104	30-150

U = Below quantitation limit

Lab Number:	6166-10
Sample Designation:	WSB50-1
Date Sampled:	9/2/03
Date Extracted:	9/5/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	5
Analyst:	WHW
Percent Solids:	83.9%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	3
PCB-1242	U	3
PCB-1221	U	3
PCB-1232	U	3
PCB-1248	U	3
PCB-1254	U	3
PCB-1260	71	3

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	145	30-150
decachlorobiphenyl	172 #	30-150

# = Surrogate above acceptance limit. Co-eluting compounds are suspected as being contributors to the elevated recovery result.
U = Below quantitation limit

Lab Number:	6166-11
Sample Designation:	WSB50-2
Date Sampled:	9/2/03
Date Extracted:	9/5/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	58.3%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.8
PCB-1242	U	0.8
PCB-1221	U	0.8
PCB-1232	U	0.8
PCB-1248	U	0.8
PCB-1254	U	0.8
PCB-1260	U	0.8

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	93	30-150
decachlorobiphenyl	110	30-150

U = Below quantitation limit

Lab Number:	6166-12
Sample Designation:	WSB50-3
Date Sampled:	9/2/03
Date Extracted:	9/5/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	2
Analyst:	WHW
Percent Solids:	70.9%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	1
PCB-1242	U	1
PCB-1221	U	1
PCB-1232	U	1
PCB-1248	U	1
PCB-1254	U	1
PCB-1260	39	1

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	120	30-150
decachlorobiphenyl	132	30-150

U = Below quantitation limit

Lab Number:	6166-13
Sample Designation:	WSB56-1
Date Sampled:	9/2/03
Date Extracted:	9/5/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	88.0%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	U	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	107	30-150
decachlorobiphenyl	116	30-150

U = Below quantitation limit

Lab Number:	6166-14
Sample Designation:	WSB56-2
Date Sampled:	9/2/03
Date Extracted:	9/5/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	83.1%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	3.5	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	118	30-150
decachlorobiphenyl	125	30-150

U = Below quantitation limit

Lab Number:	6166-15
Sample Designation:	WSB56-3
Date Sampled:	9/2/03
Date Extracted:	9/5/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	76.2%

POLYCHLORINATED BIPHENYLS

SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	7.9	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	103	30-150
decachlorobiphenyl	114	30-150

U = Below quantitation limit

Lab Number:	6166-16
Sample Designation:	WSB61-1
Date Sampled:	9/2/03
Date Extracted:	9/5/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	2
Analyst:	WHW
Percent Solids:	76.2%

POLYCHLORINATED BIPHENYLS

SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	1
PCB-1242	U	1
PCB-1221	U	1
PCB-1232	U	1
PCB-1248	U	1
PCB-1254	U	1
PCB-1260	31	1

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	62	30-150
decachlorobiphenyl	71	30-150

U = Below quantitation limit

Lab Number:	6166-17
Sample Designation:	WSB61-2
Date Sampled:	9/2/03
Date Extracted:	9/8/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	77.7%

POLYCHLORINATED BIPHENYLS

SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	105	30-150
decachlorobiphenyl	107	30-150

U = Below quantitation limit

Lab Number:	6166-18
Sample Designation:	WSB61-3
Date Sampled:	9/2/03
Date Extracted:	9/8/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	75.6%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	91	30-150
decachlorobiphenyl	93	30-150

U = Below quantitation limit

Lab Number:	6166-19
Sample Designation:	WSB65-1
Date Sampled:	9/2/03
Date Extracted:	9/8/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	2
Analyst:	WHW
Percent Solids:	84.6%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	1
PCB-1242	2	1
PCB-1221	U	1
PCB-1232	U	1
PCB-1248	U	1
PCB-1254	U	1
PCB-1260	23	1

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	110	30-150
decachlorobiphenyl	112	30-150

U = Below quantitation limit

Lab Number:	6166-20
Sample Designation:	WSB65-2
Date Sampled:	9/2/03
Date Extracted:	9/8/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	84.8%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	98	30-150
decachlorobiphenyl	102	30-150

U = Below quantitation limit

Lab Number:	6166-21
Sample Designation:	WSB65-3
Date Sampled:	9/2/03
Date Extracted:	9/8/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	74.0%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.6
PCB-1242	U	0.6
PCB-1221	U	0.6
PCB-1232	U	0.6
PCB-1248	U	0.6
PCB-1254	U	0.6
PCB-1260	U	0.6

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	88	30-150
decachlorobiphenyl	93	30-150

U = Below quantitation limit

Lab Number:	6166-22
Sample Designation:	WSB70-1
Date Sampled:	9/2/03
Date Extracted:	9/8/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	85.1%

POLYCHLORINATED BIPHENYLS

SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	U	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	96	30-150
decachlorobiphenyl	102	30-150

U = Below quantitation limit

Lab Number:	6166-23
Sample Designation:	WSB70-2
Date Sampled:	9/2/03
Date Extracted:	9/8/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	85.1%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	U	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	84	30-150
decachlorobiphenyl	77	30-150

Note: Non-target compounds were observed in this sample
U = Below quantitation limit

Lab Number:	6166-24
Sample Designation:	WSB70-3
Date Sampled:	9/2/03
Date Extracted:	9/8/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	69.7%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.7
PCB-1242	U	0.7
PCB-1221	U	0.7
PCB-1232	U	0.7
PCB-1248	U	0.7
PCB-1254	U	0.7
PCB-1260	U	0.7

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	99	30-150
decachlorobiphenyl	108	30-150

U = Below quantitation limit

Lab Number:	6166-25
Sample Designation:	WSB73-1
Date Sampled:	9/2/03
Date Extracted:	9/7/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	92.1%

POLYCHLORINATED BIPHENYLS

SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	3.5	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	102	30-150
decachlorobiphenyl	109	30-150

U = Below quantitation limit

Lab Number:	6166-26
Sample Designation:	WSB73-1-E
Date Sampled:	9/2/03
Date Extracted:	9/7/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	96.8%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	6.3	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	114	30-150
decachlorobiphenyl	121	30-150

U = Below quantitation limit

Lab Number:	6166-27
Sample Designation:	WSB73-2
Date Sampled:	9/2/03
Date Extracted:	9/7/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	2
Analyst:	WHW
Percent Solids:	96.0%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	1
PCB-1242	U	1
PCB-1221	U	1
PCB-1232	U	1
PCB-1248	U	1
PCB-1254	U	1
PCB-1260	22	1

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	102	30-150
decachlorobiphenyl	107	30-150

U = Below quantitation limit

Lab Number:	6166-28
Sample Designation:	WSB73-3
Date Sampled:	9/2/03
Date Extracted:	9/7/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	92.4%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	U	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	102	30-150
decachlorobiphenyl	108	30-150

U = Below quantitation limit

Lab Number:	6166-29
Sample Designation:	WSB73-4
Date Sampled:	9/2/03
Date Extracted:	9/7/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	96.7%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	U	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	102	30-150
decachlorobiphenyl	108	30-150

U = Below quantitation limit

Lab Number:	6166-30
Sample Designation:	WSB77-1
Date Sampled:	9/2/03
Date Extracted:	9/7/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	97.3%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.5
PCB-1242	U	0.5
PCB-1221	U	0.5
PCB-1232	U	0.5
PCB-1248	U	0.5
PCB-1254	U	0.5
PCB-1260	2.2	0.5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	112	30-150
decachlorobiphenyl	111	30-150

U = Below quantitation limit

Lab Number:	6166-31
Sample Designation:	WSB77-2
Date Sampled:	9/2/03
Date Extracted:	9/7/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	4
Analyst:	WHW
Percent Solids:	95.4%

POLYCHLORINATED BIPHENYLS

SW 846 Method 3540C/8082A

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	2
PCB-1242	U	2
PCB-1221	U	2
PCB-1232	U	2
PCB-1248	U	2
PCB-1254	U	2
PCB-1260	37	2

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	106	30-150
decachlorobiphenyl	143	30-150

U = Below quantitation limit

Lab Number:	6166-32
Sample Designation:	WSB77-3
Date Sampled:	9/2/03
Date Extracted:	9/7/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	10
Analyst:	WHW
Percent Solids:	86.0%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	5
PCB-1242	90	5
PCB-1221	U	5
PCB-1232	U	5
PCB-1248	U	5
PCB-1254	130	5
PCB-1260	U	5

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	118	30-150
decachlorobiphenyl	174 #	30-150

# = Surrogate above acceptance limit. Co-eluting compounds are suspected as being contributors to the elevated recovery result.
U = Below quantitation limit

Lab Number:	6166-33
Sample Designation:	WSB77-4
Date Sampled:	9/2/03
Date Extracted:	9/9/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	63.7%

POLYCHLORINATED BIPHENYLS
SW 846 Method 3540C/8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.8
PCB-1242	6.9	0.8
PCB-1221	U	0.8
PCB-1232	U	0.8
PCB-1248	U	0.8
PCB-1254	1.5	0.8
PCB-1260	U	0.8

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	81	30-150
decachlorobiphenyl	95	30-150

U = Below quantitation limit

Quality Control Report

RESOURCE LABORATORIES, LLC.

Case Narrative
Lab # 6166

Sample Receiving and Chain of Custody Discrepancies
Samples were received in acceptable condition, at 3 degrees C, in accordance with sample handling, preservation and integrity guidelines.

Method Blank
No exceptions noted.

Surrogate Recoveries
The surrogate recovery for decachlorobiphenyl in sample 6166-10 was 172%. Co-eluting compounds are suspected as being contributors to the elevated recovery limit. The surrogate recovery for decachlorobiphenyl in sample 6166-32 was 174%. Co-eluting compounds are suspected as being contributors to the elevated recovery limit. No other exceptions noted.

Laboratory Control Sample Results
No exceptions noted.

Matrix Spike/Matrix Spike Duplicate/Duplicate Results
Sample 6166-09 was analyzed as a matrix spike/matrix spike duplicate. The surrogate recoveries and the RPD results did not meet acceptance criteria due to a problem with extraction, the solvent volume was not maintained. No other samples were impacted by this problem.

Sample 6166-27 was analyzed as a matrix spike/matrix spike duplicate. The percent recoveries were 413% and 440%. The elevated percent recoveries are due to the presence of aroclor 1260 in the sample, which shares peaks with the spike standard of aroclor 1254.

No other exceptions were noted.

Other
Non target compounds were noted in sample 6166-23. No other exceptions noted.

[illegible] · PORTSMOUTH, NEW HAMPSHIRE · 03801
PHONE 603-436-2001 · FAX 603 430-2100

Lab Number:	6166
Sample Designation:	Blank # PB pb 090403
Date Sampled:	NA
Date Extracted:	9/4/03
Date Analyzed:	9/16/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	100.0%

POLYCHLORINATED BIPHENYLS
SW 846 Method 8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.3
PCB-1242	U	0.3
PCB-1221	U	0.3
PCB-1232	U	0.3
PCB-1248	U	0.3
PCB-1254	U	0.3
PCB-1260	U	0.3

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	82	30-150
decachlorobiphenyl	90	30-150

U = Below quantitation limit

Lab Number:	6166	LCS
Sample Designation:	LCS #	pb 090403
Date Sampled:	NA	
Date Extracted:	9/4/03	
Date Analyzed:	9/16/03	
Matrix:	Solid	
Dilution Factor:	1	
Analyst:	WHW	
Percent Solids:	100.0%	

POLYCHLORINATED BIPHENYLS
SW 846 Method 8082A.

Compound.	Spike Added (ug/g)	Sample Concentration (ug/g)	MS/LCS Concentration (ug/g)	% Recovery	QC Lower Limit	QC Upper Limit
PCB-1016					30%	150%
PCB-1242					30%	150%
PCB-1221					30%	150%
PCB-1232					30%	150%
PCB-1248					30%	150%
PCB-1254	2.5		1.8	72%	30%	150%
PCB-1260					30%	150%

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	76	30-150
decachlorobiphenyl	81	30-150

Lab Number:	6166
Sample Designation:	Blank # PB pb 090803
Date Sampled:	NA
Date Extracted:	9/8/03
Date Analyzed:	9/10/03
Matrix:	Solid
Dilution Factor:	1
Analyst:	WHW
Percent Solids:	100.0%

POLYCHLORINATED BIPHENYLS
SW 846 Method 8082A.

	Concentration ug/g dry wt	Quantitation Limit ug/g dry wt
PCB-1016	U	0.3
PCB-1242	U	0.3
PCB-1221	U	0.3
PCB-1232	U	0.3
PCB-1248	U	0.3
PCB-1254	U	0.3
PCB-1260	U	0.3

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	81	30-150
decachlorobiphenyl	106	30-150

U = Below quantitation limit

Lab Number:	6166	LCS
Sample Designation:	LCS #	90803
Date Sampled:	NA	
Date Extracted:	9/8/03	
Date Analyzed:	9/10/03	
Matrix:	Solid	
Dilution Factor:	1	
Analyst:	WHW	
Percent Solids:	100.0%	

POLYCHLORINATED BIPHENYLS
SW 846 Method 8082A.

Compound	Spike Added (ug/g)	Sample Concentration (ug/g)	MS/LCS Concentration (ug/g)	% Recovery	QC Lower Limit	QC Upper Limit
PCB-1016					30%	150%
PCB-1242					30%	150%
PCB-1221					30%	150%
PCB-1232					30%	150%
PCB-1248					30%	150%
PCB-1254	2.5		2.7	108%	30%	150%
PCB-1260					30%	150%

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	87	30-150
decachlorobiphenyl	108	30-150

Lab Number:	6166-09	MS/MSD
Sample Designation:	WSB45-3	MS/MSD
Date Sampled:	9/2/03	
Date Extracted:	9/5/03	
Date Analyzed:	9/11/03	
Matrix:	Solid	
Dilution Factor:	1	
Analyst:	WHW	
Percent Solids:	80.4%	

POLYCHLORINATED BIPHENYLS
SW 846 Method 8082A.

Compound	Spike Added (ug/g)	Sample Concentration (ug/g)	MS/LCS Concentration (ug/g)	% Recovery	QC Lower Limit	QC Upper Limit
PCB-1016						
PCB-1242						
PCB-1221						
PCB-1232						
PCB-1248						
PCB-1254	3.0	U	1.8	60%	30%	150%
PCB-1260						

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	13 #	30-150
decachlorobiphenyl	85	30-150

Compound	Spike Added (ug/g)	Sample Concentration (ug/g)	MSD/LCSD Concentration (ug/g)	% Recovery	QC Lower Limit	QC Upper Limit	RPD	RPD Limit
PCB-1016								
PCB-1242								
PCB-1221								
PCB-1232								
PCB-1248								
PCB-1254	3.0	U	2.7	90%	30%	150%	40%	30
PCB-1260								

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	18 #	30-150
decachlorobiphenyl	95	30-150

= Surrogate recoveries and RPD were not met because the solvent volume was not maintained during the soxhlet extraction process

Lab Number:	6166-27	MS/MSD
Sample Designation:	WSB73-2	MS/MSD
Date Sampled:	9/2/03	
Date Extracted:	9/7/03	
Date Analyzed:	9/10/03	
Matrix:	Solid	
Dilution Factor:	2	
Analyst:	WHW	
Percent Solids	95.9%	

POLYCHLORINATED BIPHENYLS
SW 846 Method 8082A

Compound	Spike Added (ug/g)	Sample Concentration (ug/g)	MS/LCS Concentration (ug/g)	% Recovery	QC Lower Limit	QC Upper Limit
PCB-1016						
PCB-1242						
PCB-1221						
PCB-1232						
PCB-1248						
PCB-1254	4.6	U	19	413% #	30%	150%
PCB-1260						

Should be 40-140

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	102	30-150
decachlorobiphenyl	107	30-150

Compound	Spike Added (ug/g)	Sample Concentration (ug/g)	MSD/LCSD Concentration (ug/g)	% Recovery	QC Lower Limit	QC Upper Limit	RPD	RPD Limit
PCB-1016								
PCB-1242								
PCB-1221								
PCB-1232								
PCB-1248								
PCB-1254	5.0	U	22	440% #	30%	150%	15%	30
PCB-1260								

SURROGATE STANDARDS	Recovery (%)	Acceptance Limits (%)
tetrachloro-m-xylene	108	30-150
decachlorobiphenyl	115	30-150

= The elevated percent recovery is due to the presence of aroclor 1260 in the sample, which shares peaks with the spiked aroclor 1254.

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-2001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

5166 4

Company Name: Weston Solutions
Phone #: (603) 656-5400
FAX #: (603) 656-5401
Company Address: 1 Hall Street, Manchester, NH
Site Location (City, State): Lawrence, MA
Project Manager: Jim Ricker
Project ID / Name: Former Tombarello & Sons Site
Invoice To: Jim Ricker
Protocol: RCRA SDWA NPDES MCP NHDES OTHER

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	ICE	MeOH	OTHER (Specify)	Sampling: DATE	TIME	SAMPLER
6146-01	WSB35-1	1		X					X			9/2/03	0825	SRC
02	WSB35-2	1		X					X				0830	
03	WSB35-3	1		X					X				0835	
04	WSB41-1	1		X					X				0855	
05	WSB41-2	1		X					X				1000	
06	WSB41-3	1		X					X				1005	
07	WSB45-1	1		X					X				1055	
08	WSB45-2	1		X					X				1100	
09	WSB45-3	1		X					X				1105	
10	WSB50-1	1		X					X				0905	
11	WSB50-2	1		X					X				1310	

ANALYSIS REQUEST

VOC-NH Petroleum Remediation Short List	VOC-NH Hazardous Waste Remediation Short List	VOC-NH Petroleum & Haz Waste Full List ☐ MADEP VPH ☐ MEGRO	VOC 8260 ☐ VOC8015GRO ☐ VOC 624	VOC 8260 BTEX, MBE, Naphthalene only ☐ VOC 8260 + Oxygenates	VOC 524.2 ☐ VOC 524.2 NH Petroleum & Haz. Waste Full List	TPH 8100 ☐ MEDRO ☐ DRO 8015 ☐ EPH	8270PAH ☐ 8270ABN ☐ 625	8082 PCB ☐ 8081 Pesticides ☐ 608	O&G 1664 ☐ O&G SM5520F	pH ☐ BOD ☐ Conductivity	TSS ☐ TDS ☐ TS	RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals	Total Metals-list ☐ Dissolved Metals-list	Ammonia ☐ COD	T-Phosphate ☐ Phenol (subcontract)	Cyanide ☐ Sulfide	Nitrate ☐ Nitrite ☐ Ortho-P ☐ Sulfate ☐ Fluoride ☐ Chloride	Corrosivity ☐ Reactive CN ☐ Reactive S ☐ Ignitability/FP	TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC	TCLP Pesticides ☐ TCLP Herbicides (subcontract)				Grab (G) or Composite (C)
								X																G
								X																G
								X																G
								X																G
								X																G
								X																G
								X																G
								X																G
								X																G
								X																G
								X																G

TAT REQUESTED
Priority (24 hr) ☐
Expedited (48 hr) ☐
10 Business Days ☒
Other ☐

E-Mail Address
Quote #
PO #

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS
☒ FAX ☐ EDD ☐ OTHER (specify)

RECEIVED ON ICE ☒ YES ☐ NO
TEMPERATURE 3 °C

Lab Use Only

CUSTODY RECORD

	Date	Time		Date	Time
Relinquished by Sampler:	9/3/03	1300	Received by:		
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by Laboratory: Way Bill#:	Date	Time

RL Resource Laboratories, LLC

124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-2001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

6166

Company Name: Weston Solutions	Phone #: (603) 656-5400
Company Address: 1 Wall Street, Manchester, NH	FAX #: (603) 656-5401
Project Manager: Jim Richter	Site Location (City, State): Lawrence, MA
Invoice To: Jim Richter	Project ID / Name: Former Tombarello + Sons Site
	Protocol: RCRA SDWA NPDES MCP NHDES OTHER

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	Matrix: SOLID	Matrix: OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	ICE	MeOH	OTHER (Specify)	Sampling: DATE	TIME	SAMPLER
6166 12	WSB50-3	1		X					X			9/6/03	1205	SPC
13	WSB56-1	1		X					X				1335	
14	WSB56-2	1		X					X				1340	
15	WSB56-3	1		X					X				1345	
16	WSB61-1	1		X					X				1450	
17	WSB61-2	1		X					X				1455	
18	WSB61-3	1		X					X				1500	
19	WSB65-1	1		X					X				1550	
20	WSB65-2	1		X					X				1555	
21	WSB65-3	1		X					X				1600	
22	WSB70-1	1		X					X				1205	

Analysis requested (X):

☐ VOC-NH Petroleum Remediation Short List	X
☐ VOC-NH Hazardous Waste Remediation Short List	
☐ VOC-NH Petroleum & Haz Waste Full List ☐ MADEP VPH ☐ MEGRO	
☐ VOC 8260 ☐ VOC8015GRO ☐ VOC 624	
☐ VOC 8260 BTEX, MtBE, Naphthalene only ☐ VOC 8260 + Oxygenates	
☐ VOC 524.2 ☐ VOC 524.2 NH Petroleum & Haz Waste Full List	
☐ TPH 8100 ☐ MEDRO ☐ DRO 8015 ☐ EPH	
☐ 8270PAH ☐ 8270ABN ☐ 625	
☐ 8082 PCB ☐ 8081 Pesticides ☐ 608	X
☐ 8260 1664 ☐ 8260 SM5520F	
☐ pH ☐ 9050 ☐ Cyanide/Reactivity	
☐ TSS ☐ TDS ☐ TS	
RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals	
Total Metals (list) ☐ Dissolved Metals (list)	
Ammonia ☐ TKN	
☐ Phosphorus (All) ☐ Other	
Chloride ☐ Sulfate	
Fecal ☐ Total Coliform ☐ E. coli ☐ Enterococci	
Corrosivity ☐ Reactive CN ☐ Reactive S ☐ Ignitability/FP	
TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC	
1671 ☐ Reactivity ☐ TC Pesticides/Herbicides	
Grab (G) or Composite (C)	

TAT REQUESTED

- Priority (24 hr)
- Expedited (48 hr)
- 10 Business Days X
- Other

E-Mail Address

Quote #

PO #

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS

X FAX EDD OTHER (specify)

RECEIVED ON ICE X YES NO

TEMPERATURE 3 C

Lab Use Only

CUSTODY RECORD

	Date	Time		Date	Time
Relinquished by Sampler:	9/6/03	1300	Received by:	9-3-03	1300
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by Laboratory: Way Bill#:	Date	Time

RL Resource Laboratories, LLC
124 Heritage Avenue • Portsmouth, NH 03801
Phone: 603-436-2001 • Fax: 603-430-2100

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

6166

45

Company Name: Weston Solutions
Phone #: (603) 656-5400
FAX #: (603) 656-5401
Company Address: 1 Wall St. Manchester, NH
Site Location (City, State): Lawrence MA
Project Manager: Jim Ricker
Project ID / Name: Former Tombarello & Sons Site
Invoice To: Jim Ricker
Protocol: RCRA SDWA NPDES MCP NHDES OTHER

ANALYSIS REQUEST

- ☐ VOC-NH Petroleum Remediation Short List
- ☐ VOC-NH Hazardous Waste Remediation Short List
- ☐ VOC-NH Petroleum & Haz Waste Full List ☐ MADEP VPH ☐ MEGRO
- ☐ VOC 8260 ☐ VOC8015GRO ☐ VOC 624
- ☐ VOC 8260 BTEX, MtBE, Naphthalene only ☐ VOC 8260 + Oxygenates
- ☐ VOC 524.2 ☐ VOC 524.2 NH Petroleum & Haz. Waste Full List
- ☐ TPH 8100 ☐ MEDRO ☐ DRO 8015 ☐ EPH
- ☐ 8270PAH ☐ 8270ABN ☐ 525
- ☒ 8082 PCB ☐ 8081 Pesticides ☐ 608
- ☐ O&G 1664 ☐ O&G SM5520F
- ☐ pH ☐ BOD ☐ Conductivity
- ☐ TSS ☐ TDS ☐ TS
- ☐ RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals
- ☐ Total Metals-list ☐ Dissolved Metals-list
- ☐ Ammonia ☐ COD
- ☐ T-Phosphate ☐ Phenol (subcontract)
- ☐ Cyanide ☐ Sulfide
- ☐ Nitrate ☐ Nitrite ☐ Ortho-P ☐ Sulfate ☐ Bromide ☐ Chloride
- ☐ Corrosivity ☐ Reactive CN ☐ Reactive S ☐ Ignitability/FP
- ☐ TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC
- ☐ TCLP Pesticide ☐ TCLP Herbicides (subcontract)
- Grab (G) or Composite (C)

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	Matrix: SOLID	Matrix: OTHER	Preservation Method: HCl	HNO3	H2SO4	ICE	MeOH	OTHER (Specify)	Sampling: DATE	TIME	SAMPLER	8082 PCB
6166-23	WSB70-2	1		X					X			9/2/03	1710	SPC	X
24	WSB70-3	1		X					X				1715		X
25	WSB73-1	1		X					X				1750		X
26	WSB73-1-E	1		X					X				1750		X
27	WSB73-2	1		X					X				1755		X
28	WSB73-3	1		X					X				1800		X
29	WSB73-4	1		X					X				1805		X
30	WSB77-1	1		X					X				1905		X
31	WSB77-2	1		X					X				1910		X
32	WSB77-3	1		X					X				1915		X
33	WSB77-4	1		X					X				1920		X

TAT REQUESTED
Priority (24 hr) ☐
Expedited (48 hr) ☐
10 Business Days ☒
Other ☐

E-Mail Address
Quote #
PO #

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS
☒ FAX ☐ EDD ☐ OTHER (specify)

RECEIVED ON ICE ☒ YES ☐ NO
TEMPERATURE 3 °C

Lab Use Only

CUSTODY RECORD

Relinquished by	Date	Time	Received by	Date	Time
Relinquished by Sampler:	9/3/03	1300	Received by:	9-3-03	1300
Relinquished by:			Received by:		
Relinquished by:			Received by Laboratory:		

Way Bill#:

APPENDIX E

TOMBARELLO DATA EVALUATION SUMMARY

From: Quigley, Diane
Sent: Monday, April 12, 2004
To: Pam Hoskins
Cc: Jim Ricker
Subject: Tombarello Data Evaluation Summary

PCB data (analyzed by SW-846 Methods 8082) from soil samples collected on September 2, 2003 were reviewed (Lab number 6172 and 6166). The samples were analyzed by Resource Laboratories of Portsmouth, New Hampshire. The data was reviewed in accordance with the U.S. EPA New England Region I Data Validation Functional Guidelines for Evaluating Environmental Analyses (December 1996), the MADEP MCP Data Quality Enhancement Program criteria for presumptive certainty, and the quality control limits stated in the project specific QAPP. The following QC indicators were reviewed; holding time, method blanks, surrogate recoveries (TCMX and DCB), matrix spike recoveries and laboratory control spike recoveries.

Because the laboratory was not informed that this site needed to meet the MADEP MCP presumptive certainty QC criteria, the laboratory did not submit a MCP Response Action Analytical Report Certification Form nor did they comply with all of the laboratory's reporting requirements under the MCP Data Quality Enhancement Program. For example, the LCS and MS/MSD were not spiked with 1016 and 1260 as specified in the MADEP CAM. They were spike with Aroclor 1254 which was a contaminant of concern. Also, the QC recovery limits were 30 to 150 rather than 40 to 140. However, an LCS and MS/MSD (both spike with 1254) were analyzed with the samples and did meet the laboratory specified QC limits except for one of the MS/MSD samples in lab package 6166. The recovery was above the QC limits due to matrix interference resulting in a possible high bias in the unspiked sample (WSB73-2) for the positive Aroclor 1254 result only.

All data that was reviewed met the project specific QC guidelines for method blanks, surrogate recoveries (at least one surrogate in each sample recovered within the 30 to 150 QC range), and holding time. One of the surrogates recovered above the QC limits in two of the samples in each lab package. This again would result in a possible high bias in the detected sample results only.

The only significant deviation from the MCP requirements for presumptive certainty was the failure of the laboratory to confirm positive Aroclor results on a second column. Resource Laboratories was contacted and verified that no confirmation had been done on these two laboratory packages. However, it is Weston's opinion that since the majority of the QC did meet the EPA Validation Guidelines and the laboratory QC guidelines, and only a possible high bias is indicated by the few QC failures, the overall quality of the data results is good and results that were reported by the laboratory are acceptable.

APPENDIX F

HUMAN HEALTH RISK ASSESSMENT

HUMAN HEALTH RISK ASSESSMENT
FORMER TOMBARELLO & SONS SITE
207 MARSTON STREET
LAWRENCE, MASSACHUSETTS

Prepared for:

Weston Solutions, Inc.
One Wall Street
Manchester, New Hampshire 03101

Prepared by:

Susan A. Sundstrom, Ph.D., D.A.B.T.
47 Peabody Street
Groton, Massachusetts 01450

May 14, 2004

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY

A Human Health Risk Assessment was performed on behalf of Weston Solutions, Inc. (WESTON) to evaluate potential risks to human health under current and reasonably foreseeable future conditions at the former Tombarello & Sons property located in Lawrence, Massachusetts. The risk assessment was performed in accordance with the guidance published by the United States Environmental Protection Agency (USEPA) and the Massachusetts Department of Environmental Protection (MADEP).

The detailed evaluation of human health risks was divided into four major sections: hazard identification, dose-response assessment, exposure assessment, and risk characterization. Risks were evaluated with respect to exposure to chemicals detected in soil and ground water.

The hazard identification section describes the procedures used to identify chemicals of concern. The Site is impacted primarily with polychlorinated biphenyl compounds (PCBs), polycyclic aromatic hydrocarbons (PAHs) and metals in soil. Ground water is minimally impacted. Low concentrations of VOCs and some metals were detected. Exposure scenarios were described, exposure concentrations and doses were calculated, and risks were evaluated for the following:

- Trespassers, who could be exposed to chemicals detected in surface soil; and
- Construction workers and utility maintenance workers, who may be exposed to impacted soil at the property during excavation activities in the future.

It was assumed that under future conditions, the surface soil would be covered either by buildings or asphalt pavement. Therefore, employees or visitors to the property would not be exposed to surface soil. Because ground water is impacted only with very low concentrations of VOCs, it is unlikely that impacts to indoor air would be significant. Thus, this exposure pathway was not quantified. It was also assumed that ambient air would not be significantly impacted because VOC concentrations detected in ground water and soil were low. In addition, PCBs were not

detected in ground water. Thus, inhalation of chemicals in ambient air during excavation activities was also not considered significant. The results of this assessment indicate that chemicals detected in soil do not pose a significant risk to these receptors with the exception of several areas of discrete contamination. The concentrations of PCBs detected in surface soil in the vicinity of WSB-6 pose an unacceptable risk to trespassers, construction workers and utility maintenance workers. The concentrations of PCBs detected in samples collected between one and three feet below the surface in the area in the vicinity of CD-45 pose an unacceptable risk to construction workers and utility maintenance workers. The concentrations of PCBs detected in deeper soil in the vicinity of test pits BRM-TP-4, BRM-TP-5 and BRM-TP-9/9A where the soil is bermed pose an unacceptable risk to construction workers. In addition, the concentration of cadmium detected between one and two feet below the surface in the vicinity of WSB-2 poses an unacceptable risk to construction workers.

METHOD 3
RISK ASSESSMENT
FORMER TOMBARELLO & SONS SITE
207 MARSTON STREET
LAWRENCE, MASSACHUSETTS

1.0 INTRODUCTION

1.1 OBJECTIVE

On behalf of Weston Solutions, Inc. (Weston), a human health risk assessment was performed for the former Tombarello & Sons property located at 207 Marston Street in Lawrence, Massachusetts ("the Site"). The purpose of this study was to evaluate whether chemicals detected in soil and ground water pose a significant risk of harm to human health.

1.2 METHODS

This risk characterization was performed in general accordance with relevant guidance documents from the USEPA and the MADEP. This assessment of risk includes a description of the chemicals detected at the Site, their toxicological characteristics, and an evaluation of the potential human health risks associated with the presence of these chemicals at the Site. In accordance with relevant Brownfields legislation, exempting new buyers from responsibility for historic releases to environmental media, this assessment considers only those risks posed to on-site receptors and/or potential continuing releases to the environment. All future releases to both groundwater and surface water in the vicinity of the Site will be eliminated by either source removal or removal of transport pathways, such as storm drains, etc. Therefore, the river is not considered part of this Site in this assessment. In addition, because the site is a commercial/industrial property that will either be covered by buildings or asphalt pavement in

the future, exposure to ecological receptors will be negligible. Thus, an environmental assessment was not performed.

The report is organized as follows:

- Hazard identification;
- Dose-response information;
- Exposure assessment;
- Risk characterization; and
- Uncertainties.

All tables appear at the end of the text. Concentrations in ground water are reported in units of micrograms per liter (µg/l), which is equivalent to parts per billion (ppb), or in units of milligrams per liter, which is equivalent to parts per million (ppm). Concentrations in soil are reported in units of milligrams per kilogram (mg/kg), which is equivalent to ppm.

2.0 HAZARD IDENTIFICATION

The hazard identification process includes a review of the existing analytical database for each medium, tabulation of data with regard to detected chemicals, and selection of chemicals of potential concern that were considered further in the risk assessment.

2.1 SITE DEFINITION

The former Tombarello & Sons property is about 14 acres in size and is located at 270 Marston Street in Lawrence, Massachusetts. The Site for this assessment is defined as the former Tombarello & Sons Property. Marston Street is located on the western border of the Site, Hofmann Street is located on the northern border of the Site and Route 495 is located on the eastern border of the Site. The Sons of Italy Lodge abuts the Site to the south. The Merrimack River is located approximately 400 feet east of the Site. The Site and the area surrounding the Site are zoned for medium intensity industrial uses. The site is now vacant, but in recent years, it had been used as a metal recycling facility and scrap metal handling yard. The details are described in the *Phase 2 Comprehensive Site Assessment (CSA)* (Weston, 2004).

2.2 REVIEW OF THE ANALYTICAL DATABASE

The data set for this assessment includes laboratory analytical data. Field screening data are not included in the dataset. The data set includes soil and ground water data collected by W.Z. Baumgartner & Associates, Inc. (Baumgartner) in 1998, soil and ground water data collected by Higgins Environmental Associates, Inc. (HEA) in 1999, soil data collected by Haley & Aldrich (H&A) in 2001, and soil, sediment and ground water data collected by Weston Solutions in 2003. Weston performed an overall data quality review in accordance with the requirements of the Massachusetts Contingency Plan (MCP) and USEPA Region I and concluded that the data have been deemed to be of sufficient quality to be used in assessment of site risks.

The following guidelines will be used to evaluate soil, sediment and ground water analytical data and to develop a list of chemicals of potential concern for the Site. Chemicals reported by the laboratory as estimated concentrations (*i.e.*, flagged with a "J") will be considered to be representative of actual concentrations. Field duplicate samples will be averaged. A concentration of one-half of the detection limit will be used to represent the possible presence of a chemical in samples in which the chemical was reported as not detected, unless it had not been positively detected in any samples in that particular medium.

2.2.1 Soil

In July 1998, Baumgartner collected 15 soil samples between zero to 11 feet below the ground surface (bgs) from nine soil borings (SB-1, SB-2, SB-3, SB-4, SB-6, SS-7, SS-8, and SS-9). The samples were analyzed for semi-volatile organic compounds (SVOCs), RCRA 8 metals, volatile organic compounds (VOCs), pesticides and PCBs, and total petroleum hydrocarbons (TPH) (gasoline and diesel range organics). The TPH data will not be included in the assessment.[1] Figure 4-1 of the CSA (Weston, 2004) shows the locations of these samples.

In April 1999, HEA collected 24 soil samples between zero and six inches below the ground surface from eight locations. These locations included four samples on the south east side of the Site in the vicinity of Weston monitoring well MW-7 (Baumgartner location SB#5); five samples in the vicinity of Baumgartner SS#8, five samples in the vicinity of Baumgartner SS#7; six samples in the vicinity of Baumgartner location SB#6 (Weston monitoring well MW-5), and one sample from the following locations: F7, F2, A11, and SB2-SS1. The samples were analyzed for extractable petroleum hydrocarbons (EPH) and polycyclic aromatic hydrocarbons (PAHs), cadmium and lead, volatile petroleum hydrocarbons (VPH) and target VOCs (including benzene,

1 Note that HEA subsequently collected VPH and EPH samples in the locations where TPH was detected by Baumgartner. The EPH/VPH data will be used to assess risks due to petroleum compounds.

toluene, ethylbenzene, xylenes, naphthalene, and methyl-t-butyl ether), VOCs, and PCBs. Figure 4-1 of the CSA (Weston 2004) shows the locations of these samples.

In September 2001, Haley and Aldrich collected 35 soil samples between zero and 15 feet below the ground surface. The samples were collected primarily on the eastern/southeastern portions of the Site and in the vicinity of the Bailer Press Building. The samples were analyzed for PCBs. Figure 4-1 of the CSA (Weston, 2004) shows the locations of these samples.

In February 2003, Weston collected 28 soil samples from borings WSB-1 through WSB-12 and WSB-14 at depths between zero and 7 feet below the ground surface. The samples were analyzed for PCBs, EPH and PAHs, and RCRA metals. In July 2003, Weston collected 15 additional samples from borings WSB-16 through WSB-18, WSB-21 and WSB-22 between zero and three feet below the ground surface in the vicinity of boring WSB-12. In addition, Weston collected 18 additional samples from borings WSB-25 through WSB-28, WSB-30, WSB-31, and WSB-32 between zero and three feet below the ground surface in the vicinity of boring WSB-6. The samples were analyzed for PCBs. Also, in July 2003, 44 composite samples were collected at depths of zero to one or one to three feet below the surface. The Site was divided into grids and one composite sample was collected from every two grid areas.[2] The samples were analyzed for PCBs. In September 2003, Weston collected discrete samples for PCB analysis from the locations that made up the composite samples with the elevated concentrations. Each location included five samples at three depth intervals (0-1' bgs, 1-2' bgs and 2-3' bgs) (one from the actual composite location, and one 10 ft off in each direction with the exception of hot spot DE-12, where only 3 perimeter samples could be collected because of the loading dock). Samples from the central boring in each grid area were analyzed, and if the results indicated total PCB concentrations of 37.5 ppm or higher, then samples from the other four perimeter locations were also analyzed to delineate lateral extent. Figure 4-1 of the CSA (Weston, 2004) shows the locations of these samples.

2 The property was divided into squares approximately 100 x 200 feet in size. The grid lines were labeled 1 through 6 (west to east) and A through M (north to south) (see Figure 4-1, Weston, 2004).

Table 1 presents a summary of the soil analytical data collected between zero and one foot below the surface and between one and three feet below the surface.[3] Samples that were collected across both depth intervals were considered in each summary. For example, results of a sample collected between zero and two feet below the surface was assumed to represent concentrations that could be present in the surface (*i.e.*, 0-1' bgs) or in the subsurface (*i.e.*, 1-2' bgs). Composite samples from two locations with elevated concentrations that were replaced by discrete samples at each of the locations were not included in the table. In other words, the composite samples collected at grid locations CD-35, DE-13, FG-13, FG-35, and JK-46 were replaced with discrete samples WSB-73 (at location CD-34) , WSB-77 through WSB-80 (at location CD-45), WSB-65 (at location DE-23), WSB-70 (at location DE-12), WSB-56 (at location FG-23), WSB-61 (at location FG-12), WSB-45 (at location FG-45), WSB-50 (at location FG-34), WSB-35 (at location JK-56), and WSB-41 (at location JK-45). Appendices A-1 and A-2 present the analytical data for the individual samples.

Table 2 presents a summary of the soil analytical data collected between three and 15 feet below the ground surface. Appendix A-3 presents the analytical data for the individual samples.

Chemicals of concern in soil were selected using a cumulative risk screen and USEPA Region 9 Preliminary Remediation Goals (PRGs) for industrial soil as screening benchmarks. For lead, a screening value equal to 800 mg/kg was selected (USEPA, Lead Workgroups Frequently Asked Questions). Compounds were grouped into those with noncarcinogenic effects and potential carcinogenic effects. For chemicals with noncarcinogenic effects, the maximum detected concentrations were divided by the PRG to obtain an estimated hazard index. For chemicals with potential carcinogenic effects, the maximum detected concentrations were divided by the PRG and multiplied by 1×10^{-6} to obtain an estimated potential carcinogenic risk. Any chemical with a hazard index greater than one or a carcinogenic risk greater than 1×10^{-6} was identified as a compound of concern. In addition, for the remaining chemicals the hazard indices and carcinogenic risks were summed to evaluate whether the cumulative hazard index was greater

3 Note that according to the USEPA, surface soil was considered to be located between zero and one foot below the surface.

than one or the total carcinogenic risk was greater than 1×10^{-6}. Table 3 presents the results. Chemicals of concern in soil include PCBs, carcinogenic PAH compounds, arsenic, lead, and cadmium. In addition, petroleum compounds (*i.e.*, VPH and EPH compounds) were also included because screening values have not been developed.

2.2.2 Ground water

Ground water samples were collected by Baumgartner in July 1998, by HEA in 1999 and by Weston in 2003. Monitoring wells locations are shown in Figures 4-2 of the CSA (Weston, 2004). The samples were analyzed for VOCs, pesticides and PCBs, SVOCs, metals, and petroleum compounds. The analytical data are presented in Table 4. In general, only low concentrations of VOCs were detected. Barium, chromium and low concentrations of lead were also detected in some wells. Petroleum compounds, SVOCs and PCBs were not detected in ground water.

2.2.3 Sediment

In February 2003, Weston collected a sediment sample from a catchbasin located on the property. Petroleum compounds, metals and low concentrations of PCBs were detected (Table 5). The results of this sample are not addressed further in this assessment. Since the concentrations detected are much lower than the concentrations of chemicals detected in soil, it was assumed that if risks to workers who could come into contact with impacted soil are within acceptable limits, then contact with sediment in the catchbasin would also be within acceptable limits. Moreover, as part of the remedial activities, source removal from potential transport pathways such as storm drains will be addressed.

3.0 DOSE-RESPONSE ASSESSMENT

The dose-response assessment presents data relating potential doses received from exposure to chemicals to potential health effects (response). Information is provided in this section relative to the dose-response relationships for the chemicals of concern, based on available laboratory animal studies and human epidemiology as reported in the USEPA's Integrated Risk Information System (IRIS) database, USEPA's Health Effects Assessment Summary Tables (1992; 1997), and USEPA's *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons* (1993). In some cases, dose-response information was not available from USEPA sources; in these cases, other sources of information including the MADEP were used.

3.1 ASSESSMENT OF NONCARCINOGENIC HEALTH EFFECTS

In accordance with USEPA guidance, chronic oral Reference Doses (RfD) or chronic Reference Concentrations (RfC) were used to evaluate noncarcinogenic effects. An RfD is a health-based criterion used to evaluate noncarcinogenic effects from exposures involving ingestion or dermal contact. Likewise, subchronic RfDs have been developed to estimate noncarcinogenic health effects from subchronic exposures. An RfC is a health-based criterion used to evaluate noncarcinogenic effects from inhalation exposures. Chronic RfDs and RfCs are estimates of daily exposure doses or concentrations for the human population (including sensitive sub-populations) that are likely to be without an appreciable risk of deleterious effects during a lifetime of exposure (USEPA, 1989). RfDs and RfCs are presented in Table 6.

3.2 ASSESSMENT OF CARCINOGENIC HEALTH EFFECTS

Carcinogens are considered by USEPA policy to lack a threshold of no adverse effects; this policy implies that any exposure carries some risk. Cancer potency factors, referred to as slope factors (SFs), have been derived to estimate risks resulting from oral and dermal exposures based

upon this assumption. A SF is equal to the slope of the dose-response curve and, when multiplied by the dose, provides an estimate of the upper 95 percent confidence interval of the incremental lifetime cancer risk, or probability of cancer occurring above normal background rates. Similarly, inhalation Unit Risks have been developed based on cancer slope factors or derived from inhalation studies to evaluate cancer risks resulting from inhalation exposures. SFs and inhalation Unit Risks for the chemicals of concern are presented in Table 6.

Carcinogens are classified by USEPA using a weight-of-evidence classification system to indicate the degree of confidence between chemical exposure and the likelihood of causing human cancer. Classifications are based primarily on the degree of evidence for cancer to occur based on human and animal studies. USEPA weight-of-evidence categories are: A, known human carcinogen; B1 or B2, probable human carcinogen (B1 indicates that limited human data are available; B2 indicates sufficient data in laboratory animals and inadequate or lack of evidence in humans); C, possible human carcinogen based on limited laboratory animal evidence and inadequate or lack of human data; D, not classifiable based on inadequate or no evidence; and E, no evidence of carcinogenicity to humans.

3.3 TOXICOLOGICAL PROFILES

General information and brief toxicological summaries for the chemicals of concern to human health at the Site are presented below. Where available, information has been derived from the IRIS database, from USEPA Health Effects Assessment Summary Tables (USEPA, 1992; 1997), and from the Agency of Toxic Substances and Disease Registry (ATSDR) Toxicological Profiles.

3.3.1 Polycyclic Aromatic Hydrocarbon Compounds

PAHs are a group of over 100 different compounds, which are found ubiquitously in the environment (ATSDR, 1995). PAHs are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances. They can be manmade or occur naturally. They can be

found in crude oil, coal, coal tar pitch, creosote, road and roofing tar, and food items. Most PAHs do not occur alone in the environment, but as a mixture of two or more compounds.

Several of the PAHs are used as synthetic intermediates in dye production (anthracene, acenaphthene, phenanthrene), in the synthesis of pharmaceuticals (anthracene), in the formation of polyradicals (fluorene), in the manufacture of explosives (phenanthrene), and in lining material to protect the interior of steel and ductile-iron drinking water pipes and storage tanks (fluoranthene). Other PAHs do not have any known uses, for example, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and pyrene.

PAHs are absorbed following ingestion. The amount of absorption depends upon the vehicle of administration. For example, the amount is enhanced if PAHs are solubilized in a vehicle that is readily absorbed. Although data are unavailable regarding the absorption of PAHs by inhalation in humans, laboratory animal experiments suggest that PAHs may be absorbed into the blood. Dermal absorption is also possible in humans, but it is not extensive.

Laboratory animal experiments suggest that PAHs are distributed predominantly to the lung, liver, kidney, gastrointestinal tract, and muscle tissue following inhalation. Following ingestion, laboratory animal experiments indicate that PAHs are initially distributed primarily to fat tissue then they are distributed to the liver, lung and kidney following a few hours. In contrast, other studies have shown that some PAHs are first distributed to highly perfused tissues such as the liver, blood, and brain. After a few hours they are distributed to fatty tissue. Still other studies have shown that some PAHs are distributed to the liver and kidneys and are rapidly eliminated thereafter. Following dermal exposure, although PAHs penetrate skin, very little is distributed to tissues. For example, only about 1.3 percent was detected in tissues of rats following dermal application of anthracene. PAHs are lipophilic compounds that readily penetrate cellular membranes and can remain in the body indefinitely; however, they can be metabolized to more water-soluble compounds and are thus more likely to be excreted. Metabolism of PAHs occurs in all tissues, but the degree of enzyme activity is different for different tissues. The amount and type of enzyme activity can also be influenced by exposure to other compounds, thus influencing

the rate of metabolism and the types of metabolites formed. Since PAHs have fairly similar structures, their metabolism is also fairly comparable. Following inhalation, a large fraction of the inhaled dose is excreted from the lungs with only small percentage excreted in the urine and feces. In contrast, following ingestion, about 80 to 90 percent is excreted in the feces. Following dermal exposure, the small amount that was absorbed through the skin is excreted in the urine and feces.

Adverse health effects attributed to PAHs, other than cancer, have generally not been observed in humans with the exception of adverse hematological and dermal effects. Although the data concerning hematological effects in humans are flawed with confounding factors, the evidence is substantiated with laboratory animal data showing that PAHs tend to attack rapidly proliferating tissues such as the bone marrow blood-forming cells. Benign skin tumors have been reported in humans, but these lesions are reversible. Workers exposed to substances containing PAHs have experienced chronic dermatitis. Laboratory animal evidence indicates that the lymphoid system, because of its rapidly proliferating tissues, is also susceptible to PAH-induced toxicity. Immunological effects have not been associated with exposure to PAHs in humans, but laboratory animal evidence indicates that immunosuppression may be caused by exposure to PAHs and the degree of immunosuppression may correlate with carcinogenic potency. Adverse hepatic effects have not been reported in humans, although mild hepatic changes have occurred in laboratory animals exposed to PAHs. Neurotoxic effects have not been reported in either humans or laboratory animals. The results of laboratory animal studies suggest that developmental effects may occur in humans. PAHs may also cause reproductive effects in humans. For example, data indicate that women who smoke cigarettes show a decrease in fecundity. Since the testes and ovaries contain rapidly proliferating cells, it is possible that reproductive toxicity may occur. The USEPA has not established RfDs for many of the PAHs. USEPA has, however, established RfDs for naphthalene, acenaphthene, anthracene, fluoranthene, pyrene, and fluorene. The RfD for naphthalene is equal to 2.0×10^{-2}. The RfD for fluoranthene and fluorene is equal to 4.00×10^{-2} mg/kg/day. The RfD for anthracene is equal to 3.00×10^{-1} mg/kg/day and for pyrene is equal to 3.00×10^{-2} mg/kg/day. The RfD for acenaphthene is equal to 6.00×10^{-2} mg/kg/day. PAHs of similar structures were used as surrogates for PAHs for

which specific RfDs have not been developed. USEPA has established an inhalation RfC for naphthalene equal to 3×10^{-3} mg/m^3.

Several PAHs have also been shown to be genotoxic in mammalian systems. Although PAHs have not been clearly identified as the causative agent, evidence exists to suggest that some PAHs are carcinogenic in humans following inhalation and dermal exposures. Cancers have been predominantly in the lung following inhalation exposures and in the skin following dermal exposures. This evidence is mostly from occupational studies of workers involved in coke production, roofing, oil refining, and coal gassification. It is impossible, however, to evaluate the contribution of any individual PAH to the total carcinogenicity of these mixtures because of the complexity of the mixtures and the presence of other carcinogens. Laboratory animal data, however, indicate that some of the PAHs are carcinogenic while others do not have carcinogenic potentials. USEPA classifies benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene as Group B2 carcinogens (*i.e.*, probable human carcinogen) based on the induction of several tumor types in laboratory animals. USEPA has established an oral slope factor equal to 7.30 (mg/kg/day)$^{-1}$ for benzo(a)pyrene, the most potent PAH. Carcinogenic risk estimates for mixtures of PAHs have often assumed that all carcinogenic PAHs are equipotent to benzo(a)pyrene. Recently, USEPA has developed a series of relative potency values as temporary guidance for the evaluation of carcinogenic risk of PAHs (USEPA, 1993). The estimated order of potential potencies of PAHs is as follows:

benzo(a)pyrene	1.0
benz(a)anthracene	0.1
benzo(b)fluoranthene	0.1
benzo(k)fluoranthene	0.01
chrysene	0.001
dibenz(a,h)anthracene	1.0
indeno(1,2,3-cd)pyrene	0.1

These potencies are used to adjust the slope factors of the individual PAHs compared with benzo(a)pyrene.

3.3.2 Polychlorinated Biphenyl Compounds

PCBs refer to a family of 209 individual compounds (ATSDR, 1995). PCBs produced in the United States are known by their industrial trade name, Aroclor. They were produced in the United States until 1974 for use in capacitors and transformers. PCBs were used because of their excellent dielectric and fire-resistant properties. PCBs produced in Japan and Germany are known as Kanechlors and Clophens, respectively.

Following oral exposure, gastrointestinal absorption is greater than 90 percent. Although data indicate that PCBs are absorbed via inhalation and dermal routes, the extent of absorption is less efficient. Due to their lipophilic nature, PCBs tend to accumulate in fatty tissues. PCBs initially distribute to the liver and muscle tissue and eventually they are redistributed to the fat, skin, and other fat-containing organs. PCBs are metabolized by the cytochrome P450 system. The metabolism of PCBs is dependent on the number and position of the chlorine atoms. Isomers with fewer chlorines are metabolized more readily than more chlorinated isomers. PCBs that are metabolized with more difficulty tend to be excreted via the feces, while the compounds with fewer chlorines are excreted via the urine.

Evaluation of the toxicity of PCBs is difficult because PCBs are mixtures of a variety of different congeners and impurities. The toxicity of the coplanar PCBs (dioxin-like) appears to be related to Ah receptor binding and subsequent synthesis of a variety of cellular proteins. The mechanism of toxicity of the other PCBs has not been established. Occupational studies have established that PCBs cause dermal and ocular effects. Effects such as chloracne, skin rashes, pigmentation of nails and skin, and burning eyes and skin have been associated with occupational exposure to PCBs. Similar effects have also been reported in laboratory animals exposed to PCBs via ingestion. Although PCBs have produced increases in serum liver-related enzyme levels following occupational exposure, these changes generally show inconsistent patterns, may be within normal ranges and have not been associated with liver dysfunction. Cytochrome P450 enzyme induction has been observed in the liver of humans, which may alter the metabolism of other substances and could lead to either increased or decreased toxicity of the other substances.

Liver damage has been observed in laboratory animals exposed via inhalation and ingestion. The liver damage in laboratory animals has been shown to be reversible prior to necrosis. Increased excretion of urinary porphyrins was observed in occupationally-exposed workers in one study. Although there is no evidence of porphyria in humans following exposure to PCBs, it is possible that porphyria may occur in humans at high doses of PCBs since an increase in urinary porphyrins followed by porphyria has been observed in experimental animals. Effects on the immune system have not been documented in humans, but immunosuppression has been observed in laboratory animals maintained on diets containing high concentrations of coplanar PCBs. One study reported a decrease in serum thyroxine levels in transformer maintenance workers, but other data concerning endocrine effects are not available for humans. The thyroid gland is, however, the most sensitive target organ in laboratory rats. Coplanar PCBs have been shown to act as anti-estrogens, while some non-planar PCBs have been shown to have estrogenic effects. Currently, the data are limited to acute studies so the long-term consequences are not known. Although hematological effects have not been reported in humans, a chronic oral study conducted in monkeys suggested that hematological effects could possibly occur. Some neurological effects have been reported in laboratory animal studies, but the significance of the results is not known. PCBs have not been shown to be teratogenic, but some studies have suggested that PCBs may cause neurodevelopmental effects. Although the developmental effects observed in humans cannot be specifically attributed to PCBs, the laboratory animal data appear to suggest similar results. Effects on reproduction appear to be species-specific. For example, conclusive information regarding reproductive effects has not been reported in humans, but complete reproductive failure has been observed in mink exposed to greater than 5 ppm PCBs in their diet. The susceptibility of mink to these effects may be related to their high Ah receptor affinity compared with other species. Reproductive effects have also been reported in rats, mice and monkeys. USEPA has established oral RfDs for Aroclor 1016 and Aroclor 1254 equal to 7.0×10^{-5} mg/kg/day and 2.0×10^{-5} mg/kg/day, respectively. RfDs have not been established for Aroclor 1248 or Aroclor 1260. A subchronic RfD equal to 5×10^{-5} mg/kg/day cited in HEAST (1997) was used for the construction worker scenario.

In general, PCBs have not been found to be mutagenic in either *in vitro* or *in vivo* assays. PCBs have been shown to cause liver cancer in rats. The data suggests that Aroclor 1260 has the greatest carcinogenic potential compared with Aroclor 1254 and other lower chlorinated PCBs. The liver tumors are, however, relatively non-aggressive, non-metastasizing, and not life-shortening. USEPA has concluded that the amount of evidence is sufficient to conclude that commercial PCB mixtures cause cancer in laboratory animals, but the available data do not indicate that PCBs cause cancer in humans. USEPA has categorized mixtures of PCBs as Group B2, probable human carcinogens. USEPA established an oral SF for PCBs equal to 2.0 $mg/kg/day^{-1}$.

3.3.3 Arsenic

Arsenic is the 20th most abundant element in the earth's crust (ATSDR, 1993). The most important compound for commercial use is arsenic trioxide, which is generated at copper and lead smelters and then purified. The principal uses are for wood preservation and for the manufacture of pesticides that are used in agriculture. Smaller amounts are used in the production of glass and in the electronics industry.

Studies of patients exposed to arsenic in cigarette smoke and occupational studies of workers exposed to arsenic dust in smelters suggest that between 30 and 60 percent of arsenic is absorbed following inhalation. Arsenic is well absorbed across the gastrointestinal tract as well. Laboratory animal studies suggest that dermally applied arsenic may initially bind to skin and may be absorbed slowly. Following ingestion or inhalation, arsenic is distributed throughout the body. Concentrations in hair and nails are slightly greater than the rest of the body. Arsenic is interconverted between the arsenate and arsenite forms by oxidation/reduction reactions and also undergoes methylation reactions. The majority of inhaled and ingested arsenic is excreted in the urine within a few days.

The primary effects of inhaled arsenic in humans are respiratory tract irritation, lung cancer and skin effects. Inhalation of dusts is irritating to the respiratory tract, but functional impairment is not typically observed. Acute ingestion of high doses may cause heart arrhythmias in humans.

Chronic ingestion of lower doses may cause damage to blood vessels resulting in loss of circulation referred to as "Blackfoot disease." This disease has only been reported in Taiwan; thus, other factors may also have been involved. Arsenic has, however, been shown to cause other less severe vascular effects in humans following chronic ingestion (*e.g.*, 0.6 to 0.8 mg/liter in drinking water) or inhalation (*e.g.*, chronic occupational exposures). Nausea, vomiting and diarrhea are common following ingestion of large doses. Effects on blood cells have been reported following ingestion but not inhalation. These effects are generally not observed in humans exposed to less than 0.07 mg/kg/day. Effects on the liver have been reported in humans following chronic ingestion of 0.019 mg/kg/day or more. The data suggest that the effects are primarily on the liver vasculature. The kidney is not a target organ. Both central nervous system effects, including confusion, impaired memory and hallucinations and peripheral nervous system effects, including numbness in the extremities, weakness and loss of reflexes have been observed following inhalation and ingestion of arsenic. Epidemiological studies typically indicate that central nervous system effects may occur following acute, high doses of arsenic while peripheral nervous system effects occur following chronic exposure to lower doses (0.019 to 0.5 mg/kg/day). Chronic ingestion of arsenic in drinking water (greater than 0.01 mg/kg/day) has also been shown to cause hyperkeratinization, hyperkeratinized warts, and hyperpigmentation. These lesions are very characteristic of arsenic exposure and appear to be the earliest observable signs of chronic exposure. Arsenic has been reported to cause developmental effects in laboratory animals, but only at doses that are also toxic to the mother. Therefore, it can not be concluded that arsenic causes developmental effects. Based on existing information, it is not known whether arsenic causes reproductive effects. USEPA has established an oral RfD equal to 3.0×10^{-4} mg/kg/day based on skin effects and possible vascular effects.

A number of studies have been performed to evaluate the mutagenic potential of arsenic. The data are inconclusive, but suggest that arsenic is not mutagenic or is only weakly mutagenic. Epidemiology data indicate that exposure to arsenic via inhalation increases the risk of lung cancer and ingestion of arsenic increases the risk of skin cancer. Some studies also suggest that ingestion of arsenic may increase the risk of liver, bladder, kidney, and lung cancers. Based on the increased risk of lung cancer, USEPA assigned arsenic to Group A by the inhalation route,

and based on the increased risk of skin cancer, USEPA assigned arsenic to Group A by the oral route. USEPA established an oral slope factor based on data from epidemiological studies of populations exposed to arsenic in drinking water equal to 1.5 $(mg/kg/d)^{-1}$. Recent evidence suggests, however, that this slope factor may overestimate cancer risks at low doses because arsenic is rapidly metabolized to nontoxic methylated forms, which would result in a non-linear dose-response curve.

3.3.4 Cadmium

Cadmium is present in the earth's crust in low concentrations (ATSDR, 1993). Small amounts are released into the environment by natural weathering processes, but the majority comes from anthropogenic activities such as mining and smelting operations, fuel combustion and application of phosphate fertilizers. Cadmium is taken up and retained by plants and animals. Thus, cadmium that has accumulated in the food chain may represent a significant source of exposure to humans. For people who smoke cigarettes, another significant source of cadmium is cigarette smoke. The primary uses for cadmium include the production of nickel-cadmium batteries and metal plating. It is also used in pigments and plastics and for alloys.

Suspensions of cadmium particles inhaled into the lung may be absorbed if they are deposited and retained in the lower regions of the lungs, primarily the alveoli. Thus, absorption depends on deposition, particle size and retention. Based on a model developed using data obtained from cigarette smokers, about 50 percent of inhaled cadmium may be deposited into the deeper regions of the lung (due to the very small size of cadmium particles in cigarette smoke) and, of the amount deposited, about 50 to 100 percent will be absorbed. In contrast, ingested cadmium is not very well absorbed. It is estimated that only about 3 to 5 percent may be absorbed, although absorption may be increased in individuals whose diet is deficient in iron, calcium and protein. Dermal absorption is slow and may be of concern only when concentrated solutions are in contact with the skin for several hours or longer. Cadmium does not cross the placenta very well, probably because it is bound to various proteins such as metallothionein and it is not found in breast milk in significant concentrations. Cadmium is widely distributed in the body, although the major fractions are located in the liver and kidney. It may be stored in the liver and kidneys

for as long as 30 years. Cadmium is transported in the blood by binding to red blood cells and proteins such as albumin and to some extent metallothionein. Cadmium is not metabolized. Cadmium is excreted predominantly in the feces. Most of the excreted cadmium represents the unabsorbed fraction. Absorbed cadmium is excreted about equally in the urine and feces.

Acute ingestion of high concentrations of cadmium may cause nausea and vomiting and acute inhalation of high concentrations of cadmium fumes may cause chemical pneumonitis in humans. The principal effects in humans from chronic exposure to lower levels are respiratory effects and kidney disease. Inhalation of cadmium has been shown to cause chronic obstructive pulmonary disease and progressive fibrosis of the lower airways, which may lead to emphysema. The primary target organ is the kidney. Of principal importance in the toxic effects of cadmium to the kidney is the role of metallothionein, an inducible protein synthesized by the liver as well as other tissues including the lungs and kidneys. Chronic exposure to low levels of cadmium results in an increased synthesis of metallothionein. It is thought that cadmium bound to metallothionein within tissues is essentially non-toxic. Thus, when the concentration of cadmium exceeds the binding capacity of metallothionein, toxicity may occur. It is postulated that cadmium binds to metallothionein in the liver and is transported to the kidney. Within the kidney cells, the complex is degraded and free cadmium is released. When the amount of unbound cadmium becomes high enough, kidney damage begins to occur. In contrast, there is also some evidence that the complex itself causes renal tubular damage. Although cadmium accumulates in the liver, there is no evidence that cadmium causes liver damage in humans, possibly because the synthesis of metallothionein is sufficient to bind the free cadmium. In contrast, acute high doses of injected cadmium have been shown to cause liver toxicity in laboratory animals, most likely because a high concentration of unbound cadmium reaches the liver. Cadmium has also been shown to cause bone pain and osteoporosis. Effects on the skeletal system are, however, only observed in individuals with severe kidney damage. The mechanism may be either via a direct effect on bones or via an indirect effect as a result of kidney damage, which causes altered calcium metabolism and Vitamin D activation. There is conflicting evidence from both human and laboratory animal studies regarding the effects of cadmium on the cardiovascular system. Some studies indicate that cadmium may cause a small

increase in blood pressure and other changes in cardiac function, but overall, the evidence suggests that these effects are not significant. Insufficient evidence exists to evaluate whether cadmium causes either developmental or reproductive effects. USEPA has established an oral RfD equal to 5.0×10^{-4} mg/kg/day for exposure to cadmium in water and an RfD equal to 1.0×10^{-3} mg/kg/day for exposure to cadmium in food. The RfDs are based on potential kidney effects in humans. An inhalation RfC is pending.

A number of studies have been performed to evaluate the mutagenic potential of cadmium. The overall results of these studies have been conflicting, but they suggest that cadmium may cause mutations in somatic cells but not in germinal cells. A number of epidemiological studies have suggested a relationship between inhalation of cadmium and lung and prostate cancer. Experimental data demonstrate that inhalation of cadmium increases the risk of lung cancer in laboratory animals. Studies in humans and laboratory animals do not demonstrate that ingestion of cadmium is carcinogenic. Based on these studies, USEPA has classified cadmium as Group B1 by inhalation. They have established an inhalation Unit Risk equal to 1.8×10^{-3} ($\mu g/m^3$).

3.3.5 Lead

Lead is used in commercial products because of its ease of casting, high density, low melting point, low strength, ease of fabrication, acid resistance, and chemical stability (ATSDR, 1991). Until recently, the transportation industry was the major end user of lead. It was consumed in batteries and as a gasoline additive. Other materials in which lead was used include construction materials, ammunition, electrical materials, television glass, paint, and ceramics. In recent years, the use of lead has markedly decreased because of its toxic effects.

Like many metals, suspensions of lead particles inhaled into the lung may be absorbed if they are deposited in the lower regions of the lungs, primarily the alveoli. Thus, absorption depends on particle size. Typically, the rate of deposition is about 30 to 50%. Once deposited in the alveoli, almost all lead is absorbed. Lead is not as well absorbed via the gastrointestinal tract. The gastrointestinal tract is, however, the primary site of lead absorption in children. About 50

percent is absorbed in young children compared to one to 15 percent for older children and adults. The rate is also affected by the solubility of the particular lead salt and by fasting. USEPA recommends a default value of 12% (USEPA, 2003). Dermal absorption is much less significant. For example, about 0.06% of lead in cosmetic preparations is absorbed. Once absorbed, lead is distributed to several distinct compartments — blood, bone and various soft tissues including liver, kidney, lungs, brain, *etc.* In blood, lead is partitioned between red blood cells (about 90%) and plasma. In adults, almost 95 percent of the total body burden of lead is found in bones. In children, however, only about 73 percent is found in bones. Lead has been shown to cross the placenta in humans and has been shown to transfer into breast milk in laboratory animals. Inorganic lead has not been shown to be metabolized. In contrast, organic lead compounds are metabolized in the liver by cytochrome P450 enzymes. Unabsorbed lead is excreted in the feces. Absorbed lead is excreted also excreted in feces with smaller amounts excreted in urine.

Although lead may affect almost every organ system in the body, the primary target organs/organ systems are the nervous system, blood cells, and kidneys, reproductive system, and cardiovascular system in males. The most sensitive effects occur in the central nervous system of children and infants. IQ deficits have been reported in children with blood lead levels as low as 10 to 15 µg/dl and hearing deficits may occur at levels only slightly greater. In children and adults, lead affects the peripheral nervous system. These effects are manifested at much higher blood lead levels (40 µg/dl). Lead has been show to cause anemia by several mechanisms including shortening the lifespan of red blood cells and impairing heme synthesis. In the past, a major problem in occupational settings was the effects of lead on kidneys. High concentrations of lead have been shown to cause acute toxicity in proximal tubular cells, and chronic exposure has been shown to cause interstitial nephropathy. The most sensitive effects observed in adult males is the effect on blood pressure. It is postulated that lead increases blood pressure via an effect on vascular smooth muscle. Colic, which is characterized by abdominal pain, constipation, cramps, nausea and vomiting, is an early symptom of lead poisoning in children and in workers. Definitive conclusions cannot be drawn regarding an association between lead exposure and congenital malformations. Lead has, however, been associated with growth retardation in

children. Lead also is clearly associated with adverse effects on neurobehavioral development. Lead has been associated with sterility in males. This effect is supported by laboratory animal data that shows gametotoxic effects in both male and female animals. USEPA has not established an oral RfD or an inhalation RfC for lead. USEPA has developed models to predict blood lead levels that can be compared to acceptable blood levels. In addition, USEPA has established soil screening concentrations equal to 400 mg/kg for residential sites and 1,200 mg/kg for commercial/industrial sites. In contrast, MADEP has established an oral RfD equal to 7.5×10^{-4} mg/kg/day. Use of the MADEP RfD to quantify health risks generally results in a more conservative estimate of health risks. In this assessment, risks due to lead were estimated using the RfD established by the MADEP.

A number of studies have been performed to evaluate the mutagenic potential of lead. The results of these studies have been conflicting, thus it is unclear whether lead may cause genetic damage. Human data do not provide evidence that exposure to lead increases the risk of cancer. The available data in laboratory animals indicate that high levels of lead cause kidney tumors. However, these tumors have not been reported at levels below those that cause toxicity. Since lead also increases renal tubular epithelial cell proliferation, it is likely that the increase in tumors is due to a non-specific response to hyperplasia. Nevertheless, USEPA has classified lead as Group B2. They have, however, recommended that a numerical estimate of cancer potency or risk based on such data should not be used.

3.3.6 Petroleum Hydrocarbons

Fuel oils are refined from crude petroleum and are categorized either as a distillate fuel or a residual fuel depending on the method of production (ATSDR, 1993). Fuel oils No. 1 and No. 2 are distillate fuels. Residual fuel oils such as fuel oil No. 4 and No. 6 are residues remaining after distillation or blends of such residues with distillates. They are complex mixtures of straight chain and cyclic aliphatic hydrocarbons and aromatic hydrocarbons. They are distinguished from each other primarily based on their boiling point ranges, chemical additives, and uses. Fuel oils are used in many types of engines, in lamps, heaters, furnaces, stoves, and as solvents.

Indirect evidence suggests that fuel oils can be absorbed following inhalation and ingestion. There is also some evidence that fuel oils can be absorbed across the skin. Very little information is available concerning the distribution, metabolism and excretion of fuel oils.

Very little is also known about the human health effects caused by fuel oils. Fuel oils are eye and skin irritants. Data are, however, limited for most other systemic effects. Fatigue, headaches and coordination and concentration difficulties may occur following acute inhalation of high vapor concentrations. Respiratory effects may occur following inhalation of or dermal contact with high concentrations of diesel fuel. Most of the respiratory effects that have been reported have, however, occurred following aspiration. Vomiting, diarrhea and abdominal cramps have also been reported following exposure to high concentrations of diesel fuel vapor. In laboratory animal experiments, liver and kidney damage and immunotoxicity have been reported following inhalation of or dermal contact with fuel oils. Currently, the available information regarding liver and immune system effects is insufficient to assess the relevance to human health. Kidney effects that have been reported in male rats are attributed to a sex- and species-specific response and are unlikely to occur in humans or other species. Epidemiological data do not suggest an association between exposures to fuel oils and cancer.

Gasoline was originally produced by simple distillation of crude oil (ATSDR, 1995). Today, gasolines are blended from several petroleum refinery process streams. After blending the streams, sulfur is removed and additives are added to improve the performance and stability of gasoline. For example, organic lead compounds were added as anti-knock agents; however, methyl-tert-butyl ether has gradually replaced the use of lead. Gasoline primarily contains short-chain alkanes, cycloalkanes and alkenes and some aromatics including alkanes, cycloalkanes, alkenes, and aromatics such as benzene, toluene, ethyl benzene, and xylenes.

Although all chemicals can produce toxic effects if exposure is sufficient, traditional risk assessment methods have recognized that the majority of the compounds present in petroleum products are much less toxic than benzene, toluene, ethyl benzene, xylenes (BTEX), n-hexane,

and 17 PAH compounds (which are also found in various petroleum products). Typically, risk was quantified for the more toxic compounds and was not quantified for the remaining hydrocarbon compounds (since it was assumed that the risk due to these remaining compounds would contribute relatively little to the overall risk estimate). MADEP has recommended an alternative method to evaluate the risks from petroleum hydrocarbons that is described in the documents *Characterizing Risk Posed by Petroleum Contaminated Sites: Implementation of the MADEP VPH/EPH Approach* (MADEP, 2002a), the *Background/Support Documentation for the Development of Publication Guidelines & Rules of Thumb* (MADEP, 2002b), and the *Draft Updated Petroleum Hydrocarbon Fraction Toxicity Values for the VPH/EPH/APH Methodology* (MADEP, 2002d). The approach evaluates the risk due to specific compounds individually (including BTEX and 17 PAH compounds as has been done in the past) and uses surrogate toxicity criteria to represent the toxicity of the remaining hydrocarbons within certain carbon ranges. To quantify the risks due to exposure to these remaining hydrocarbons, MADEP has proposed the RfD and RfC for n-hexane to represent the toxicity of alkanes and cycloalkanes with carbon chain lengths in the range of C_5 to C_8. The MADEP had proposed an RfD ten-times the RfD for n-hexane to represent the toxicity of alkanes and cycloalkanes with carbon chain lengths in the range of C_9 to C_{18}. Currently, the MADEP changed the RfD to a value adopted by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG, 1997). They also changed the RfC based on their interpretation of a study cited by the TPHCWG and another study by Lund *et al.* (1995). MADEP proposed an RfD for eicosane to represent the toxicity of alkanes and cycloalkanes with carbon chain lengths in the range of C_{19} to C_{32}. However, they recently changed their recommendation to a value recommended by the TPHCWG. Finally, they have proposed an RfD for aromatic and alkene compounds with carbon chain lengths in the range of C_9 to C_{32} based on a naphthalene/2-methyl naphthalene mixture study.

These surrogate compounds overestimate the toxicity of the petroleum fractions. MADEP has recommended the RfD for n-hexane (0.06 mg/kg/d) as the surrogate RfD for all alkanes and cycloalkanes having carbon chain lengths C_5 to C_8. The RfD is based on the RfC established by the USEPA. The alkanes and cycloalkanes ranging from C_5 through C_8 cause central nervous system depression following acute exposure to relatively high concentrations or doses. This

general effect is common to most solvents following exposure to very high doses or concentrations not typical of an environmental exposure. The effect is also a transient effect. In addition to these acute effects, some solvents also cause other specific effects following subchronic or chronic exposure to lower doses or concentrations. For example, benzene causes hemopoietic toxicity (*i.e.*, effects on developing blood cells) and n-hexane causes peripheral neuropathies and male reproductive effects. The specific toxicities are often directly related to the metabolism of the solvent to a specific metabolite. For example, the mechanism by which n-hexane produces peripheral neuropathies and male reproductive effects is through a specific metabolite, 2,5-hexanedione. None of the other compounds in the aliphatic petroleum fraction are metabolized to this metabolite and none of the other compounds produce either effects on the peripheral nervous system or the male reproductive system. MADEP suggests that n-pentane, n-heptane and n-octane may be associated with peripheral neuropathies. There is, however, no reliable or consistent laboratory animal evidence for this assumption and the only animal or human studies suggesting these effects were confounded by co-exposure to n-hexane. Therefore, while it is true that acute exposure to high concentrations of aliphatic compounds having carbon chain lengths from C_5 to C_8 can cause central nervous system depression, the scientific literature does not suggest that these compounds other than n-hexane can cause peripheral neuropathies and reproductive effects following chronic exposure to lower concentrations typical of environmental exposures. Likewise, MADEP recommends using the inhalation RfC established by the USEPA for n-hexane (0.2 mg/m^3) for the entire C_5 to C_8 aliphatic fraction. Although these values are likely to overestimate the risks significantly, they were used in this assessment.

MADEP proposed an RfD for alkanes and cycloalkanes with carbon chains ranging from C_9 to C_{18} using the surrogate compound n-nonane (0.6 mg/kg/d). MADEP assigned an RfD for aliphatic hydrocarbons in this range equal to 10 times that of n-hexane primarily based on subchronic studies in rats and mice and on the fact that the Threshold Limit Values (TLVs) established by American Conference of Governmental and Industrial Hygienists (ACGIH) for n-nonane is 10-fold higher than that established for n-hexane. Recently, the MADEP changed

the RfD to a value adopted by the Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG, 1997) (0.1 mg/kg/d).

The RfD adopted by the TPHCWG also appears to be very conservative. The RfD assigned to this group of compounds (0.1 mg/kg/d) was based on studies in rodents exposed to mixtures of aliphatic compounds ranging from C_9 to C_{16}. The RfD (0.1 mg/kg/d) developed from the data in the first study was based on some serum chemistry changes, organ weight increases and microscopic changes in several organs, which were reversible within the month. The effects were attributed to male rat nephropathy, which is irrelevant to humans, and the direct effect of introducing high concentrations of an irritating substance via an intubation tube into the stomach (TPHCWG, 1997). It should also be noted that irritation is a local, not a systemic effect, and the threshold for irritation is likely to be much higher than the RfD that has been developed by incorporating a safety factor equal to 5,000.[4] Thus, an RfD equal to 0.1 mg/kg/d is likely to overestimate potential effects in humans. The RfD (0.1 mg/kg/d) derived from the data in the second study was based on increased liver weights, which were observed in the high dose females (1,000 mg/kg/d). They indicated the NOAEL (No Observed Adverse Effect Level) was 100 mg/kg/d; however, liver weight increases were not observed in female rats dosed with 500 mg/kg/d; thus, it is unclear why the NOAEL dose was assumed to be 100 mg/kg/d rather than 500 mg/kg/d. Moreover, increased liver weight is generally not considered an adverse effect. It is an adaptive change likely due to increased metabolic enzyme concentrations. In fact, all treatment-related effects were reversible within the month. Based on the data in these two studies a more appropriate RfD would be 0.5 mg/kg/d based on a safety factor of 1,000 for the first study and a NOAEL dose of 500 mg/kg/d in the second study. In a third study, increases in hemoglobin levels and decreases in triglyceride levels were observed in male rats but the effects were not considered significant. Liver weight changes were observed in females and males but no histopathological effects were noted and the effects were disappeared following the recovery period. These effects were observed at concentrations of 500 mg/kg/d. The RfD derived from this study was also 0.1 mg/kg/d based on a NOAEL equal to 100 mg/kg/d. As discussed previously, increased liver weight is likely to be an adaptive change, which is transient,

4 Typically, safety factors range between 100 and 1000.

particularly since histopathological effects were not observed. A fourth study was cited in which male rats were dosed with jet fuel. The RfD for this study (0.75 mg/kg/d) was based on a NOAEL of 750 mg/kg/d. Based on these four studies, the RfDs ranged between 0.1 mg/kg/d and 0.75 mg/kg/d. Three of the studies suggest that the RfD should be between 0.5 mg/kg/d and 0.75 mg/kg/d. Thus, it is likely that an RfD equal to 0.1 mg/kg/d would overestimate health risks. Nevertheless, this value was used to estimate the risks for this fraction in this assessment.

The MADEP recommends an RfC for the C_9 to C_{18} aliphatic compounds equal to 0.2 mg/m^3 based on a study by Lund *et al.* and the TPHCWG RfC equal to 0.9 mg/m^3, which the MADEP adjusted to 0.3 mg/m^3. The TPHCWG proposed an RfC equal to 0.9 mg/m^3 based on two studies in which NOAEL levels were identified as 900 and 1000 mg/m^3. The MADEP suggests that the NOAEL levels were actually LOAEL levels because decreased body weights and increased liver and kidney weights were observed in males at these concentrations. However, the effects on body weight were questionable. In addition, male rat nephropathy was observed at all doses; thus, the effects are not considered significant or relevant to human health. Thus, the TPHCWG was correct that the RfC should be based on a NOAEL equal to 0.9 mg/m^3. The study by Lund *et al.* is difficult to interpret. Neurobehavioral studies generally involve measurements of electrical potentials in the brain or other non-specific endpoints that are presumed to reflect neurobehavioral or neuropsychological effects. However, interpretation of the results by the authors is generally subjective. Comparing the results to psychological disorders observed in painters, who are exposed to a wide variety of solvents, is questionable. The majority of scientific literature published indicates that the major effects of long chain aliphatic hydrocarbons are central nervous system depression and irritation (ACGIH, 1991; Clayton & Clayton, 1994). Exposure to low concentrations of aliphatic hydrocarbons has not been associated with long-term health effects in either humans or laboratory animals. It should also be noted that RfC for the C_9 to C_{18} aliphatic petroleum compounds recommended by the MADEP is more conservative than RfCs established by the USEPA for the target volatile organic compounds (VOCs) in petroleum such as ethylbenzene and toluene (RfC equal to 1.0 and 0.4 mg/m^3, respectively).[5] The majority of scientific evidence suggests that aliphatic petroleum compounds are much less toxic than the

5 Other examples include the RfCs for styrene (1 mg/m^3) or chlorinated solvents such as vinyl chloride (0.1 mg/m3)

target VOCs; thus, the toxicity factors recommended by the MADEP are likely to overestimate health risks significantly. A more appropriate value, yet still conservative, is the value proposed the TPHCWG (1 mg/m^3), which is used in this assessment.

MADEP had proposed an RfD (6 mg/kg/d) for alkanes and cycloalkanes with carbon chain lengths from C_{19} to C_{36} based on a NOAEL for eicosane equal to 6,000 mg/kg/d. However, the MADEP recently recommended an RfD equal to 2 mg/kg/d based on a study by the TPHCWG in which the NOAEL was identified as 2,000 mg/kg/d (the highest dose tested). Clinical effects were not observed in either study. In fact, it is likely that clinical effects would not have been observed in the second study at a dose equal to 6,000 mg/kg/d, but the animals were not dosed higher than 2,000 mg/kg/d in this study. Based on the data from these two studies, the NOAEL is still 6,000 mg/kg/d. Moreover, safety factors of 1000 were applied. Quantifying potential risks for compounds that have been shown to be relatively non-toxic using a very conservative RfD greatly overestimates the risks for these compounds. Changing the RfD from 6 mg/kg/d to 2 mg/kg/d is not warranted especially for compounds that have not been shown to cause toxic effects in any species including humans and are safe enough to be used as food additives.

The TPHCWG proposed 0.2 mg/m^3 as the RfC for C_9 to C_{16} aromatic compounds. The TPHCWG based the RfC on a NOAEL (900 mg/m^3) in a study performed in rats. The only observable effect was an increase in liver and kidney weights in male rats dosed with 1,800 mg/m^3. As discussed above, these effects are likely adaptive effects (increases in metabolic enzymes) and are probably transient. Thus, this RfC may overestimate health effects. MADEP recommends using an RfC equal to 0.02 mg/m^3 for C_9 to C_{16} aromatic compounds. MADEP indicated that the NOAEL should not be 900 mg/m^3, rather it should be equal to either 490 mg/m^3 based on reproductive effects reported in a mouse study or 589 mg/m^3 based on developmental effects reported in a rat study. However, in the mouse study, the authors recommended additional studies before any definitive conclusions can be reached about reproductive effects. In the rat study, maternal weight gain was reduced at all exposure levels; thus, conclusions about developmental effects can not be drawn from this study. To conclude

established the USEPA.

that a substance causes developmental effects, maternal health can not be affected because when developmental toxicity is observed only in the presence of maternal toxicity, the developmental effects may not be associated with the substance. Understanding the mechanism of maternal toxicity and the association with developmental effects are required before the relevance of the observations to humans can be addressed (Klaassen, 1996). The MADEP further indicates that while the RfC derived by the TPHCWG may be a representative value for volatile alkyl benzenes, other volatile aromatics with more than one ring in their structure (such as naphthalene) may be present. Thus, they recommend 0.02 mg/m^3 as the RfC for the entire C_9 to C_{16} aromatic fraction. This value incorporates an additional safety factor of 10 for developmental effects and the database deficiency (*i.e.,* including the other compounds such as naphthalene). First, as stated above, conclusions regarding developmental effects cannot be drawn from these studies. Second, although the addition of another safety factor to account for the lack of data for compounds with additional ring structures may be prudent for C_{10} (*i.e.* naphthalene) to C_{16} aromatic compounds, it is likely to overestimate the toxicity of the single ring C_9 to C_{10} aromatic compounds. It should be noted that RfCs developed by USEPA for alkyl benzenes range between 0.1 mg/m^3 and 1.0 mg/m^3. Because naphthalene is the only multi-ring compound in the C_9 to C_{10} aromatic group and because it is analyzed separately as part of the target VOCs and PAHs, the remaining compounds within this group are single ring compounds (*i.e.*, alkyl benzene compounds). Therefore, the toxicity factor used to estimate risks due to exposure to C_9 to C_{10} aromatic compounds were based on isopropyl benzene, which conservatively represents the toxicity of alkyl benzene compounds.

Finally, MADEP has proposed an RfD for aromatic hydrocarbons and alkenes with carbon chain lengths from C_9 to C_{22} using pyrene as the surrogate compound. MADEP assumes appropriately that the RfDs are fairly similar for the polycyclic aromatic hydrocarbons (PAHs) and that one RfD could be used to represent the toxicity of all of these compounds. It is a conservative assumption, however, to assume that the entire aromatic fraction with carbon chain lengths from C_9 to C_{22} consists of PAHs. The scientific literature does not support the hypothesis that the toxicity of the other hydrocarbons containing unsaturated carbon bonds with chain lengths from C_9 to C_{22} (such as the alkylbenzenes, tetralins, benzothiophenes, indens, and alkenes) is the same

as the toxicity of pyrene. In fact, as discussed above, using RfDs for PAHs to represent the toxicity of single aromatic ring compounds such as n-propyl benzene, isopropyl benzene, isopropyl toluene is very conservative. Because the toxic effects and mechanisms of action of most of the aromatic compounds detected in the VPH fraction are more likely to be similar to the alkyl benzene compounds (*i.e.*, single aromatic ring compounds) than PAHs, RfDs consistent with those established for alkyl benzenes ought to be more appropriate. RfDs established for alkyl benzene compounds including toluene, xylenes, ethyl benzene, and n-propyl benzene range between 0.1 mg/kg/d and 2 mg/kg/d. Therefore, the RfD for C_9 to C_{10} aromatic compounds used in this assessment is 0.1 mg/kg/d, which is based on the RfD established for the C_9 aromatic compound isopropyl benzene. Naphthalene, the only polycyclic aromatic compound in this group is considered separately in the target compound list for both VPH and EPH. The RfD for pyrene is used for the remaining C_{11} to C_{22} aromatic compounds.

4.0 EXPOSURE ASSESSMENT

An exposure assessment was performed to identify current or reasonably foreseeable exposure scenarios by which chemicals present at the Site may reach potential human receptors. Potential receptors and exposure pathways were identified, exposure routes were evaluated, exposure point concentrations were estimated, and exposure doses or concentrations were calculated.

4.1 EXPOSURE SCENARIOS

Potential exposure pathways were evaluated for the various media. The following criteria must be met for a complete exposure pathway to exist:

- a source and mechanism to release chemicals into the environment,
- an exposure point at which there is a potential for contact with the contaminated medium by a receptor, and
- an exposure route (*e.g.*, ingestion, inhalation or dermal contact) at the exposure point.

If one of these criteria is not met, then the exposure pathway is not complete. In other words, without any exposure, the risk is zero. Thus, incomplete exposure pathways are eliminated from the assessment. The following sections describe: 1) the soil and ground water categories applicable to the Site; 2) the human receptors likely to be present at this Site; 3) the complete exposure pathways by which the receptors may come into contact with impacted media; and 4) the exposure assumptions used to estimate average daily doses or concentrations.

4.1.1 Identification of Site Soil and Ground water Categories

To evaluate potential exposures to receptors at the Site, the ground water and soil categories are identified. Ground water is categorized by the MADEP based on its current and/or future use as drinking water (GW-1), its potential to act as a source of volatile material to indoor air (GW-2), and its potential to discharge material to surface water (GW-3). The ground water categories applicable to the Site are GW-2 and GW-3. Ground water at the Site is not a potential source of drinking water; therefore, it is not classified as GW-1. Ground water is located less than 15 feet below the ground surface and may be located within 30 feet of a future building. Thus, the Site is considered to be in a GW-2 category. The Site is also considered to be in a GW-3 category because all ground water is assumed to eventually discharge to surface water bodies.

The soil category applicable to the Site under current and future conditions is S-2. The Site is a commercial/industrial property. The majority of impacted soil is located in surface soil. Under current conditions, older children may visit the Site occasionally. However, they are not expected to disturb the soil. Under future conditions, surface soil will be covered either by buildings or asphalt pavement. Adults could be present frequently if they work at the Site and adults and children could visit the Site, however, they are not expected to disturb the soil. If construction work takes place in the future, workers are expected to actively disturb the soil. Excavation activities are, however, not expected to be frequent.

4.1.2 Potential Human Receptors

Under current conditions, this risk assessment considered exposures to:

- Older children who could trespass on the property.

Under foreseeable future conditions, this risk assessment considered exposures to:

- Employees who work at the property;
- Potential future workers who may perform subsurface excavation work during

future construction at the property; and

- Potential future workers who may perform subsurface excavation work while repairing subsurface utilities at the property.

4.1.2.1 Trespassers

Under current conditions, it was assumed that older children could trespass on the property. Exposure routes of concern include incidental ingestion of surface soil, dermal contact with surface soil and inhalation of particulate matter derived from surface soil.

4.1.2.2 Employees

Employees who could work in buildings at a future commercial business could potentially be exposed to VOCs that could volatilize from shallow ground water or soil and migrate into indoor air. However, since VOC concentrations in both ground water and soil were very low (Tables 1 and 4), significant indoor air impacts are unlikely. In addition, surface soil is considered an incomplete pathway because it will be covered either by buildings or asphalt pavement in the future. An Activity and Use Limitation (AUL) with provisions for maintenance of the asphalt pavement and building floor slab will be written to ensure their continued integrity. Therefore, risks to employees were not quantified.

4.1.2.3 Construction and Utility Maintenance Workers

Under future conditions, construction workers could be exposed to impacted surface and subsurface soil and ground water if soil were excavated in the future during construction activities on the property. The principal potential exposure routes include dermal contact with soil, incidental ingestion of soil, and inhalation of particulate matter. Inhalation of VOCs in ambient air during excavation activities was considered but was not evaluated further because wind dispersion and dilution are likely to reduce the concentrations of chemicals in ambient air significantly; thus, it is unlikely that they would pose a significant risk. It should be noted that

VOC concentrations detected in soil and ground water were very low (see Tables 1 and 4); thus, it is unlikely that significant concentrations could be present even in areas without significant dispersion such as a trench. Moreover, the amount of time a worker would spend in a trench over the entire construction period is likely to be limited. In addition, PCBs were not detected in ground water and volatilization from soil to ambient air is likely to be negligible (USEPA, 1996). Skin contact with chemicals detected in shallow ground water is also possible; however, these exposures are not typically quantified because they are usually limited to acute exposures (*e.g.*, incidental splashes on the hands and arms or short-term exposures during the repair of a de-watering pump) (MADEP, 1996). The concentrations of chemicals detected at most disposal sites (including this Site) are not high enough to cause acute health effects via skin contact.

Utility maintenance workers could also be exposed to impacted soil located between the surface and approximately six feet below the surface. The potential exposure routes include dermal contact with soil, incidental ingestion of soil, and inhalation of particulate matter.

4.1.3 Exposure Assumptions

Exposure assumptions for each receptor are described below. Table 7 presents a summary of the assumptions.

4.1.3.1 Trespassers

To estimate exposure doses for older children (age 7 to 18 years old) who may trespass on the former Tombarello & Sons property under current conditions, several assumptions were made. The frequency of exposure was assumed to be 26 days per year, the duration of exposure was assumed to be 4 hours per day and the period of exposure was assumed to be for 12 years. It was assumed that trespassers weigh 46.88 kg, ingest 50 mg of soil per day, and breathe 1.2 m^3 of air per hour (USEPA, 1997a). It was also assumed that trespassers have their forearms, hands, and feet exposed and the weighted soil adherence is equal to 0.14 mg/cm^2 (USEPA, 1992; 1998; MADEP, 2002a). For doses received from inhalation of particulate matter, it was assumed that the Particulate Emission Factor (PEF) was 1.32×10^{-9} and the ventilation rate was equal to 4.8

m^3/day, assuming 4 hours of moderate activity (USEPA, 1996; USEPA, 1997a). The averaging period was equal to the exposure period for exposures to noncarcinogenic chemicals and equal to 75 years for exposures to carcinogenic chemicals (USEPA, 1989; 1997b).

4.1.3.2 Construction Workers

It was assumed that workers involved in construction work would be exposed to impacted soil during excavation activities. Recently, MADEP has published three guidance documents to estimate risks to workers involved in construction activities (MADEP, 2002a,b,c). The first document *Calculation of an Enhanced Soil Ingestion Rate* recommends an ingestion rate for construction workers equal to 100 mg/d (MADEP, 2002b); however, the value recommended by the USEPA (330 mg/day) was used to estimate an ingestion rate at this Site (USEPA, 2002). The second document *Weighted Skin-soil Adherence Factors* is based on a recent review of the literature including recent USEPA information. MADEP developed a skin-soil adherence factor based on data from a study of two groups of utility workers involved in heavy construction work including jack-hammering and excavating trenches with a back hoe and a shovel. The third guidance document *Characterization of Risks Due to Inhalation of Particulates by Construction Workers* accounts for exposure to particulate matter by two pathways including inhalation into the lungs and gastrointestinal absorption following coughing up and subsequent swallowing of the particulates. The assumptions provided in these documents were used to estimate risks to construction workers. A soil ingestion rate of 330 mg/day was used to estimate average daily doses from incidental ingestion of soil (USEPA, 2002). For dermal exposures, it was assumed that the face, forearms, hands, and feet (*i.e.*, 3,477 cm^2) could potentially contact the soil during an exposure event (MADEP, 2002a). A soil adherence factor of 0.29 mg/cm^2 was used to estimate soil adherence during heavy construction work (MADEP, 2002a). It was assumed that the respirable particulate concentration in air (*i.e.*, PM_{10} concentration) was 60$\mu g/m^3$ and that a worker breathes 28.8 m^3/day (60 liters/minute for 8 hours) (MADEP, 2002c). It was also assumed that two-times the PM_{10} would be ingested if inhaled particulates were coughed up and swallowed and that 0.5 times the PM_{10} would enter the lungs (MADEP, 2002c). An average body weight of 71.8 kg was assumed to be the weight of a typical adult (USEPA, 1997a). The

duration of exposure was assumed to be eight hours per day. The frequency of exposure was assumed to be 120 days per year. The exposure period was assumed to be one year. The averaging period was equal to the exposure period for exposures to noncarcinogenic chemicals and equal to 75 years for exposures to carcinogenic chemicals (USEPA, 1989; 1997a).

4.1.3.3 Utility Workers

It was assumed that workers involved in subsurface utility work would be exposed to impacted soil during excavation activities. A soil ingestion rate of 330 mg/day was used to estimate average daily doses from incidental ingestion of soil (USEPA, 2002). For dermal exposures, it was assumed that the face, forearms, hands, and feet (*i.e.*, 3,477 cm^2) could potentially contact the soil during an exposure event (MADEP, 2002a). A soil adherence factor of 0.29 mg/cm^2 was used to estimate soil adherence during heavy construction work (MADEP, 2002a). It was assumed that the respirable particulate concentration in air (*i.e.*, PM_{10} concentration) was 60$\mu g/m^3$ and that a worker breathes 28.8 m^3/day (60 liters/minute for 8 hours) (MADEP, 2002c). It was also assumed that two-times the PM_{10} would be ingested if inhaled particulates were coughed up and swallowed and that 0.5 times the PM_{10} would enter the lungs (MADEP, 2002c). An average body weight of 71.8 kg was assumed to be the weight of a typical adult (USEPA, 1997a). The duration of exposure was assumed to be eight hours per day. The frequency of exposure was assumed to be 5 days per year (MADEP, 1996). The exposure period was assumed to be 25 years. The averaging period was equal to the exposure period for exposures to noncarcinogenic chemicals and equal to 75 years for exposures to carcinogenic chemicals (USEPA, 1989; 1997a).

4.1.3.4 Absorption Factors

It was assumed that 100 percent of the chemical was absorbed from soil by ingestion with the exception of lead. It was assumed that the absorption of lead from soil was equal to 12 percent based on the USEPA default value of 12 percent (USEPA, 2003). Absorption for dermal contact was based on the recommended chemical-specific dermal absorption factors published by

USEPA (1997b). Absorption from inhalation of particulate matter was assumed to be equal to absorption from ingestion because most of the dose received from inhaling particulate matter can be attributed to swallowing material that is coughed up from the lungs (MADEP, 2002c).[6]

4.2 EXPOSURE POINT CONCENTRATIONS

Exposure point concentrations are the estimated concentrations of a chemical in a particular medium at the point of contact. According to USEPA Region I policy, the exposure point concentrations were based on the 95% Upper Confidence Limit (UCL) of the arithmetic mean concentration or the maximum concentration detected (USEPA, 1994).

Table 8 presents the summary statistics for surface soil (zero to one foot below the ground surface) for two "hot spot" areas and for the areas outside the "hot spots". "Hot spots" were considered to be the area around WSB-6 and the area on the southeast corner of the property. Soil between zero and one foot below the ground surface is considered the exposure point for trespassers. Table 9 presents the summary statistics for soil between zero and three feet below the ground surface for three "hot spots" and the area outside the "hot spots". "Hot spots" were considered to be the area around WSB-6, the area in grid quadrant CD-45 and the area on the southeast corner of the property. Soil between zero and three feet below the ground surface is considered to be the primary exposure point for construction and utility workers because the majority of impacts to soil are located at this depth interval. In the tables, the 95% UCL concentrations are shown for some chemicals.[7] UCL concentrations are not shown for chemicals where insufficient data or widely variable data were available because in these cases the UCL concentrations would be greater than the maximum concentrations detected.

Table 10 presents the exposure point concentrations for the trespasser scenario. These concentrations are based on samples collected between zero and one foot below the ground

6 Note that the lifetime carcinogenic dose due to inhalation of cadmium did not consider carcinogenic effects due to swallowing because scientific information indicates that although cadmium may cause lung cancer, the mechanism is likely to be due to a direct effect on the lung.
7 UCL concentrations were based on a lognormal distribution. They were calculated using USEPA equations (USEPA, 1994; Gilbert, 1987.)

surface. The exposure point concentration was assumed to be either the maximum or the 95% UCL of the arithmetic mean concentration, whichever was lower. Likewise, Table 11 shows the exposure point concentrations for the construction worker and utility worker scenarios. Because impacts at this site are primarily limited to surface soils up to three feet below the surface, it was conservatively assumed that excavation work would take place between zero and three feet below the surface. In addition, exposure point concentrations are also presented for soil located between three and 15 feet below the ground surface. These concentrations are based on the maximum concentrations detected in subsurface soil across the Site. It should be noted that the highest PCB concentrations in subsurface soil were detected in the test pits (BRM-TP-4, BRM-TP-5 and BRM-TP9/9A) located in the berm areas along the east and southeast sides of the property. The PCB concentrations ranged between 42 mg/kg and 78 mg/kg in the samples from these test pits. PCB concentrations detected greater than three feet below the surface on other areas of the Site were significantly less.

Two additional discrete areas of contamination were considered for arsenic and cadmium. Arsenic was detected at 69.4 mg/kg in a sample collected between zero and one foot below the surface from boring WSB-10. The next highest concentration detected was 17.9 mg/kg. Because the highest concentration detected was only approximately 4-fold greater than the next highest concentration and because exposure to the area with the highest concentration is not expected to be any greater than any other area, the area in the vicinity of WSB-10 was not considered to be a "hot spot". Thus, the 95% UCL concentration was assumed to be the exposure point concentration for arsenic, which is included in the exposure point concentrations for the area outside the "hot spots" (Table 10). Cadmium was detected at 716 mg/kg in a sample collected between one and two feet below the surface from boring WSB-2. The next highest concentration detected was 12.5 mg/kg., which is greater than 50-fold less than the concentration detected at WSB-2. Because of the significant difference between the concentration detected at WSB-2 and the rest of the Site, this area was considered a "hot spot". Thus, the exposure point concentration was conservatively considered to be 716 mg/kg even though the 95% UCL concentration was 14.1 mg/kg, which is included in the exposure point concentrations for the area outside the "hot spots" (Table 11).

4.3 ESTIMATION OF AVERAGE DAILY EXPOSURES

Equations adapted from USEPA guidance were used to estimate average daily exposure concentrations for inhalation exposures and average daily exposure doses for ingestion of soil dermal contact with soil and inhalation of particulate matter derived from soil (USEPA, 1989). Exposures to chemicals via ingestion and dermal contact are estimated by calculating exposure doses, which are expressed as milligrams of chemical per kilogram of body weight per day. In contrast, exposures to chemicals via inhalation are estimated by calculating average exposure concentrations. Estimating average exposure concentrations rather than average exposure doses is technically more accurate because compounds that elicit route-of-entry effects where the toxic effect is directly on the lung (*e.g.*, irritants and sensitizers) would be inappropriately evaluated if they were calculated as a systemic dose, and pharmacokinetic differences such as absorption and metabolism do not have to be adjusted as would be necessary to estimate a systemic dose. In some cases, toxicity factors are not available to estimate risks from inhalation; in these cases, average daily exposure doses were calculated instead of average daily exposure concentrations.

Estimated average daily exposure doses for incidental ingestion of soil were calculated using the following equation:

$$ADD = \frac{C_x \times IR \times EF \times EP \times C_1}{BW \times AP \times C_2}$$

where:

ADD	=	Chronic or lifetime average daily dose (mg/kg/day)
C_x	=	Exposure point concentration (mg/kg)
IR	=	Ingestion rate (mg/day)
EF	=	Exposure frequency (days/year)
EP	=	Exposure period (years)
C_1	=	Conversion factor (10^{-6} kg/mg)

BW	=	Body weight (kg)
AP	=	Averaging period (years)
C_2	=	Conversion factor (365 days/year)

Estimated average daily exposure doses for dermal contact with soil were calculated using the following equation:

$$ADD = \frac{C_x \, x \, SA \, x \, AF \, x \, ABS \, x \, EF \, x \, EP \, x \, C_1}{BW \, x \, AP \, x \, C_2}$$

where:

ADD	=	Chronic or lifetime average daily dose (mg/kg/day)
C_x	=	Exposure point concentration (mg/kg)
SA	=	Skin surface area in contact with soil (cm^2/day)
AF	=	Soil adherence factor (mg/cm^2)
ABS	=	Absorption factor (unitless)
EF	=	Exposure frequency (days/year)
EP	=	Exposure period (years)
C_1	=	Conversion factor (10^{-6} kg/mg)
BW	=	Body weight (kg)
AP	=	Averaging period (years)
C_2	=	Conversion factor (365 days/year)

For trespassers, estimated average daily exposure doses or concentrations for inhalation of particulate matter were calculated using one of the following equations:

$$ADD = \frac{(\frac{C_x}{PEF}) \, x \, VR \, x \, EF \, x \, EP}{BW \times AP \, x \, C_1}$$

where:

ADD	=	Chronic or Lifetime Average Daily Dose (mg/kg/day)

C_x	=	Exposure point concentration (mg/kg)
PEF	=	Particulate emission factor (m^3/kg)
VR	=	Ventilation Rate (m^3/day)
EF	=	Exposure Frequency (days/year)
EP	=	Exposure period (years)
BW	=	Body weight (kg)
AP	=	Averaging period (years)
C_1	=	Conversion factor (365 days/year)

or:

$$ADE = \frac{(\frac{C_x}{PEF}) \, x \, EF \, x \, ED \, x \, EP \; x \, C_1}{AP \, x \, C_2}$$

where:

ADE	=	Chronic or Lifetime Average Daily Exposure Concentration (mg/m^3 or $\mu g/m^3$)
C_x	=	Exposure point concentration (mg/kg)
PEF	=	Particulate emission factor (m^3/kg)
EF	=	Exposure Frequency (days/year)
ED	=	Exposure duration (hours/day)
EP	=	Exposure period (years)
C_1	=	Conversion factor (days/hour)
C_2	=	Conversion factor (365 days/year)
AP	=	Averaging period (years)

For construction and utility workers, estimated average daily exposure doses or concentrations for inhalation of particulate matter were calculated using one of the following equations:

$$ADD = \frac{C_x \, x \, RP \, x \, VR \, x \, EF \, x \; EP \; x \, C_1}{BW \times AP \, x \, C_2}$$

where:

ADD	=	Chronic or lifetime average daily dose (mg/kg)
C_x	=	Exposure point concentration (mg/kg)
RP	=	Concentration of respirable particulates (mg/m^3)
VR	=	Ventilation rate (m^3/d)
EF	=	Exposure frequency (days/year)
EP	=	Exposure period (years)
C_1	=	Conversion factor (10^{-6} kg/mg)
BW	=	Body weight (kg)
AP	=	Averaging period (years)
C_3	=	Conversion factor (365 days/year)

Or:

$$ADE = \frac{C_x \, x \, RP \, x \, EF \, x \, ED \, x \, EP \; x \, C_1 x \, C_2}{AP \, x \, C_3}$$

where:

ADE	=	Chronic or lifetime average daily exposure concentration (mg/m^3)
C_x	=	Exposure point concentration (mg/kg)
RP	=	Concentration of respirable particulates (mg/m^3)
EF	=	Exposure frequency (d/year)
ED	=	Exposure duration (hours/day)
EP	=	Exposure period (years)
C_1	=	Conversion factor (10^{-6} kg/mg)
C_2	=	Conversion factor (days/hour)
AP	=	Averaging period (years)
C_3	=	Conversion factor (365 days/year)

4.3.1 Trespassers

Trespassers could be exposed to chemicals detected in surface soil on the former Tombarello & Sons property under current conditions. Exposure point concentrations were estimated for areas outside of two "hot spots" using soil samples collected between zero and one foot below the ground surface. Average daily exposure doses were calculated for incidental ingestion of soil,

skin contact with soil and inhalation of particulate matter (Tables 12 through 14). Exposure point concentrations were also estimated for the two "hot spot" locations using soil samples collected between zero and one foot below the ground surface. Average daily exposure doses were calculated for incidental ingestion of soil, skin contact with soil and inhalation of particulate matter for the "hot spot" in the vicinity of WSB-6 (Tables 15 through 17) and for the "hot spot" on the southeast corner of the property (Tables 18 through 20).

4.3.2 Construction Workers

Construction workers could be exposed to surface and subsurface soil in the future. Exposure point concentrations were estimated for areas outside of three "hot spots" using soil samples collected between zero and three feet below the ground surface. Average daily exposure doses were calculated for incidental ingestion of soil, skin contact with soil, and inhalation of particulate matter (Tables 21 through 23). Exposure point concentrations were also estimated for the three "hot spot" locations using soil samples collected between zero and three feet below the ground surface. Average daily exposure doses were calculated for incidental ingestion of soil, skin contact with soil and inhalation of particulate matter for the "hot spot" in the vicinity of WSB-6 (Tables 24 through 26), for the "hot spot" in the vicinity of CD-45 (Tables 27 through 29), and for the "hot spot" on the southeast corner of the property (Tables 30 through 32). Exposure point concentrations were also estimated for site-wide deeper soil located between three and 15 feet below the ground surface and average daily exposure doses were calculated for incidental ingestion of soil, skin contact with soil and inhalation of particulate matter (Tables 33 through 35).

4.3.3 Utility Workers

Utility workers could be exposed to surface and subsurface soil in the future. Exposure point concentrations were estimated for areas outside of three "hot spots" using soil samples collected between zero and three feet below the ground surface. Average daily exposure doses were calculated for incidental ingestion of soil, skin contact with soil and inhalation of particulate

matter (Tables 36 through 38). Exposure point concentrations were also estimated for the three "hot spot" locations using soil samples collected between zero and three feet below the ground surface. Average daily exposure doses were calculated for incidental ingestion of soil, skin contact with soil and inhalation of particulate matter for the "hot spot" in the vicinity of WSB-6 (Tables 39 through 41), for the "hot spot" in the vicinity of CD-45 (Tables 42 through 44), and for the "hot spot" on the southeast corner of the property (Tables 45 through 47). Exposure point concentrations were also estimated for site-wide deeper soil located between three and 15 feet below the ground surface and average daily exposure doses were calculated for incidental ingestion of soil, skin contact with soil and inhalation of particulate matter (Tables 48 through 50).

5.0 RISK EVALUATION

5.1 METHODS TO EVALUATE NONCARCINOGENIC AND CARCINOGENIC RISKS

A risk characterization evaluates current and reasonably foreseeable future health risks associated with site conditions. Risks associated with a site are characterized by integrating data developed in the Hazard Identification, Dose-Response Assessment and Exposure Assessment. Methodologies for evaluating noncarcinogenic health hazards and carcinogenic risks are presented below.

5.1.1 Estimation of Noncarcinogenic Risk

Noncarcinogenic effects are characterized in terms of a Hazard Index. This method assumes that there is an exposure below which adverse effects are not expected to occur (USEPA, 1989). The Hazard Index is calculated for each noncarcinogenic constituent of concern by dividing the average daily exposure concentration (ADE) in mg/m^3 by the chemical-specific reference concentration (RfC), also in mg/m^3, as shown in the equation below.

$$Hazard\ Index = \frac{ADE}{RfC}$$

Or, by dividing the average daily exposure dose (ADD) in mg/kg/day by the chemical-specific Reference Dose (RfD), also in units of mg/kg/day, as shown in the equation below.

$$Hazard\ Index = \frac{ADD}{RfD}$$

The Hazard Indices for each chemical are summed to yield a hazard index for that particular exposure pathway. Then for each receptor, hazard indices for each exposure pathway are summed to yield a total hazard index for the receptor. This hazard index is a screening hazard index. If the screening hazard index exceeds one, then further evaluation is needed to classify chemicals into groups that share similar mechanisms of action. In this case, a separate hazard index is calculated for each group of chemicals that share similar mechanisms of action. If the hazard index for each group does not exceed one, risks associated with exposure to the chemicals are not considered to be significant.

5.1.2 Estimation of Carcinogenic Risk

The potential for carcinogenic health effects is characterized in terms of an incremental lifetime cancer risk, an estimate of the incremental lifetime probability of an individual developing cancer above background cancer incidence. An incremental lifetime carcinogenic risk is calculated for each chemical in the inhalation pathway by multiplying the lifetime average daily exposure (ADE) in $\mu g/m^3$ by the chemical-specific Unit Risk in $(\mu g/m^3)^{-1}$ as shown in the equation below.

$$Risk = ADE \times Unit\ Risk$$

Likewise, the incremental lifetime cancer risk is calculated for each chemical in the ingestion and dermal exposure pathways by multiplying the lifetime average daily dose (ADD) in mg/kg/day by the chemical-specific cancer Slope Factor (SF) as shown in the equation below.

$$Risk = ADD \times SF$$

For each exposure pathway, the chemical-specific risks are summed together, then the risks for each exposure pathway are summed to yield a total risk for that particular medium. Finally, risks for all media of concern are summed to yield a total site risk for each receptor. A total incremental lifetime carcinogenic risk that does not exceed the acceptable total lifetime carcinogenic risk limit indicates that the exposure is unlikely to produce a significant risk of cancer above normal background rates. In accordance with the USEPA, the acceptable lifetime carcinogenic risk limit ranges between 1×10^{-4} and 1×10^{-6} (*i.e.*, one in 10,000 to one in 1,000,000). For purposes of this assessment, it was assumed that the acceptable risk limit was equal to 1×10^{-5} (*i.e.*, one in 100,000) in accordance with the Massachusetts Contingency Plan (1999).

5.2 RISKS TO HUMAN HEALTH

The potential risks to human health were evaluated for each plausible exposure pathway identified in Section 4.0. The intent was to provide reasonable, but conservative, assessment of the degree of risk associated with exposure to the chemicals under current and reasonably foreseeable future conditions.

5.2.1 Trespassers

This assessment assumed that older children could trespass on the former Tombarello & Sons property under current conditions. Tables 51 and 52 present the chronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil for areas outside of two "hot spots". Tables 53 and 54 present the chronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil for the "hot spot" in the vicinity of WSB-6. Tables 55 and 56 present the chronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil and for the "hot spot" on the southeast corner of the property.

The results show that for most of the property both noncarcinogenic and carcinogenic risks are within acceptable limits (Tables 51 and 52).[8] The results also show that direct contact with soil in the "hot spot" area in the vicinity of WSB-6 poses a significant risk of both noncarcinogenic and carcinogenic health effects (Tables 53 and 54). In this area, both the hazard index and incremental lifetime carcinogenic risks are greater than acceptable limits. The unacceptable risk is due to the concentration of PCBs. The results show that risks from direct contact with soil in the "hot spot" area in the southeast area are within acceptable limits (Tables 55 and 56).

5.2.2 Construction Workers

Construction workers may be exposed to soil during excavation activities via incidental ingestion and dermal contact with soil and inhalation of particulate matter. Tables 57 and 58 present the subchronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil (0-3' bgs) for areas outside of the "hot spots". Tables 59 and 60 present the subchronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil (0-3' bgs) for the "hot spot" in the vicinity of WSB-6. Tables 61 and 62 present the subchronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil (0-3' bgs) for the "hot spot" in the vicinity of CD-45. Tables 63 and 64 present the subchronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil (0-3' bgs) and for the "hot spot" on the southeast corner of the property. Tables 65 and 66 present the subchronic hazard indices and incremental lifetime carcinogenic risks for direct contact with site-wide deep soil (3-15' bgs) across the Site.

The results show that for areas outside the "hot spots" noncarcinogenic risks are above acceptable limits. The unacceptable risks are due primarily to PCBs, cadmium and lead. Because the total screening hazard index exceeds one, the hazard indices were evaluated by classifying the chemicals into groups that share similar mechanisms of action. In this case, a separate hazard index is calculated for each group of chemicals that share similar mechanisms of action. The

8 Since both noncancer and cancer risk estimates should be expressed as one significant figure only, the result indicates that this area does not pose a significant risk (MCP, 1999; USEPA, 1989).

bottom part of Table 57 presents the hazard indices for chemicals with similar mechanisms of action. PCBs and PAHs were grouped together because they cause similar noncancer health effects and they both can bind to the Ah receptor, which is the likely mechanism for noncarcinogenic effects. The metals were considered separately because they cause effects by distinct mechanisms. Likewise, petroleum compounds were also grouped together. The bold values in the table show the total hazard index for each group. The results indicate that noncarcinogenic health effects are above acceptable limits only for cadmium. It should be noted that the exposure point concentration for cadmium was based on the high concentration (716 mg/kg) detected in the sample from boring WSB-2. Concentrations of cadmium detected in samples from the remainder of the Site, which are more than 50-fold less than the concentration detected in boring WSB-2, would not pose an unacceptable risk. The results show that for areas outside the "hot spots" carcinogenic risks are within acceptable limits (Table 58).

The results show that direct contact with soil in the "hot spot" area in the vicinity of WSB-6 poses a significant risk of both noncarcinogenic or carcinogenic health effects (Tables 59 and 60). In this area, both the hazard index and incremental lifetime carcinogenic risks are greater than acceptable limits. The unacceptable risk is due to the concentration of PCBs. The results show that direct contact with soil in the "hot spot" area in the vicinity of CD-45 poses a significant risk of both noncarcinogenic or carcinogenic health effects (Tables 61 and 62). In this area, both the sub chronic hazard index and incremental lifetime carcinogenic risks are greater than acceptable limits. The results show that direct contact with soil in the "hot spot" area in the southeast area are within acceptable limits (Tables 63 and 64). The total subchronic hazard index is less than one for workers who could be exposed to surface soil (0-3' bgs) in the southeast area (Table 63). Table 64 shows that carcinogenic risks are also not significant for construction workers who could be exposed to surface soil (0-3' bgs) in the southeast area. It was also assumed that construction work could also take place in deeper soil. The results show that direct contact with deep soil is above the acceptable risk limit for noncarcinogenic effects (Table 65). The unacceptable risk is due to the concentrations of PCBs detected in the berm areas on the east and southeast sides of the property. Carcinogenic risks are within acceptable limits for deep soil (Table 66).

5.2.3 Utility Workers

Utility workers may be exposed to soil during excavation activities via incidental ingestion and dermal contact with soil and inhalation of particulate matter. Risks were calculated for utility maintenance work that could take place on the property in the future. Tables 67 and 68 present the chronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil (0-3' bgs) for areas outside of the "hot spots". Tables 69 and 70 present the chronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil (0-3' bgs) for the "hot spot" in the vicinity of WSB-6. Tables 71 and 72 present the chronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil (0-3' bgs) for the "hot spot" in the vicinity of CD-45. Tables 73 and 74 present the chronic hazard indices and incremental lifetime carcinogenic risks for direct contact with surface soil (0-3' bgs) for the "hot spot" on the southeast corner of the property. Tables 75 and 76 present the chronic hazard indices and incremental lifetime carcinogenic risks for direct contact with deep soil (3-15' bgs) across the Site.

The results show that for areas outside the "hot spots" noncarcinogenic risks and carcinogenic risks are carcinogenic risks are within acceptable limits (Tables 67 and 68). The results also show that direct contact with soil in the "hot spot" area in the vicinity of WSB-6 poses a significant risk of both noncarcinogenic or carcinogenic health effects (Tables 69 and 70). In this area, both the hazard index and incremental lifetime carcinogenic risks are greater than acceptable limits. The unacceptable risk is due to the concentration of PCBs. The results show that direct contact with soil in the "hot spot" area in the vicinity of CD-45 poses a significant risk of both noncarcinogenic or carcinogenic health effects (Tables 71 and 22). In this area, both the hazard index and incremental lifetime carcinogenic risks are greater than acceptable limits due to PCB concentrations. The results show that risks due to direct contact with surface soil in the southeast area are within acceptable limits (Tables 73 and 74). The total chronic hazard index is less than one for workers who could be involved in utility maintenance in the southeast area (Table 73). Table 74 shows that carcinogenic risks are also not significant for workers who

could work in the southeast area. It was also assumed that utility maintenance work could also take place in deeper soil. The results show that direct contact with deep soil does not pose a significant risk to utility maintenance workers (Tables 75 and 76).

6.0 SOURCES OF UNCERTAINTY

Uncertainty is inherent to each stage of the risk characterization process. It is therefore important to identify those uncertainties most critical to the evaluation and to consider their potential impact on the estimation of total site risk because a meaningful risk assessment is a tool for managing anticipated on-site activities. Many kinds of uncertainty enter into the calculation of carcinogenic and noncarcinogenic health risks. Decisions will be made based on a future use scenario, the estimated toxicity of the chemicals of concern, and estimated chemical concentrations in on-site media. Each of these three components is uncertain. First, actual future uses are likely to deviate from current assumptions about who will be on Site, where they will be active, how they will be exposed to the chemical, how long they will be exposed, how repeatedly, and so on. Second, the estimated toxicities are uncertain due to uncertainties in the toxicological data. Third, the chemical concentrations detected in media are uncertain because they are estimated from samples and there are random fluctuations in analytical results due to variations in sampling and analytical procedures. Standard practice in human health risk assessment adopts safety factors to deal with almost every form of uncertainty. The resulting safety factor is so large that levels of risks are certain to be overestimated by orders of magnitude.

A large component of uncertainty arises from the inability to predict future use scenarios. No one can precisely predict the duration or frequency of exposure, the soil ingestion rates, the skin surface area and the body weights of exposed receptors, chemical absorption rates, and the fraction of time spent in the areas of highest chemical concentrations. This creates a level of uncertainty in estimating health risks that can result in either overestimation or underestimation of health risks. One approach to address uncertainty in estimating risks is to use health-protective or conservative assumptions in developing remedial goals. Health-protective assumptions are those that systematically overstate the magnitude of health risks to ensure protection of public health. For example, in this assessment a soil ingestion rate for the

construction and utility worker scenarios was assumed to be 330 mg/day based on the USEPA recommendation. However, the MADEP recommends an ingestion rate equal to 100 mg/d (MADEP, 2002b). Thus, the risks estimated herein for the construction and utility worker scenarios are approximately three fold-higher than would be estimated using MADEP exposure assumptions. Risks due to exposure to PCBs are also likely to be overestimated because the USEPA recommends using an absorption factor for ingestion of soil equal to 100 percent while the MADEP recommends using an absorption factor equal to 85 percent. Likewise, dermal absorption factors for absorption of PCBs from soil are equal to 14 percent using USEPA recommendations while MADEP recommends a factor equal to 6.7 percent. Absorption of PCBs from soil via the gastrointestinal tract and through the skin is likely to be much less than the percentages assumed in this assessment.

Traditionally, the concern with uncertainty in risk assessment procedures stems from exposure assessment methods; however, the uncertainty associated with the exposure parameters seldom spans more than one or two orders of magnitude (10- to 100-fold). In contrast, the assumptions used to evaluate the toxicity of chemicals, rather than exposure, may represent the greatest sources of uncertainty. The potency of a chemical is most often overestimated by several orders of magnitude for noncarcinogenic compounds. In this assessment, noncarcinogenic health effects may be overestimated even more so for metals because subchronic RfDs have not been developed. Therefore, risks to construction workers, who could be exposed for only 120 days (*i.e.*, a subchronic exposure), are evaluated with the same toxicity factor as other receptors, who could be exposed over a working lifetime (*i.e.*, a chronic exposure). Thus, risks to construction workers, who may be exposed on a subchronic basis, are likely to be overestimated. The potency of a chemical is most often overestimated even more for carcinogenic compounds. The extrapolation of cancer potency from laboratory animals to humans, which forms the basis for the cancer risk estimates, may be associated with uncertainties ranging from three to five orders of magnitude (1,000- to 100,000-fold) for selected chemicals. Two general assumptions influence the uncertainty associated with toxicity values developed for chemicals: the assumption that cancer risks are linearly related to exposure (*i.e.*, that carcinogenic effects have no thresholds) and the assumption that exposure variables and toxicity constants formulated for lifetime cancer

risks are applicable for less than lifetime (subchronic) exposures. In addition, it is assumed that values for different chemicals are additive and that values for chemical surrogates are reasonable. To put this more concretely, the step from observing tumors in rats exposed to high doses of PCBs to estimating potential harm to an adult intermittently exposed to parts-per-million levels in soil is a very long one. To ensure human health and safety, standard practice and regulation require that toxicity values reflect "worst-case" results. For most chemicals, actual results — expected ones, in the statistical sense — are likely to result in three to five orders of magnitude less risk than estimates here.

Exposure point concentrations are uncertain because they are based on laboratory analyses of samples or they are based on mathematical models. Exposure point concentrations are dependent on the quality and nature of the sampling data from the site characterization. Sampling bias to areas where higher concentrations are expected or selection of specific analytical methodologies may affect the representativeness of the data. The true concentrations of these samples are probably different from those reported by the laboratory, because analytical results inherently fluctuate randomly about the true concentration. The true values are likely to be within a factor or two of the reported ones. In this assessment, exposure point concentrations were based on maximum concentrations or 95% UCL of the arithmetic mean concentrations according to USEPA guidance. Comparing these concentrations to the average or median concentrations detected on Site (Tables 8 and 9) suggests that the exposure point concentrations used in this assessment are likely to yield very conservative estimates of exposure doses.

In summary, risk is characterized by combining assumptions regarding the level of contamination, the exposure scenario and the toxic potency of the chemical. Since conservative assumptions are used throughout the process, the uncertainties associated with each of these assumptions become multiplicative, which generally results in an overall extremely conservative risk estimate.

7.0 SUMMARY

A Human Health Risk Assessment was performed to evaluate potential risks to human health under current and reasonably foreseeable future conditions. The risk assessment was performed in accordance with the USEPA and MADEP guidance documents. The detailed evaluation of human health risks was divided into four major sections: hazard identification, dose-response assessment, exposure assessment, and risk characterization. Risks were evaluated with respect to exposure to chemicals detected in soil and ground water.

The hazard identification section describes the procedures used to identify chemicals of concern. The Site is impacted primarily with PCBs, PAHs and metals in soil approximately zero to three feet below the ground surface. Ground water impacts are relatively minimal. Low concentrations of VOCs and some metals were detected. It was assumed that VOC concentrations detected in ground water would not result in significant impacts to ambient air or air within buildings that could be constructed. VOCs were also not detected in soil at significant concentrations. Thus, exposure via inhalation of air was not quantified. It was also assumed that future employees who could work at the property would not be exposed to soil because surface soil would be covered either by buildings or pavement. Exposure was quantified for the following scenarios:

- Trespassers, who could be exposed to chemicals detected in surface soil; and
- Construction workers and utility maintenance workers, who may be exposed to impacted soil at the property during excavation activities in the future.

Table 77 presents a summary of the human health risks for trespassers who could be exposed to surface soil at this Site under current conditions. The results indicate that chemicals detected in soil do not pose a significant risk to trespassers with the exception of the "hot spot" area in the vicinity of WSB-6. Table 78 presents a summary of the human health risks for construction workers who could be exposed to soil at this Site. The results indicate that chemicals detected in

soil do not pose a significant risk to construction with the exception of the "hot spots" area in the vicinity of WSB-6, CD-45, the area near WSB-2 (where high concentrations of cadmium were detected), and deeper soil in the berms on the east and southeast sides of the property. Table 79 presents a summary of the human health risks for utility maintenance workers who could be exposed to soil at this Site. The results indicate that chemicals detected in soil do not pose a significant risk to utility workers with the exception of the "hot spots" in the vicinity of WSB-6 and CD-45.

In summary, this risk assessment was performed to evaluate current and reasonably foreseeable future risk to human health. Based on the results of the human health risk assessment, No Significant Risk exists at this Site with the exception of exposure to surface soil in the vicinity of "hotspots" WSB-6, soil between one and two feet below the surface in location CD-45, and deeper soil in the berms located on the east and southeast sides of the Site. In addition, the concentration of cadmium detected in boring WSB-2, which was considered a potential "hot spot", poses a significant risk for construction workers.

8.0 LIMITATIONS

Reasonable care was used in performing all the analyses in this report. The analyses were based on information available at the time of the project and on the assumption that the information provided (such as the sampling and analytical data) is accurate and reliable. The analyses assume that the laboratory analytical data were checked for QA/QC requirements. The analysis assumes that both the source and extent of contamination have been adequately characterized. If additional information becomes available after the completion of this report, if the current or anticipated future uses of the property change after the submission of this report, or if the state and federal agencies change their procedures or their estimates of toxicological properties, then the report will need to be reviewed for appropriateness and accuracy in light of the new information.

9.0 REFERENCES

ACGIH, 1991. American Conference of Governmental and Industrial Hygienists. *Documentation of the Threshold limit Values and Biological Exposure Indicies*. Sixth Edition. Cincinnati, Ohio.

Agency for Toxic Substances and Disease Registry 1993. Toxicological Profile for Arsenic. PB-93-182376.

Agency for Toxic Substances and Disease Registry 1993. *Toxicological Profile for Cadmium.* PB-93-182418.

Agency for Toxic Substances and Disease Registry 1990. *Draft Toxicological Profile for Lead.*

Agency for Toxic Substances and Disease Registry 1995. Draft Toxicological Profile for Polychlorinated Biphenyls (Update).

Agency for Toxic Substances and Disease Registry. 1995. Toxicological Profile for Polycyclic Aromatic Hydrocarbons (Update).

Clayton, G.D. and Clayton, F.E. 1994. *Patty's Industrial Hygiene and Toxicology*. Volume II, 4th Edition. John Wiley & Sons, Inc., New York.

Gilbert, R.O., 1987. *Statistical Methods for Environmental Pollution Monitoring*, Van Nostrand Reinhold, New York.

Haley and Aldrich. 2001. *Immediate Response Action (IRA) Completion Report – American Recycling of Massachusetts, Lawrence, Massachusetts*. RTN: 3-18126. 15 May 2001.

Haley and Aldrich. 2002. *Laboratory data for additional sampling activities at American Recycling of Massachusetts, Lawrence, Massachusetts* .

Higgins Environmental Associates. 1999. *Immediate Response Action (IRA) Status Report.* July 1999.

Health Effects Summary Tables (HEAST). 1992; 1997. United States Environmental Protection Agency.

Integrated Risk Information System (IRIS). United States Environmental Protection Agency.

Klaassen, C.D. 1996. *Casarett and Doull's Toxicology – The Basic Science of Poisons*. 5th Edition. McGraw-Hill, New York

Lund, S.P., Simonsen, L, Hass, U., Ladefoged, O., Lam, H.R., and Ostergaard, G., 1995. *Dearomatized white spirit inhalation exposure causes long-lasting neurophysiological changes in rats*. Neurotox. Terat. 18:67-76.

Massachusetts Department of Environmental Protection 1994. *Background Documentation for the Development of the MCP Numerical Standards.*

Massachusetts Department of Environmental Protection 1995. *Guidance for Disposal Site Risk Characterization -- In Support of the Massachusetts Contingency Plan.*

Massachusetts Department of Environmental Protection 1996. *Draft Commercial/Industrial Shortform.*

Massachusetts Department of Environmental Protection 2002a. *Technical Update: Weighted Skin-soil Adherence Factors. Updates: Appendix B, Guidance for Disposal Site Risk Characterization -- In Support of the Massachusetts Contingency Plan.*

Massachusetts Department of Environmental Protection 2002b. *Technical Update: Calculation of an Enhanced Soil Ingestion Rate. Updates: Appendix B, Guidance for Disposal Site Risk Characterization -- In Support of the Massachusetts Contingency Plan.*

Massachusetts Department of Environmental Protection 2002c. *Technical Update: Characterization of Risks Due to Inhalation of Particulates by Construction Workers. Updates: Appendix B, Guidance for Disposal Site Risk Characterization -- In Support of the Massachusetts Contingency Plan.*

TPHCWG, 1997. *Development of Fraction Specific Reference Doses (RfDs) and Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH).* Total Petroleum Hydrocarbon Criteria Working Group Series, Amherst Scientific Publishers, Amherst, MA ISBN 1-884-940-13-7.

United States Environmental Protection Agency 1989. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A), Interim Final.* Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-89/002.

United States Environmental Protection Agency 1992. Dermal Exposure Assessment: Principles and Applications. Office of Research and Development, Washington, D.C. EPA/600/8-91/011B.

United States Environmental Protection Agency 1993. *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic hydrocarbons.* Office of Research and Development, Washington, D.C. EPA/600/R-93/089.

United States Environmental Protection Agency 1994. *Risk Updates. Number 2. USEPA Region One. Waste Management Division. August 1994.*

United States Environmental Protection Agency 1996. *Soil Screening Guidance: Technical Background Document.* Office of Solid Waste and Emergency Response, Washington, DC EPA/540/R-95/128.

United States Environmental Protection Agency 1997a. *Exposure Factors Handbook. Volumes 1through III.* Office of Research and Development, Washington, DC EPA/600/P-95/002Fa/Fb/Fc.

United States Environmental Protection Agency 1997b. *Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual Supplemental Guidance Dermal Risk Assessment Interim Guidance.* Office of Emergency and Remedial Response, Washington, DC NCEA-W-0364. External Review Draft.

United States Environmental Protection Agency 1998. *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Dermal Risk Assessment Interim Guidance, (workshop draft as cited by MADEP).*

United States Environmental Protection Agency 2002. *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.* Solid Waste and Emergency Response. OSWER 9355.4-24. December 2002.

United States Environmental Protection Agency 2003. *Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil.* Final (December 1996) EPA-540-R-03-001. January 2003.

Weston Solutions, Inc., 2004. *Phase 2 Comprehensive Site Assessment (CSA), Former Tombarello & Sons Property, 207 Marston Street, Lawrence, Massachusetts.*

W.Z. Baumgartner and Associates. 1998. *Environmental Site Assessment, John C. Tombarello and Sons, Inc., Lawrence, Massachusetts.* August 1998.

10.0 TABLES

TABLE 1
SOIL ANALYTICAL DATA SUMMARY - SURFACE SOIL
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	0-1 ' bgs			1-3 ' bgs		
	FREQUENCY OF DETECTION	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)	FREQUENCY OF DETECTION	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)
Total PCBs	94 / 107	13000	158.84	45 / 87	530	23.06
EPH						
C9-C18 Aliphatics	5 / 22	2400	345.46	4 / 13	1750	197.08
C19-C36 Aliphatics	22 / 22	23800	3314.68	9 / 13	6980	918.83
C11-C22 Aromatics	9 / 22	968	167.17	9 / 13	1955	459.59
SVOCs						
Acenaphthylene	2 / 18	19.4	3.80	3 / 6	19.4	4.42
Acenaphthene	3 / 18	7.8	2.34	0 / 0	<0.33	
Anthracene	12 / 18	36	9.95	4 / 6	36	8.12
Benzo(a)Anthracene	12 / 18	72	16.79	4 / 6	58.6	15.57
Benzo(a)Pyrene	12 / 18	44	14.68	4 / 6	32.2	9.44
Benzo(b)fluoranthene	14 / 18	61	17.87	4 / 6	39.5	11.20
Benzo(g,h,I)Perylene	12 / 18	69	16.93	4 / 6	6.84	2.71
Benzo(k)fluoranthene	14 / 18	53	13.80	4 / 6	22.6	6.35
Chrysene	15 / 18	84	24.44	4 / 6	60.4	15.99
Dibenzo(a,h)Anthracene	0 / 18	<0.33		0 / 0	<0.33	
Fluoroanthene	15 / 18	120	36.19	4 / 6	118	29.20
Fluorene	8 / 18	52	8.13	3 / 6	25.8	5.56
Indeno(1,2,3-cd)Pyrene	10 / 18	42	10.63	4 / 6	7.63	2.94
2-Methylnaphthalene	1 / 18	4.6	1.73	0 / 0	<0.33	
Naphthalene	0 / 18	<0.33		0 / 0	<0.33	
Phenanthrene	14 / 18	143	27.92	4 / 6	143	30.49
Pyrene	16 / 18	141	36.97	5 / 6	141	37.18
Dibenzofuran	2 / 6	14	3.25	1 / 6	14	3.24
Carbazole	3 / 6	16.2	3.92	3 / 6	16.2	3.92
Butylbenzylphthalate	1 / 6	0.825	0.38	1 / 6	4.14	1.50
Bis(2-ethylhexyl)phthalate	3 / 6	15.8	3.81	2 / 6	15.8	3.81
Metals						
Arsenic	17 / 18	69.4	11.74	17 / 18	15.6	8.38
Barium	18 / 18	552	167.52	18 / 18	867	205.59
Cadmium	28 / 32	10.6	3.59	10 / 18	716	42.64
Chromium	18 / 18	64	36.99	18 / 18	60.4	31.36
Lead	32 / 32	3470	590.51	15 / 18	3470	712.49
Mercury	17 / 18	7.13	1.47	12 / 18	2.71	1.03
Selenium	0 / 18	<0.95		0 / 18	<0.95	
Silver	2 / 18	20.8	1.62	3 / 18	1.71	0.61
VPH						
C5-C8 Aliphatics	2 / 8	0.51	0.08	0 / 0		
C9-C12 Aliphatics	2 / 8	2.7	0.56	0 / 0		
C9-C10 Aromatics	3 / 8	8.1	1.13	0 / 0		
Target VOCs						
Benzene	2 / 14	0.13	0.03	0 / 6	<0.002	
Ethylbenzene	3 / 14	0.28	0.06	0 / 6	<0.002	
MtBE	1 / 8	0.48	0.11	0 / 0		
Naphthalene	3 / 14	3.4	0.74	0 / 6	<0.002	
Toluene	5 / 14	0.85	0.10	0 / 6	<0.002	
Xylenes	4 / 14	2.17	0.35	0 / 6	<0.002	
VOCSs						
Trichlorofluoromethane	8 / 14	2.7	0.62	0 / 6	<0.002	
Tetrachloroethene	2 / 14	0.22	0.04	0 / 6	<0.002	
1,1,1-Trichloroethane	1 / 14	0.25	0.03	0 / 6	<0.002	

TABLE 2
SOIL ANALYTICAL DATA SUMMARY - SURFACE SOIL (3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	FREQUENCY OF DETECTION	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)	MEDIAN CONCENTRATION (mg/kg)
Total PCBs	14 / 19	78	17.90	8.4
EPH				
C9-C18 Aliphatics	1 / 5	45	22.86	15.575
C19-C36 Aliphatics	3 / 5	7300	1646.95	77.6
C11-C22 Aromatics	2 / 5	1670	394.29	15.7
Metals				
Arsenic	10 / 10	11	5.93	4.53
Barium	10 / 10	1480	200.31	22.7
Cadmium	3 / 10	20	2.93	0.4975
Chromium	10 / 10	220	33.35	9.395
Lead	9 / 10	2230	376.47	84.37
Mercury	4 / 10	1.29	0.24	0.05
Selenium	0 / 10	<0.99		
Silver	1 / 10	2.21	0.63	0.485

TABLE 3
SELECTION OF CHEMICALS OF CONCERN
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	0-1' bgs MAXIMUM CONCENTRATION (mg/kg)	1-3' bgs MAXIMUM CONCENTRATION (mg/kg)	3-15' bgs MAXIMUM CONCENTRATION (mg/kg)	0-15' MAXIMUM CONCENTRATION (mg/kg)	Region IX Industrial Soil PRGs[3] (mg/kg)	Ratio of Maximum to PRG[4]	Pass Screening?[5]
Noncarcinogenic NCOC							
SVOCs							
Acenaphthylene[2]	19.4	19.4		19.4	29000	0.0007	YES
Acenaphthene	7.8	<0.33		7.8	29000	0.0003	YES
Anthracene	36	36		36	250000	0.0001	YES
Benzo(g,h,i)perylene[2]	69	6.84		69	29000	0.0024	YES
Fluoroanthene	120	118		120	22000	0.0055	YES
Fluorene	52	25.8		52	26000	0.0020	YES
2-Methylnaphthalene[2]	4.6	<0.33		4.6	190	0.0242	YES
Phenanthrene[2]	143	143		143	26000	0.0055	YES
Pyrene	141	141		141	29000	0.0049	YES
Dibenzofuran	14	14		14	3100	0.0045	YES
Carbazole	16.2	16.2		16.2	86	0.1884	YES
Butylbenzylphthalate	0.825	4.14		4.14	120000	0.0000	YES
Bis(2-ethylhexyl)phthalate	15.8	15.8		15.8	120	0.1317	YES
Metals							
Arsenic	69.4	15.6	11	69.4	260.0	0.2669	YES
Barium	552	867	1480	1480	67000	0.0221	YES
Chromium	64	60.4	220	220	1500000	0.0001	YES
Mercury	7.13	2.71	1.29	7.13	310	0.0230	YES
Silver	20.8	1.71	2.21	20.8	5100	0.0041	YES
Target VOCs							
Benzene	0.13	<0.002		0.13	24	0.0054	YES
Ethylbenzene	0.28	<0.002		0.28	7400	0.0000	YES
MtBE	0.48			0.48	160	0.0030	YES
Naphthalene	3.4	<0.002		3.4	190	0.0179	YES
Toluene	0.85	<0.002		0.85	2200	0.0004	YES
Xylenes	2.17	<0.002		2.17	900	0.0024	YES
VOCSs							
Trichlorofluoromethane	2.7	<0.002		2.7	1300	0.0021	YES
Tetrachloroethene	0.22	<0.002		0.22	1800	0.0001	YES
1,1,1-Trichloroethane	0.25	<0.002		0.25	6900	0.00004	YES
Total Hazard Index						**0.71770**	
Noncarcinogenic COC							
Lead[1]	3470	3470	2230	3470	800	4.3375	NO
Cadmium	10.6	716	20	716	450	1.5911	NO

TABLE 3
SELECTION OF CHEMICALS OF CONCERN
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	0-1' bgs MAXIMUM CONCENTRATION (mg/kg)	1-3' bgs MAXIMUM CONCENTRATION (mg/kg)	3-15' bgs MAXIMUM CONCENTRATION (mg/kg)	0-15' MAXIMUM CONCENTRATION (mg/kg)	Region IX Industrial Soil PRGs[3] (mg/kg)	Ratio of Maximum to PRG[4]	Pass Screening?[5]
Potential Carcinogenic NCOC							
Benzene	0.13	<0.002		0.13	1.3	1.00E-07	YES
Tetrachloroethene	0.22	<0.002		0.22	3.4	6.47E-08	YES
Bis(2-ethylhexyl)phthalate	15.8	15.8		15.8	120	1.32E-07	YES
Total ILCR						**2.96E-07**	
Potential Carcinogenic COC							
Total PCBs	13000	530	78	13000	0.74	1.76E-02	NO
SVOCs							
Benzo(a)Anthracene	72	58.6		72	2.1	3.43E-05	NO
Benzo(a)Pyrene	44	32.2		44	0.21	2.10E-04	NO
Benzo(b)fluoranthene	61	39.5		61	2.1	2.90E-05	NO
Benzo(k)fluoranthene	53	22.6		53	21	2.52E-06	NO
Chrysene	84	60.4		84	210	4.00E-07	NO
Indeno(1,2,3-cd)Pyrene	42	7.63		42	2.1	2.00E-05	NO
Metals							
Arsenic	69.4	15.6	11	69.4	1.6	4.34E-05	NO
Cadmium	10.6	716	20	716	300	2.39E-06	NO

1 USEPA, Lead Workgroups Frequently Asked Questions

2 Surrogates based on similarly structured PAH compound.

3 USEPA Region IX PRG Table for Industrial Soil, October, 2002.

NCOC = Not a chemical of concern

COC = Chemical of concern.

4 For carcinogens, risk is based on the ratio of the maximum concentration:PRG multiplied by 1×10^{-6}. For noncarcinogens, the hazard index is based on the unadjusted ratio of the maximum concentration:PRG.

5 COC identified such that cumulative site incremental lifetime carcinogenic risk (ILCR) and hazard index do not exceed targets equal to 1×10^{-6} (risk) and one (sum of hazard indices).

TABLE 4
GROUND WATER ANALYTICAL DATA
FORMER TOMBARELLO PROPERTY
LAWRENCE, MASSACHUSETTS

	Baumgartner					Higgins				Weston			
	MW-2 7/9/98 ug/l	MW-2A 7/9/98 ug/l	MW-3 7/9/98 ug/l	MW-3A 7/9/98 ug/l	MW-4 7/9/98 ug/l	MW1 6/10/99 ug/l	MW5 6/10/99 ug/l	MW6 6/10/99 ug/l	MW7 6/10/99 ug/l	MW1 2/13/03 ug/l	MW5 2/13/03 ug/l	MW6 2/13/03 ug/l	MW7 2/13/03 ug/l
VOCs													
Acetone	<10	<10	<10	<10	<10	<15	<15	<15	<15	<25	<25	<25	**140**
Benzene	**2.5**	<2	**13.6**	**3.4**	<2	<1	<1	<1	**<1**	<1	<1	<1	**4.55**
Chloroethane	<2	<2	<2	<2	<2	<1	<1	<1	**13**	<2	<2	<2	<2
1,1-Dichloroethane	**113.8**	<2	**74.2**	**16.7**	<2	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	**2.2**	<2	**9.2**	**2.4**	<2	<1	<1	**<1**	<1	<1	<1	<1	**57.6**
4-Methyl-2-pentanone	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	4.1	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	**3.97**	**3.27**
Tetrachloroethene	<2	<2	**7.1**	**2.6**	<2	<1	<1	<1	<1	<1	**1.53**	**3.61**	**38.2**
Toluene	**3**	<2	2	<2	<2	<1	<1	**2**	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	**14.5**	<2	**5.3**	**3.9**	<2	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	<2	**3.2**	**2.7**	**4.4**	**3.2**	<1	<1	<13	<1	<1	<1	**56.8**	**17.6**
1,2,4-Trimethylbenzene	**2.4**	**3.3**	**3.3**	**2.8**	**3.3**	<1	<1	<1	<1	<1	**1.1**	**2.04**	**2.83**
Vinyl Chloride	<2	<2	<2	<2	<2	<1	<1	<1	<1	<2	<2	<2	**4.66**
Xylenes	**5.7**	<2	<2	<2	<2	<1	<1	<1	<1	<2	**2.32**	**2.06**	<2
MTBE	NA	NA	NA	NA	NA	<1	<1	**5**	<1	<1	**125**	**4.92**	**1320**
Pesticides/PCBs													
phenolics	<50	NA	**72**	NA	<50								
Metals													
Arsenic	<5	<5	<5	<5	<5	<10	<10	<10	<10	<50	<50	<50	<50
Barium	**177**	**49**	**70**	**48**	**108**	NA	NA	NA	NA	<50	**70**	**70**	<50
Cadmium	<1	<1	<1	<1	<1	NA	NA	NA	NA	<5	<5	<5	<5
Chromium	<5	<5	<5	<5	<5	NA	NA	**13**	**16**	<20	<20	<20	<20
Lead,	<3	<3	<3	<3	**6**	<5	<5	<5	<5	<5	**6**	<5	<5
Mercury,	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA	<0.5	<0.5	<0.5	<0.5
Selenium	<5	<5	<5	<5	<5	NA	NA	NA	NA	<10	<10	<10	<10
Silver	<5	<5	<5	<5	<5	NA	NA	NA	NA	<5	<5	<5	<5
SVOCs	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
VPH	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
C5-C8 Aliphatics						<1	<1						
C9-12 Aliphatics						<1	<1						
C9-C10 Aromatics						<1	<1						
Target VOCs	NA	NA	NA	NA	NA			NA	NA	NA	NA	NA	NA
Benzene						<1	<1						
Ethylbenzene						<1	<1						
MtBe						<1	<1						
Naphthalene						<1	<1						
Toluene						<1	<1						
xylenes						<1	<1						
EPH	NA	NA	NA	NA	NA			NA	NA	NA	NA	NA	NA
C9-C18 Aliphatics						<10	<10						
C19-C36 Aliphatics						<10	<10						
C11-C22 Aromatics						<10	<10						
PAHs	NA	NA	NA	NA	NA			NA	NA	NA	NA	NA	NA
Acenaphthalene						<10	<10						
Acenaphthene						<10	<10						
Anthracene						<10	<10						
Benzo(a)Anthracene						<0.1	<0.1						
Benzo(a)Pyrene						<0.1	<0.1						
Benzo(b)fluoranthene						<0.1	<0.1						
Benzo(g,h,I)Perylene						<0.1	<0.1						
Benzo(k)fluoranthene						<0.1	<0.1						
Chrysene						<0.1	<0.1						
Dibenzo(a,h)Anthracene						<0.1	<0.1						
Fluoroanthene						<10	<10						
Fluorene						<10	<10						
Indeno(1,2,3-cd)Pyrene						<0.1	<0.1						
2-Methylnaphthalene						<5	<5						
Naphthalene						<10	<10						
Phenanthrene						<10	<10						
Pyrene						<10	<10						

TABLE 5
SEDIMENT ANALYTICAL DATA SUMMARY - ON SITE CATCH BASIN
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	Catch Basin mg/kg
EPH	
C9-C18 Aliphatics	<403
C19-C36 Aliphatics	4,850
C11-C22 Aromatics	2,140
PCBs	
Aroclor 1016	<0.538
Aroclor 1221	<0.538
Aroclor 1232	<0.538
Aroclor 1242	<0.538
Aroclor 1248	<0.538
Aroclor 1254	<0.538
Aroclor 1260	1.64
Metals	
Arsenic	16.9
Barium	598
Cadmium	8.96
Chromium	72.7
Lead	1,480
Mercury	2.04
Selenium	<10.6
Silver	1.22

Sample collected on 2/12/2003.

[redacted]BLE 6
HUMAN HEALTH-BASED TOXICITY VALUES
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Subchronic RfD (mg/kg/day)	Chronic RfD (mg/kg/day)		Target Organ	RfC (mg/m^3)		Target Organ	Slope Factor $(mg/kg/day)^{-1}$		Inhalation Unit Risk $(ug/m^3)^{-1}$	CLASS
PCBs	5.00E-05	2.00E-05		immune				2.00E+00		1.00E-04	B2
EPH											
C9-C18 aliphatics	1.00E+00	1.00E-01	e		1.00E+00	f					
C19-C36 aliphatics	2.00E+01	2.00E+00	e								
C10-C22 aromatics	3.00E-01	3.00E-02	e								
PAHs											
benzo(a)anthracene	4.00E-01	4.00E-02	d					7.30E-01	c		B2
benzo(a)pyrene	4.00E-01	4.00E-02	d					7.30E+00			B2
benzo(b)fluoranthene	4.00E-01	4.00E-02	d					7.30E-01	c		B2
benzo(k)fluoranthene	4.00E-01	4.00E-02	d					7.30E-02	c		B2
chrysene	4.00E-01	4.00E-02	d					7.30E-03	c		B2
indeno(1,2,3-cd)pyrene	4.00E-01	4.00E-02	d					7.30E-01	c		B2
Metals											
arsenic		3.00E-04		keratosis (skin)	No data			1.50E+00			A
cadmium		5.00E-04		kidney	Pending					1.80E-03	B1
lead		7.50E-04	a	CNS/PNS	Pending						
VPH											
C5-C8 aliphatics	6.00E-01	6.00E-02	e		2.00E-01	e					
C9-C12 aliphatics	1.00E+00	1.00E-01	e		1.00E+00	f					
C9-C10 aromatics	1.00E+00	1.00E-01	d		1.00E-01	d					

All data cited from IRIS unless indicated otherwise
a MADEP 1994
b HEAST 1992; 1997
c USEPA, 1993
d Based on a compound with a similar structure (SAR).
e MADEP 2002a
f TPHCWG, 1997
NA = Data unavailable for quantitative risk assessment.
NOEL - No observable effects level.

TABLE 7
EXPOSURE ASSUMPTIONS
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

Parameter	Receptor	Assumption	Reference
Averaging period	All	75 yr	USEPA, 1997a
Exposure frequency	Trespassers	26 d/yr	Site-specific
	Construction workers	120 d/yr	Site-specific
	Utility maintenance workers	5 d/yr	Site-specific
Exposure duration	Trespassers	4 hr/d	Site-specific
	Construction workers	8 hr/d	USEPA, 1991
	Utility maintenance workers	8 hr/d	USEPA, 1991
Exposure period	Construction workers	1 yr	Site-specific
	Trespassers	12 yr	Site-specific
	Utility maintenance workers	25 yr	USEPA, 1997a
Body weights	Adults	71.8 kg	USEPA, 1997a
	Children 7-18	46.88	USEPA, 1997a
Total body surface area (BSA)	Adults	20,000 cm^2	USEPA, 1997a
	Children 7-18 yr	13,100 cm^2	USEPA, 1997a
Dermal absorption factors from soil	Chemicals specific		USEPA, 1997b
Soil adherence	Construction/utility workers	0.29 mg/cm^2	USEPA, 1992; 1998; MADEP 2002
	Trespassers	0.14 mg/cm^2	USEPA, 1992; 1998; MADEP 2002
Dermal contact with soil	Construction/utility workers	3,477 cm^2	USEPA, 1992; 1998; MADEP 2002
	Trespassers	2928 cm^2	USEPA, 1992; 1998; MADEP 2002
Ingestion of soil	Trespassers	50 mg/d	USEPA, 1997a
	Construction/utility worker	330 mg/d	USEPA, 2002
Particulate emission factor	Trespassers	1.32E-09	USEPA, 1996
PM_{10}	Construction/utility worker	60 ug/m^3	MADEP, 2002
Inhalation rate	Children 7-18-moderate activity	1.0 m^3/hr	USEPA, 1997a
	Construction/utility worker	3.6 m^3/hr	MADEP, 2002

TABLE 8
SUMMARY STATISTICS FOR SURFACE SOIL (0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	OUTSIDE HOT SPOTS				
	NUMBER OF SAMPLES	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)	MEDIAN CONCENTRATION (mg/kg)	95% UCL CONCENTRATION* (mg/kg)
Total PCBs	85	92	13.18	4.80	27.650
EPH					
C9-C18 Aliphatics	15	2400	298.04	15.80	
C19-C36 Aliphatics	15	23800	3232.80	700.00	
C11-C22 Aromatics	15	968	163.05	19.00	
SVOCs					
Benzo(a)Anthracene	13	58.6	15.37	7.70	
Benzo(a)Pyrene	13	44	14.80	10.00	
Benzo(b)fluoranthene	13	40	16.45	9.60	
Benzo(k)fluoranthene	13	34	12.28	8.96	
Chrysene	13	60.4	22.79	15.00	
Indeno(1,2,3-cd)Pyrene	13	42	12.21	4.15	
Metals					
Arsenic	14	69.4	12.53	8.74	19.42
Cadmium	24	10.6	3.46	3.11	
Lead	24	3470	638.67	355.50	
VPH					
C5-C8 Aliphatics	4	0.51	0.14	0.01	
C9-C12 Aliphatics	4	2.7	0.68	0.01	
C9-C10 Aromatics	4	8.1	2.10	0.15	

* Based on lognormal distribution.

TABLE 8
SUMMARY STATISTICS FOR SURFACE SOIL (0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	WSB-6 HOT SPOT			
	NUMBER OF SAMPLES**	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)	MEDIAN CONCENTRATION (mg/kg)
Total PCBs	8	13000	1978.24	27.5
EPH				
C9-C18 Aliphatics	1	<28.4		
C19-C36 Aliphatics	1	311		
C11-C22 Aromatics	1	527		
SVOCs				
Benzo(a)Anthracene	0			
Benzo(a)Pyrene	0			
Benzo(b)fluoranthene	0			
Benzo(k)fluoranthene	0			
Chrysene	0			
Indeno(1,2,3-cd)Pyrene	0			
Metals				
Arsenic	1	17.9		
Cadmium	1	1.61		
Lead	1	92.2		
VPH				
C5-C8 Aliphatics	0			
C9-C12 Aliphatics	0			
C9-C10 Aromatics	0			

	SOUTHEAST CORNER HOT SPOT			
	NUMBER OF SAMPLES**	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)	MEDIAN CONCENTRATION (mg/kg)
Total PCBs	14	16.9	3.77	3.05
EPH				
C9-C18 Aliphatics	6	2000	519.22	6.95
C19-C36 Aliphatics	6	8800	4020.00	3850.00
C11-C22 Aromatics	6	620	117.48	5.19
SVOCs				
Benzo(a)Anthracene	5	72	20.47	7.60
Benzo(a)Pyrene	5	38	14.35	8.90
Benzo(b)fluoranthene	5	61	21.57	13.00
Benzo(k)fluoranthene	5	53	17.75	9.90
Chrysene	5	84	28.72	18.00
Indeno(1,2,3-cd)Pyrene	5	9.1	6.50	6.85
Metals				
Arsenic	2	10.7	6.27	6.27
Cadmium	6	8.19	4.72	5.43
Lead	6	980	514.50	610.00
VPH				
C5-C8 Aliphatics	4	0.062	0.023	0.011
C9-C12 Aliphatics	4	1.7	0.433	0.012
C9-C10 Aromatics	4	0.58	0.153	0.012

TABLE 9
SUMMARY STATISTICS FOR SOIL (0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	OUTSIDE HOT SPOTS				
	NUMBER OF SAMPLES	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)	MEDIAN CONCENTRATION (mg/kg)	95% UCL CONCENTRATION* (mg/kg)
Total PCBs	135	92	9.74	2.60	21.960
EPH					
C9-C18 Aliphatics	25	2400	207.95	16.20	
C19-C36 Aliphatics	25	23800	2096.58	557.00	
C11-C22 Aromatics	25	983	205.72	70.60	
SVOCs					
Benzo(a)Anthracene	13	58.6	15.37	7.70	
Benzo(a)Pyrene	13	44	14.80	10.00	
Benzo(b)fluoranthene	13	40	16.45	9.60	
Benzo(k)fluoranthene	13	34	12.28	0.00	
Chrysene	13	60.4	22.79	15.00	
Indeno(1,2,3-cd)Pyrene	13	42	12.21	4.15	
Metals					
Arsenic	27	69.4	10.10	7.33	14.69
Cadmium	37	716	22.53	2.98	14.10
Lead	37	3470	608.51	381.00	3608.34
VPH					
C5-C8 Aliphatics	4	0.51	0.137	0.014	
C9-C12 Aliphatics	4	2.7	0.685	0.014	
C9-C10 Aromatics	4	8.1	2.104	0.152	

* Based on lognormal distribution.

	WSB-6 HOT SPOT			
	NUMBER OF SAMPLES	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)	MEDIAN CONCENTRATION (mg/kg)
Total PCBs	21	13000	780.63	7.10
EPH				
C9-C18 Aliphatics	2	<28.4		
C19-C36 Aliphatics	2	311	163.53	
C11-C22 Aromatics	2	527	271.53	
SVOCs				
Benzo(a)Anthracene	0			
Benzo(a)Pyrene	0			
Benzo(b)fluoranthene	0			
Benzo(k)fluoranthene	0			
Chrysene	0			
Indeno(1,2,3-cd)Pyrene	0			
Metals				
Arsenic	2	17.9	13.21	
Cadmium	2	1.61	1.01	
Lead	2	92.2	48.10	
VPH				
C5-C8 Aliphatics	0			
C9-C12 Aliphatics	0			
C9-C10 Aromatics	0			

TABLE 9
SUMMARY STATISTICS FOR SOIL (0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	SOUTHEAST CORNER HOT SPOT			
	NUMBER OF SAMPLES	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)	MEDIAN CONCENTRATION (mg/kg)
Total PCBs	16	16.9	4.16	3.20
EPH				
C9-C18 Aliphatics	7	2000	695.04	7.05
C19-C36 Aliphatics	7	8800	4442.86	5000.00
C11-C22 Aromatics	7	1955	379.98	6.85
SVOCs				
Benzo(a)Anthracene	5	72	20.47	7.60
Benzo(a)Pyrene	5	38	14.35	8.90
Benzo(b)fluoranthene	5	61	21.57	13.00
Benzo(k)fluoranthene	5	53	17.75	9.90
Chrysene	5	84	28.72	18.00
Indeno(1,2,3-cd)Pyrene	5	9.1	6.50	6.85
Metals				
Arsenic	3	14.05	8.87	10.70
Cadmium	7	8.19	4.94	5.45
Lead	7	1240	618.14	670.00
VPH				
C5-C8 Aliphatics	4	0.062	0.023	0.011
C9-C12 Aliphatics	4	1.7	0.433	0.012
C9-C10 Aromatics	4	0.58	0.153	0.012

	CD 4-5 HOT SPOT			
	NUMBER OF SAMPLES	MAXIMUM CONCENTRATION (mg/kg)	AVERAGE CONCENTRATION (mg/kg)	MEDIAN CONCENTRATION (mg/kg)
Total PCBs	17	530	68.10	20.10
EPH				
C9-C18 Aliphatics	2	<29.2		
C19-C36 Aliphatics	2	545	521.00	
C11-C22 Aromatics	2	1140	661.00	
SVOCs				
Benzo(a)Anthracene	0			
Benzo(a)Pyrene	0			
Benzo(b)fluoranthene	0			
Benzo(k)fluoranthene	0			
Chrysene	0			
Indeno(1,2,3-cd)Pyrene	0			
Metals				
Arsenic	2	6.75	6.12	
Cadmium	2	3.86	2.84	
Lead	2	563	476.00	
VPH				
C5-C8 Aliphatics	0			
C9-C12 Aliphatics	0			
C9-C10 Aromatics	0			

TABLE 10
EXPOSURE POINT CONCENTRATIONS FOR TRESPASSER SCENARIO
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	OUTSIDE HOTSPOTS (mg/kg)	WSB-6 HOTSPOT (mg/kg)	SE CORNER HOTSPOT (mg/kg)
Total PCBs	27.65	13000	16.9
EPH			
C9-C18 Aliphatics	2400	14.2	2000
C19-C36 Aliphatics	23800	311	8800
C11-C22 Aromatics	968	527	620
SVOCs			
Benzo(a)Anthracene	58.6		72
Benzo(a)Pyrene	44		38
Benzo(b)fluoranthene	40		61
Benzo(k)fluoranthene	34		53
Chrysene	60.4		84
Indeno(1,2,3-cd)Pyrene	42		9.1
Metals			
Arsenic	19.42	17.9	10.7
Cadmium	10.6	1.61	8.19
Lead	3470	92.2	980
VPH			
C5-C8 Aliphatics	0.51		0.062
C9-C12 Aliphatics	2.7		1.7
C9-C10 Aromatics	8.1		0.58

TABLE 11
EXPOSURE POINT CONCENTRATIONS FOR CONTRUCTION/UTILITY WORK
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	OUTSIDE HOT SPOTS (0-3' bgs) mg/kg	SOUTHEAST CORNER (0-3' bgs) mg/kg	WSB-6 HOT SPOT (0-3' bgs) mg/kg	CD 4 - 5 HOT SPOT (0-3' bgs) mg/kg	SITEWIDE (3-15' bgs) mg/kg
PCBs	21.96	17	13000	530	78
EPH					
C9-C18 Aliphatics	2400	2000			45
C19-C36 Aliphatics	23800	8800	311	545	7300
C11-C22 Aromatics	983	1955	527	1140	1670
SVOCs					
Benzo(a)Anthracene	58.6	72.00			
Benzo(a)Pyrene	44	38.00			
Benzo(b)fluoranthene	40	61.00			
Benzo(k)fluoranthene	34	53.00			
Chrysene	60.4	84.00			
Indeno(1,2,3-cd)Pyrene	42	9.10			
Metals					
Arsenic	14.58	14.05	17.90	6.75	11
Cadmium	716	8.19	1.61	3.86	20
Lead	3470	1240.00	92.20	563.00	2230
VPH					
C5-C8 Aliphatics	0.51	0.06			
C9-C12 Aliphatics	2.7	1.70			
C9-C10 Aromatics	8.1	0.58			

[redacted]LE 1[redacted]

AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
TRESPASSER SCENARIO (OUTSIDE HOT SPOT AREAS 0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	27.65	50	26	12	1.00E-06	46.88	365	12	2.10E-06	75	3.36E-07
EPH											
C9-C18 Aliphatics	2400	50	26	12	1.00E-06	46.88	365	12	1.82E-04		
C19-C36 Aliphatics	23800	50	26	12	1.00E-06	46.88	365	12	1.81E-03		
C11-C22 Aromatics	968	50	26	12	1.00E-06	46.88	365	12	2.65E-05		
SVOCs											
Benzo(a)anthracene	58.6	50	26	12	1.00E-06	46.88	365	12	4.45E-06	75	7.12E-07
Benzo(a)pyrene	44	50	26	12	1.00E-06	46.88	365	12	3.34E-06	75	5.35E-07
Benzo(b)fluoranthene	40	50	26	12	1.00E-06	46.88	365	12	3.04E-06	75	4.86E-07
Benzo(k)fluoranthene	34	50	26	12	1.00E-06	46.88	365	12	2.58E-06	75	4.13E-07
Chrysene	60.4	50	26	12	1.00E-06	46.88	365	12	4.59E-06	75	7.34E-07
Indeno(1,2,3-cd)pyrene	42	50	26	12	1.00E-06	46.88	365	12	3.19E-06	75	5.11E-07
Metals											
Arsenic	19.42	50	26	12	1.00E-06	46.88	365	12	1.48E-06	75	2.36E-07
Cadmium	10.6	50	26	12	1.00E-06	46.88	365	12	8.05E-07		
Lead	3470	50	26	12	1.00E-06	46.88	365	12	3.16E-05		
VPH											
C5-C8 Aliphatics	0.51	50	26	12	1.00E-06	46.88	365	12	3.87E-08		
C9-C12 Aliphatics	2.7	50	26	12	1.00E-06	46.88	365	12	2.05E-07		
C9-C10 Aromatics	8.1	50	26	12	1.00E-06	46.88	365	12	6.15E-07		

TABLE 13
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
TRESPASSER SCENARIO (OUTSIDE HOT SPOT AREAS)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	27.65	1.00E-06	2928	0.140	0.14	26	12	46.88	365	12	2.41E-06	75	3.86E-07
EPH													
C9-C18 Aliphatics	2400	1.00E-06	2928	0.14	0.5	26	12	46.88	365	12	7.47E-04		
C19-C36 Aliphatics	23800	1.00E-06	2928	0.14	0.1	26	12	46.88	365	12	1.48E-03		
C11-C22 Aromatics	968	1.00E-06	2928	0.14	0.1	26	12	46.88	365	12	6.03E-05		
SVOCs													
Benzo(a)anthracene	58.6	1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	4.74E-06	75	7.59E-07
Benzo(a)pyrene	44	1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	3.56E-06	75	5.70E-07
Benzo(b)fluoranthene	40	1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	3.24E-06	75	5.18E-07
Benzo(k)fluoranthene	34	1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	2.75E-06	75	4.40E-07
Chrysene	60.4	1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	4.89E-06	75	7.83E-07
Indeno(1,2,3-cd)pyrene	42	1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	3.40E-06	75	5.44E-07
Metals													
Arsenic	19.42	1.00E-06	2928	0.140	0.03	26	12	46.88	365	12	3.63E-07	75	5.81E-08
Cadmium	10.6	1.00E-06	2928	0.140	0.1	26	12	46.88	365	12	6.60E-07		
Lead	3470	1.00E-06	2928	0.140	0.01	26	12	46.88	365	12	2.16E-05		
VPH													
C5-C8 Aliphatics	0.51	1.00E-06	2928	0.14	1	26	12	46.88	365	12	3.18E-07		
C9-C12 Aliphatics	2.7	1.00E-06	2928	0.14	0.5	26	12	46.88	365	12	8.41E-07		
C9-C10 Aromatics	8.1	1.00E-06	2928	0.14	0.2	26	12	46.88	365	12	1.01E-06		

TABLE 1

AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
TRESPASSER SCENARIO (OUTSIDE HOT SPOT AREAS)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Soil Concentration (mg/kg)	PEF (m^3/kg)	VR (m^3/d)	EF (d/yr)	EP (yr)	BW (kg)	C_1 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	27.65	1.32E+09	4	26	12	46.88	365	12	1.27E-10	75	2.04E-11
EPH											
C9-C18 Aliphatics	2400	1.32E+09	4	26	12	46.88	365	12	1.11E-08		
C19-C36 Aliphatics	23800	1.32E+09	4	26	12	46.88	365	12	1.10E-07		
C11-C22 Aromatics	968	1.32E+09	4	26	12	46.88	365	12	4.46E-09		
SVOCs											
Benzo(a)anthracene	58.6	1.32E+09	4	26	12	46.88	365	12	2.70E-10	75	4.32E-11
Benzo(a)pyrene	44	1.32E+09	4	26	12	46.88	365	12	2.03E-10	75	3.24E-11
Benzo(b)fluoranthene	40	1.32E+09	4	26	12	46.88	365	12	1.84E-10	75	2.95E-11
Benzo(k)fluoranthene	34	1.32E+09	4	26	12	46.88	365	12	1.57E-10	75	2.50E-11
Chrysene	60.4	1.32E+09	4	26	12	46.88	365	12	2.78E-10	75	4.45E-11
Indeno(1,2,3-cd)pyrene	42	1.32E+09	4	26	12	46.88	365	12	1.93E-10	75	3.09E-11
Metals											
Arsenic	19.42	1.32E+09	4	26	12	46.88	365	12	8.94E-11	75	1.43E-11
Cadmium	10.6	1.32E+09	4	26	12	46.88	365	12	4.88E-11		
Lead	3470	1.32E+09	4	26	12	46.88	365	12	1.60E-08		
VPH											
C5-C8 Aliphatics	0.51	1.32E+09	4	26	12	46.88	365	12	2.35E-12		
C9-C12 Aliphatics	2.7	1.32E+09	4	26	12	46.88	365	12	1.24E-11		
C9-C10 Aromatics	8.1	1.32E+09	4	26	12	46.88	365	12	3.73E-11		

CHEMICALS	Soil Concentration (mg/kg)	PEF (m^3/kg)	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (d/hr)	C_2 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals									
cadmium	10.6	1.32E+09	26	4	12.0	4.17E-02	365	75	1.53E-08

TABLE 15
AVERAGE DAILY EXPOSURE DOSES -- INGESTION OF SOIL
TRESPASSER SCENARIO (HOT SPOT WSB-6 - 0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	13000	50	26	12	1.00E-06	46.88	365	12	9.88E-04	75	1.58E-04
EPH											
C9-C18 Aliphatics	14.2	50	26	12	1.00E-06	46.88	365	12	1.08E-06		
C19-C36 Aliphatics	311	50	26	12	1.00E-06	46.88	365	12	2.36E-05		
C11-C22 Aromatics	527	50	26	12	1.00E-06	46.88	365	12	1.44E-05		
SVOCs											
Benzo(a)anthracene		50	26	12	1.00E-06	46.88	365	12	0.00E+00	75	0.00E+00
Benzo(a)pyrene		50	26	12	1.00E-06	46.88	365	12	0.00E+00	75	0.00E+00
Benzo(b)fluoranthene		50	26	12	1.00E-06	46.88	365	12	0.00E+00	75	0.00E+00
Benzo(k)fluoranthene		50	26	12	1.00E-06	46.88	365	12	0.00E+00	75	0.00E+00
Chrysene		50	26	12	1.00E-06	46.88	365	12	0.00E+00	75	0.00E+00
Indeno(1,2,3-cd)pyrene		50	26	12	1.00E-06	46.88	365	12	0.00E+00	75	0.00E+00
Metals											
Arsenic	17.9	50	26	12	1.00E-06	46.88	365	12	1.36E-06	75	2.18E-07
Cadmium	1.61	50	26	12	1.00E-06	46.88	365	12	1.22E-07		
Lead	92.2	50	26	12	1.00E-06	46.88	365	12	8.41E-07		
VPH											
C5-C8 Aliphatics		50	26	12	1.00E-06	46.88	365	12	0.00E+00		
C9-C12 Aliphatics		50	26	12	1.00E-06	46.88	365	12	0.00E+00		
C9-C10 Aromatics		50	26	12	1.00E-06	46.88	365	12	0.00E+00		

TABLE 10
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
TRESPASSER SCENARIO (HOT SPOT WSB-6 - 0-1' bgs)
FORMER TOMBARELLO SITE
LWWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	13000	1.00E-06	2928	0.140	0.14	26	12	46.88	365	12	1.13E-03	75	1.81E-04
EPH													
C9-C18 Aliphatics	14.2	1.00E-06	2928	0.14	0.5	26	12	46.88	365	12	4.42E-06		
C19-C36 Aliphatics	311	1.00E-06	2928	0.14	0.1	26	12	46.88	365	12	1.94E-05		
C11-C22 Aromatics	527	1.00E-06	2928	0.14	0.1	26	12	46.88	365	12	3.28E-05		
SVOCs													
Benzo(a)anthracene		1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Benzo(a)pyrene		1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Benzo(b)fluoranthene		1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Benzo(k)fluoranthene		1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Chrysene		1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Indeno(1,2,3-cd)pyrene		1.00E-06	2928	0.140	0.13	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Metals													
Arsenic	17.9	1.00E-06	2928	0.140	0.03	26	12	46.88	365	12	3.34E-07	75	5.35E-08
Cadmium	1.61	1.00E-06	2928	0.140	0.1	26	12	46.88	365	12	1.00E-07		
Lead	92.2	1.00E-06	2928	0.140	0.01	26	12	46.88	365	12	5.74E-07		
VPH													
C5-C8 Aliphatics		1.00E-06	2928	0.14	1	26	12	46.88	365	12	0.00E+00		
C9-C12 Aliphatics		1.00E-06	2928	0.14	0.5	26	12	46.88	365	12	0.00E+00		
C9-C10 Aromatics		1.00E-06	2928	0.14	0.2	26	12	46.88	365	12	0.00E+00		

TABLE 17
AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
TRESPASSER SCENARIO (HOT SPOT WSB-6 - 0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Soil Concentration (mg/kg)	PEF (m^3/kg)	VR (m^3/d)	EF (d/yr)	EP (yr)	BW (kg)	C_1 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	13000	1.32E+09	4	26	12	46.88	365	12	5.99E-08	75	9.58E-09
EPH											
C9-C18 Aliphatics	14.2	1.32E+09	4	26	12	46.88	365	12	6.54E-11		
C19-C36 Aliphatics	311	1.32E+09	4	26	12	46.88	365	12	1.43E-09		
C11-C22 Aromatics	527	1.32E+09	4	26	12	46.88	365	12	2.43E-09		
SVOCs											
Benzo(a)anthracene		1.32E+09	4	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Benzo(a)pyrene		1.32E+09	4	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Benzo(b)fluoranthene		1.32E+09	4	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Benzo(k)fluoranthene		1.32E+09	4	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Chrysene		1.32E+09	4	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Indeno(1,2,3-cd)pyrene		1.32E+09	4	26	12	46.88	365	12	0.00E+00	75	0.00E+00
Metals											
Arsenic	17.9	1.32E+09	4	26	12	46.88	365	12	8.24E-11	75	1.32E-11
Cadmium	1.61	1.32E+09	4	26	12	46.88	365	12	7.41E-12		
Lead	92.2	1.32E+09	4	26	12	46.88	365	12	4.25E-10		
VPH											
C5-C8 Aliphatics		1.32E+09	4	26	12	46.88	365	12	0.00E+00		
C9-C12 Aliphatics		1.32E+09	4	26	12	46.88	365	12	0.00E+00		
C9-C10 Aromatics		1.32E+09	4	26	12	46.88	365	12	0.00E+00		

CHEMICALS	Soil Concentration (mg/kg)	PEF (m^3/kg)	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (d/hr)	C_2 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals									
cadmium	1.61	1.32E+09	26	4	12	4.17E-02	365	75	2.32E-09

[redacted]LE 18
AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
TRESPASSER SCENARIO (SOUTHEAST CORNER 0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	16.9	50	26	12.0	1.00E-06	46.88	365	12.0	1.28E-06	75	2.05E-07
EPH											
C9-C18 Aliphatics	2000	50	26	12	1.00E-06	46.88	365	12	1.52E-04		
C19-C36 Aliphatics	8800	50	26	12	1.00E-06	46.88	365	12	6.69E-04		
C11-C22 Aromatics	620	50	26	12	1.00E-06	46.88	365	12	1.70E-05		
SVOCs											
Benzo(a)anthracene	72	50	26	12.0	1.00E-06	46.88	365	12.0	5.47E-06	75	8.75E-07
Benzo(a)pyrene	38	50	26	12.0	1.00E-06	46.88	365	12.0	2.89E-06	75	4.62E-07
Benzo(b)fluoranthene	61	50	26	12.0	1.00E-06	46.88	365	12.0	4.63E-06	75	7.42E-07
Benzo(k)fluoranthene	53	50	26	12.0	1.00E-06	46.88	365	12.0	4.03E-06	75	6.44E-07
Chrysene	84	50	26	12.0	1.00E-06	46.88	365	12.0	6.38E-06	75	1.02E-06
Indeno(1,2,3-cd)pyrene	9.1	50	26	12.0	1.00E-06	46.88	365	12.0	6.91E-07	75	1.11E-07
Metals											
Arsenic	10.7	50	26	12.0	1.00E-06	46.88	365	12.0	8.13E-07	75	1.30E-07
Cadmium	8.19	50	26	12.0	1.00E-06	46.88	365	12.0	6.22E-07		
Lead	980	50	26	12.0	1.00E-06	46.88	365	12.0	8.93E-06		
VPH											
C5-C8 Aliphatics	0.062	50	26	12	1.00E-06	46.88	365	12	4.71E-09		
C9-C12 Aliphatics	1.7	50	26	12	1.00E-06	46.88	365	12	1.29E-07		
C9-C10 Aromatics	0.58	50	26	12	1.00E-06	46.88	365	12	4.41E-08		

TABLE 19
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
TRESPASSER SCENARIO (SOUTHEAST CORNER 0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	16.9	1.00E-06	2928	0.140	0.14	26	12.0	46.88	365	12.0	1.47E-06	75	2.36E-07
EPH													
C9-C18 Aliphatics	2000	1.00E-06	2928	0.14	0.5	26	12	46.88	365	12	6.23E-04		
C19-C36 Aliphatics	8800	1.00E-06	2928	0.14	0.1	26	12	46.88	365	12	5.48E-04		
C11-C22 Aromatics	620	1.00E-06	2928	0.14	0.1	26	12	46.88	365	12	3.86E-05		
SVOCs													
Benzo(a)anthracene	72	1.00E-06	2928	0.140	0.13	26	12.0	46.88	365	12.0	5.83E-06	75	9.33E-07
Benzo(a)pyrene	38	1.00E-06	2928	0.140	0.13	26	12.0	46.88	365	12.0	3.08E-06	75	4.92E-07
Benzo(b)fluoranthene	61	1.00E-06	2928	0.140	0.13	26	12.0	46.88	365	12.0	4.94E-06	75	7.90E-07
Benzo(k)fluoranthene	53	1.00E-06	2928	0.140	0.13	26	12.0	46.88	365	12.0	4.29E-06	75	6.87E-07
Chrysene	84	1.00E-06	2928	0.140	0.13	26	12.0	46.88	365	12.0	6.80E-06	75	1.09E-06
Indeno(1,2,3-cd)pyrene	9.1	1.00E-06	2928	0.140	0.13	26	12.0	46.88	365	12.0	7.37E-07	75	1.18E-07
Metals													
Arsenic	10.7	1.00E-06	2928	0.140	0.03	26	12.0	46.88	365	12.0	2.00E-07	75	3.20E-08
Cadmium	8.19	1.00E-06	2928	0.140	0.1	26	12.0	46.88	365	12.0	5.10E-07		
Lead	980	1.00E-06	2928	0.140	0.01	26	12.0	46.88	365	12.0	6.10E-06		
VPH													
C5-C8 Aliphatics	0.062	1.00E-06	2928	0.14	1	26	12	46.88	365	12	3.86E-08		
C9-C12 Aliphatics	1.7	1.00E-06	2928	0.14	0.5	26	12	46.88	365	12	5.29E-07		
C9-C10 Aromatics	0.58	1.00E-06	2928	0.14	0.2	26	12	46.88	365	12	7.23E-08		

TABLE 2

AVERAGE EXPOSURE DOSES -- INHALATION OF PARTICULATE MATTER
TRESPASSER SCENARIO (SOUTHEAST CORNER 0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Soil Concentration (mg/kg)	PEF (m^3/kg)	VR (m^3/d)	EF (d/yr)	EP (yr)	BW (kg)	C_1 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	16.9	1.32E+09	4	26	12	46.88	365	12.0	7.78E-11	75	1.25E-11
EPH											
C9-C18 Aliphatics	2000	1.32E+09	4	26	12	46.88	365	12	9.21E-09		
C19-C36 Aliphatics	8800	1.32E+09	4	26	12	46.88	365	12	4.05E-08		
C11-C22 Aromatics	620	1.32E+09	4	26	12	46.88	365	12	2.85E-09		
SVOCs											
Benzo(a)anthracene	72	1.32E+09	4	26	12	46.88	365	12.0	3.32E-10	75	5.30E-11
Benzo(a)pyrene	38	1.32E+09	4	26	12	46.88	365	12.0	1.75E-10	75	2.80E-11
Benzo(b)fluoranthene	61	1.32E+09	4	26	12	46.88	365	12.0	2.81E-10	75	4.49E-11
Benzo(k)fluoranthene	53	1.32E+09	4	26	12	46.88	365	12.0	2.44E-10	75	3.90E-11
Chrysene	84	1.32E+09	4	26	12	46.88	365	12.0	3.87E-10	75	6.19E-11
Indeno(1,2,3-cd)pyrene	9.1	1.32E+09	4	26	12	46.88	365	12.0	4.19E-11	75	6.70E-12
Metals											
Arsenic	10.7	1.32E+09	4	26	12	46.88	365	12.0	4.93E-11	75	7.88E-12
Cadmium	8.19	1.32E+09	4	26	12	46.88	365	12.0	3.77E-11		
Lead	980	1.32E+09	4	26	12	46.88	365	12.0	4.51E-09		
VPH											
C5-C8 Aliphatics	0.062	1.32E+09	4	26	12	46.88	365	12	2.85E-13		
C9-C12 Aliphatics	1.7	1.32E+09	4	26	12	46.88	365	12	7.83E-12		
C9-C10 Aromatics	0.58	1.32E+09	4	26	12	46.88	365	12	2.67E-12		

CHEMICALS	Soil Concentration (mg/kg)	PEF (m^3/kg)	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (d/hr)	C_2 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals									
cadmium	8.19	1.32E+09	26	4	12.0	4.17E-02	365	75	1.18E-08

TABLE 21
AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
CONSTRUCTION WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	21.96	330	120	1	1.00E-06	72	1	3.32E-05	365	75	4.42E-07
EPH											
C9-C18 Aliphatics	2400	330	120	1	1.00E-06	72	1	3.63E-03	365		
C19-C36 Aliphatics	23800	330	120	1	1.00E-06	72	1	3.60E-02	365		
C11-C22 Aromatics	983	330	120	1	1.00E-06	72	1	1.49E-03	365		
SVOCs											
Benzo(a)anthracene	58.6	330	120	1	1.00E-06	72	1	8.85E-05	365	75	1.18E-06
Benzo(a)pyrene	44	330	120	1	1.00E-06	72	1	6.65E-05	365	75	8.86E-07
Benzo(b)fluoranthene	40	330	120	1	1.00E-06	72	1	6.04E-05	365	75	8.06E-07
Benzo(k)fluoranthene	34	330	120	1	1.00E-06	72	1	5.14E-05	365	75	6.85E-07
Chrysene	60.4	330	120	1	1.00E-06	72	1	9.13E-05	365	75	1.22E-06
Indeno(1,2,3-cd)pyrene	42	330	120	1	1.00E-06	72	1	6.35E-05	365	75	8.46E-07
Metals											
Arsenic	14.58	330	120	1	1.00E-06	72	1	2.20E-05	365	75	2.94E-07
Cadmium	716	330	120	1	1.00E-06	72	1	1.08E-03	365		
Lead	3470	330	120	1	1.00E-06	72	1	6.29E-04	365		
VPH											
C5-C8 Aliphatics	0.51	330	120	1	1.00E-06	72	1	7.71E-07	365		
C9-C12 Aliphatics	2.7	330	120	1	1.00E-06	72	1	4.08E-06	365		
C9-C10 Aromatics	8.1	330	120	1	1.00E-06	72	1	1.22E-05	365		

[redacted]LE 2[redacted]

AVERAGE DAILY DOSES – DERMAL CONTACT WITH SOIL
CONSTRUCTION WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	21.96	1.00E-06	3477	0.290	0.14	120	1	71.8	365	1	1.42E-05	75	1.89E-07
EPH													
C9-C18 Aliphatics	2400	1.00E-06	3477	0.290	0.5	120	1	71.8	365	1	5.54E-03		
C19-C36 Aliphatics	23800	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	1.10E-02		
C11-C22 Aromatics	983	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	4.54E-04		
SVOCs													
Benzo(a)anthracene	58.6	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	3.52E-05	75	4.69E-07
Benzo(a)pyrene	44	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	2.64E-05	75	3.52E-07
Benzo(b)fluoranthene	40	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	2.40E-05	75	3.20E-07
Benzo(k)fluoranthene	34	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	2.04E-05	75	2.72E-07
Chrysene	60.4	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	3.63E-05	75	4.83E-07
Indeno(1,2,3-cd)pyrene	42	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	2.52E-05	75	3.36E-07
Metals													
Arsenic	14.58	1.00E-06	3477	0.290	0.03	120	1	71.8	365	1	2.02E-06	75	2.69E-08
Cadmium	716	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	3.31E-04		
Lead	3470	1.00E-06	3477	0.290	0.01	120	1	71.8	365	1	1.60E-04		
VPH													
C5-C8 Aliphatics	0.51	1.00E-06	3477	0.290	1	120	1	71.8	365	1	2.35E-06		
C9-C12 Aliphatics	2.7	1.00E-06	3477	0.290	0.5	120	1	71.8	365	1	6.23E-06		
C9-C10 Aromatics	8.1	1.00E-06	3477	0.290	0.2	120	1	71.8	365	1	7.48E-06		

TABLE 23
AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
CONSTRUCTION WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	21.96	6.00E-02	28.8	120	1	1.00E-06	72	365	1	3.48E-07	8.69E-08	4.34E-07	75	4.63E-09	1.16E-09	5.79E-09
EPH																
C9-C18 Aliphatics	2400	6.00E-02	28.8	120	1	1.00E-06	72	365	1	3.80E-05	9.49E-06	4.75E-05				
C19-C36 Aliphatics	23800	6.00E-02	28.8	120	1	1.00E-06	72	365	1	3.77E-04	9.42E-05	4.71E-04				
C11-C22 Aromatics	983	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.56E-05	3.89E-06	1.94E-05				
SVOCs																
Benzo(a)anthracene	58.6	6.00E-02	28.8	120	1	1.00E-06	72	365	1	9.27E-07	2.32E-07	1.16E-06	75	1.24E-08	3.09E-09	1.55E-08
Benzo(a)pyrene	44	6.00E-02	28.8	120	1	1.00E-06	72	365	1	6.96E-07	1.74E-07	8.70E-07	75	9.28E-09	2.32E-09	1.16E-08
Benzo(b)fluoranthene	40	6.00E-02	28.8	120	1	1.00E-06	72	365	1	6.33E-07	1.58E-07	7.91E-07	75	8.44E-09	2.11E-09	1.05E-08
Benzo (k) fluoranthene	34	6.00E-02	28.8	120	1	1.00E-06	72	365	1	5.38E-07	1.35E-07	6.73E-07	75	7.17E-09	1.79E-09	8.97E-09
Chrysene	60.4	6.00E-02	28.8	120	1	1.00E-06	72	365	1	9.56E-07	2.39E-07	1.19E-06	75	1.27E-08	3.19E-09	1.59E-08
Indeno(1,2,3-c,d)pyrene	42	6.00E-02	28.8	120	1	1.00E-06	72	365	1	6.65E-07	1.66E-07	8.31E-07	75	8.86E-09	2.22E-09	1.11E-08
Metals																
Arsenic	14.58	6.00E-02	28.8	120	1	1.00E-06	72	365	1	2.31E-07	5.77E-08	2.88E-07	75	3.08E-09	7.69E-10	3.84E-09
cadmium	716	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.13E-05	2.83E-06	1.42E-05				
Lead	3470	6.00E-02	28.8	120	1	1.00E-06	72	365	1	5.49E-05	1.37E-05	6.86E-05				
VPH																
C5-C8 Aliphatics	0.51	6.00E-02	28.8	120	1	1.00E-06	72	365	1	8.07E-09	2.02E-09	1.01E-08				
C9-C12 Aliphatics	2.7	6.00E-02	28.8	120	1	1.00E-06	72	365	1	4.27E-08	1.07E-08	5.34E-08				
C9-C10 Aromatics	8.1	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.28E-07	3.20E-08	1.60E-07				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals										
Cadmium	716	6.00E-02	120	8	1	1.00E-06	4.17E-02	365	75	6.28E-05

[redacted] E 2[redacted]

AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
CONSTRUCTION WORKER SCENARIO (HOT SPOT WSB-6)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	13000	330	120	1	1.00E-06	72	1	1.96E-02	365	75	2.62E-04
EPH											
C9-C18 Aliphatics		330	120	1	1.00E-06	72	1	0.00E+00	365		
C19-C36 Aliphatics	311	330	120	1	1.00E-06	72	1	4.70E-04	365		
C11-C22 Aromatics	527	330	120	1	1.00E-06	72	1	7.96E-04	365		
SVOCs											
Benzo(a)anthracene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Benzo(a)pyrene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Benzo(b)fluoranthene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Benzo(k)fluoranthene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Chrysene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Indeno(1,2,3-cd)pyrene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Metals											
Arsenic	17.9	330	120	1	1.00E-06	72	1	2.70E-05	365	75	3.61E-07
Cadmium	1.61	330	120	1	1.00E-06	72	1	2.43E-06	365		
Lead	92.2	330	120	1	1.00E-06	72	1	1.67E-05	365		
VPH											
C5-C8 Aliphatics		330	120	1	1.00E-06	72	1	0.00E+00	365		
C9-C12 Aliphatics		330	120	1	1.00E-06	72	1	0.00E+00	365		
C9-C10 Aromatics		330	120	1	1.00E-06	72	1	0.00E+00	365		

TABLE 25
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
CONSTRUCTION WORKER SCENARIO (HOT SPOT WSB-6)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	13000	1.00E-06	3477	0.290	0.14	120	1	71.8	365	1	8.40E-03	75	1.12E-04
EPH													
C9-C18 Aliphatics		1.00E-06	3477	0.290	0.5	120	1	71.8	365	1	0.00E+00		
C19-C36 Aliphatics	311	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	1.44E-04		
C11-C22 Aromatics	527	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	2.43E-04		
SVOCs													
Benzo(a)anthracene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Benzo(a)pyrene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Benzo(b)fluoranthene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Benzo(k)fluoranthene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Chrysene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Indeno(1,2,3-cd)pyrene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Metals													
Arsenic	17.9	1.00E-06	3477	0.290	0.03	120	1	71.8	365	1	2.48E-06	75	3.31E-08
Cadmium	1.61	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	7.43E-07		
Lead	92.2	1.00E-06	3477	0.290	0.01	120	1	71.8	365	1	4.26E-06		
VPH													
C5-C8 Aliphatics		1.00E-06	3477	0.290	1	120	1	71.8	365	1	0.00E+00		
C9-C12 Aliphatics		1.00E-06	3477	0.290	0.5	120	1	71.8	365	1	0.00E+00		
C9-C10 Aromatics		1.00E-06	3477	0.290	0.2	120	1	71.8	365	1	0.00E+00		

TABLE 20

AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
CONSTRUCTION WORKER SCENARIO (HOT SPOT WSB-6)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	13000	6.00E-02	28.8	120	1	1.00E-06	72	365	1	2.06E-04	5.14E-05	2.57E-04	75	2.74E-06	6.86E-07	3.43E-06
EPH																
C9-C18 Aliphatics		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00				
C19-C36 Aliphatics	311	6.00E-02	28.8	120	1	1.00E-06	72	365	1	4.92E-06	1.23E-06	6.15E-06				
C11-C22 Aromatics	527	6.00E-02	28.8	120	1	1.00E-06	72	365	1	8.34E-06	2.08E-06	1.04E-05				
SVOCs																
Benzo(a)anthracene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo(a)pyrene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo (k) fluoranthene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Chrysene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-c,d)pyrene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Metals																
Arsenic	17.9	6.00E-02	28.8	120	1	1.00E-06	72	365	1	2.83E-07	7.08E-08	3.54E-07	75	3.78E-09	9.44E-10	4.72E-09
cadmium	1.61	6.00E-02	28.8	120	1	1.00E-06	72	365	1	2.55E-08	6.37E-09	3.18E-08				
Lead	92.2	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.46E-06	3.65E-07	1.82E-06				
VPH																
C5-C8 Aliphatics		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00				
C9-C12 Aliphatics		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00				
C9-C10 Aromatics		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	Fraction from Soil	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals											
Cadmium	1.61	6.00E-02	1.0	120	8	1	1.00E-06	4.17E-02	365	75	1.41E-07

TABLE 27
AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
CONSTRUCTION WORKER SCENARIO (HOT SPOT CD 4-5)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	530	330	120	1	1.00E-06	72	1	8.01E-04	365	75	1.07E-05
EPH											
C9-C18 Aliphatics		330	120	1	1.00E-06	72	1	0.00E+00	365		
C19-C36 Aliphatics	545	330	120	1	1.00E-06	72	1	8.24E-04	365		
C11-C22 Aromatics	1140	330	120	1	1.00E-06	72	1	1.72E-03	365		
SVOCs											
Benzo(a)anthracene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Benzo(a)pyrene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Benzo(b)fluoranthene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Benzo(k)fluoranthene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Chrysene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Indeno(1,2,3-cd)pyrene		330	120	1	1.00E-06	72	1	0.00E+00	365	75	0.00E+00
Metals											
Arsenic	6.75	330	120	1	1.00E-06	72	1	1.02E-05	365	75	1.36E-07
Cadmium	3.86	330	120	1	1.00E-06	72	1	5.83E-06	365		
Lead	563	330	120	1	1.00E-06	72	1	1.02E-04	365		
VPH											
C5-C8 Aliphatics		330	120	1	1.00E-06	72	1	0.00E+00	365		
C9-C12 Aliphatics		330	120	1	1.00E-06	72	1	0.00E+00	365		
C9-C10 Aromatics		330	120	1	1.00E-06	72	1	0.00E+00	365		

AVERAGE DAILY DOSES – DERMAL CONTACT WITH SOIL
CONSTRUCTION WORKER SCENARIO (HOT SPOT CD 4-5)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	530	1.00E-06	3477	0.290	0.14	120	1	71.8	365	1	3.43E-04	75	4.57E-06
EPH													
C9-C18 Aliphatics		1.00E-06	3477	0.290	0.5	120	1	71.8	365	1	0.00E+00		
C19-C36 Aliphatics	545	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	2.52E-04		
C11-C22 Aromatics	1140	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	5.26E-04		
SVOCs													
Benzo(a)anthracene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Benzo(a)pyrene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Benzo(b)fluoranthene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Benzo(k)fluoranthene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Chrysene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Indeno(1,2,3-cd)pyrene		1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	0.00E+00	75	0.00E+00
Metals													
Arsenic	6.75	1.00E-06	3477	0.290	0.03	120	1	71.8	365	1	9.35E-07	75	1.25E-08
Cadmium	3.86	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	1.78E-06		
Lead	563	1.00E-06	3477	0.290	0.01	120	1	71.8	365	1	2.60E-05		
VPH													
C5-C8 Aliphatics		1.00E-06	3477	0.290	1	120	1	71.8	365	1	0.00E+00		
C9-C12 Aliphatics		1.00E-06	3477	0.290	0.5	120	1	71.8	365	1	0.00E+00		
C9-C10 Aromatics		1.00E-06	3477	0.290	0.2	120	1	71.8	365	1	0.00E+00		

TABLE 29
AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
CONSTRUCTION WORKER SCENARIO (HOT SPOT CD 4-5)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	530	6.00E-02	28.8	120	1	1.00E-06	72	365	1	8.39E-06	2.10E-06	1.05E-05	75	1.12E-07	2.80E-08	1.40E-07
EPH																
C9-C18 Aliphatics		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00				
C19-C36 Aliphatics	545	6.00E-02	28.8	120	1	1.00E-06	72	365	1	8.62E-06	2.16E-06	1.08E-05				
C11-C22 Aromatics	1140	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.80E-05	4.51E-06	2.26E-05				
SVOCs																
Benzo(a)anthracene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo(a)pyrene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo (k) fluoranthene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Chrysene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-c,d)pyrene		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Metals																
Arsenic	6.75	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.07E-07	2.67E-08	1.34E-07	75	1.42E-09	3.56E-10	1.78E-09
cadmium	3.86	6.00E-02	28.8	120	1	1.00E-06	72	365	1	6.11E-08	1.53E-08	7.64E-08				
Lead	563	6.00E-02	28.8	120	1	1.00E-06	72	365	1	8.91E-06	2.23E-06	1.11E-05				
VPH																
C5-C8 Aliphatics		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00				
C9-C12 Aliphatics		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00				
C9-C10 Aromatics		6.00E-02	28.8	120	1	1.00E-06	72	365	1	0.00E+00	0.00E+00	0.00E+00				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	Fraction from Soil	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals											
Cadmium	3.86	6.00E-02	1.0	120	8	1	1.00E-06	4.17E-02	365	75	3.38E-07

[redacted]E 30[redacted]

AVERAGE DAILY EXPOSURE DOSES -- INGESTION OF SOIL
CONSTRUCTION WORKER SCENARIO (HOT SPOT SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	17	330	120	1	1.00E-06	72	1	2.55E-05	365	75	3.40E-07
EPH											
C9-C18 Aliphatics	2000	330	120	1	1.00E-06	72	1	3.02E-03	365		
C19-C36 Aliphatics	8800	330	120	1	1.00E-06	72	1	1.33E-02	365		
C11-C22 Aromatics	1955	330	120	1	1.00E-06	72	1	2.95E-03	365		
SVOCs											
Benzo(a)anthracene	72	330	120	1	1.00E-06	72	1	1.09E-04	365	75	1.45E-06
Benzo(a)pyrene	38	330	120	1	1.00E-06	72	1	5.74E-05	365	75	7.66E-07
Benzo(b)fluoranthene	61	330	120	1	1.00E-06	72	1	9.22E-05	365	75	1.23E-06
Benzo(k)fluoranthene	53	330	120	1	1.00E-06	72	1	8.01E-05	365	75	1.07E-06
Chrysene	84	330	120	1	1.00E-06	72	1	1.27E-04	365	75	1.69E-06
Indeno(1,2,3-cd)pyrene	9.1	330	120	1	1.00E-06	72	1	1.38E-05	365	75	1.83E-07
Metals											
Arsenic	14.05	330	120	1	1.00E-06	72	1	2.12E-05	365	75	2.83E-07
Cadmium	8.19	330	120	1	1.00E-06	72	1	1.24E-05	365		
Lead	1240	330	120	1	1.00E-06	72	1	2.25E-04	365		
VPH											
C5-C8 Aliphatics	0.062	330	120	1	1.00E-06	72	1	9.37E-08	365		
C9-C12 Aliphatics	1.7	330	120	1	1.00E-06	72	1	2.57E-06	365		
C9-C10 Aromatics	0.58	330	120	1	1.00E-06	72	1	8.76E-07	365		

TABLE 31
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
CONSTRUCTION WORKER SCENARIO (SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	17	1.00E-06	3477	0.290	0.14	120	1	71.8	365	1	1.09E-05	75	1.46E-07
EPH													
C9-C18 Aliphatics	2000	1.00E-06	3477	0.290	0.5	120	1	71.8	365	1	4.62E-03		
C19-C36 Aliphatics	8800	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	4.06E-03		
C11-C22 Aromatics	1955	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	9.03E-04		
SVOCs													
Benzo(a)anthracene	72	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	4.32E-05	75	5.76E-07
Benzo(a)pyrene	38	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	2.28E-05	75	3.04E-07
Benzo(b)fluoranthene	61	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	3.66E-05	75	4.88E-07
Benzo(k)fluoranthene	53	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	3.18E-05	75	4.24E-07
Chrysene	84	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	5.04E-05	75	6.72E-07
Indeno(1,2,3-cd)pyrene	9.1	1.00E-06	3477	0.290	0.13	120	1	71.8	365	1	5.46E-06	75	7.28E-08
Metals													
Arsenic	14.05	1.00E-06	3477	0.290	0.03	120	1	71.8	365	1	1.95E-06	75	2.59E-08
Cadmium	8.19	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	3.78E-06		
Lead	1240	1.00E-06	3477	0.290	0.01	120	1	71.8	365	1	5.73E-05		
VPH													
C5-C8 Aliphatics	0.062	1.00E-06	3477	0.290	1	120	1	71.8	365	1	2.86E-07		
C9-C12 Aliphatics	1.7	1.00E-06	3477	0.290	0.5	120	1	71.8	365	1	3.92E-06		
C9-C10 Aromatics	0.58	1.00E-06	3477	0.290	0.2	120	1	71.8	365	1	5.36E-07		

AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
CONSTRUCTION WORKER SCENARIO (SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	17	6.00E-02	28.8	120	1	1.00E-06	72	365	1	2.67E-07	6.69E-08	3.34E-07	75	3.57E-09	8.91E-10	4.46E-09
EPH																
C9-C18 Aliphatics	2000	6.00E-02	28.8	120	1	1.00E-06	72	365	1	3.16E-05	7.91E-06	3.96E-05				
C19-C36 Aliphatics	8800	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.39E-04	3.48E-05	1.74E-04				
C11-C22 Aromatics	1955	6.00E-02	28.8	120	1	1.00E-06	72	365	1	3.09E-05	7.73E-06	3.87E-05				
SVOCs																
Benzo(a)anthracene	72	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.14E-06	2.85E-07	1.42E-06	75	1.52E-08	3.80E-09	1.90E-08
Benzo(a)pyrene	38	6.00E-02	28.8	120	1	1.00E-06	72	365	1	6.01E-07	1.50E-07	7.52E-07	75	8.02E-09	2.00E-09	1.00E-08
Benzo(b)fluoranthene	61	6.00E-02	28.8	120	1	1.00E-06	72	365	1	9.65E-07	2.41E-07	1.21E-06	75	1.29E-08	3.22E-09	1.61E-08
Benzo (k) fluoranthene	53	6.00E-02	28.8	120	1	1.00E-06	72	365	1	8.39E-07	2.10E-07	1.05E-06	75	1.12E-08	2.80E-09	1.40E-08
Chrysene	84	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.33E-06	3.32E-07	1.66E-06	75	1.77E-08	4.43E-09	2.22E-08
Indeno(1,2,3-c,d)pyrene	9.1	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.44E-07	3.60E-08	1.80E-07	75	1.92E-09	4.80E-10	2.40E-09
Metals																
Arsenic	14.05	6.00E-02	28.8	120	1	1.00E-06	72	365	1	2.22E-07	5.56E-08	2.78E-07	75	2.96E-09	7.41E-10	3.71E-09
cadmium	8.19	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.30E-07	3.24E-08	1.62E-07				
Lead	1240	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.96E-05	4.91E-06	2.45E-05				
VPH																
C5-C8 Aliphatics	0.062	6.00E-02	28.8	120	1	1.00E-06	72	365	1	9.81E-10	2.45E-10	1.23E-09				
C9-C12 Aliphatics	1.7	6.00E-02	28.8	120	1	1.00E-06	72	365	1	2.69E-08	6.73E-09	3.36E-08				
C9-C10 Aromatics	0.58	6.00E-02	28.8	120	1	1.00E-06	72	365	1	9.18E-09	2.29E-09	1.15E-08				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	Fraction from Soil	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals											
Cadmium	8.19	6.00E-02	1.0	120	8	1	1.00E-06	4.17E-02	365	75	7.18E-07

TABLE 33
AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
CONSTRUCTION WORKER SCENARIO (SITE WIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	78	330	120	1	1.00E-06	72	1	1.18E-04	365	75	7.86E-07
EPH											
C9-C18 Aliphatics	45	330	120	1	1.00E-06	72	1	6.80E-05	365		
C19-C36 Aliphatics	7300	330	120	1	1.00E-06	72	1	1.10E-02	365		
C11-C22 Aromatics	1670	330	120	1	1.00E-06	72	1	2.52E-03	365		
Metals											
Arsenic	11	330	120	1	1.00E-06	72	1	1.66E-05	365	75	1.11E-07
Cadmium	20	330	120	1	1.00E-06	72	1	3.02E-05	365		
Lead	2230	330	120	1	1.00E-06	72	1	4.04E-04	365		

[redacted] LE 3 [redacted]

AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
CONSTRUCTION WORKER SCENARIO (SITE WIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	78	1.00E-06	3477	0.290	0.14	120	1	71.8	365	1	5.04E-05	75	3.36E-07
EPH													
C9-C18 Aliphatics	45	1.00E-06	3477	0.290	0.5	120	1	71.8	365	1	1.04E-04		
C19-C36 Aliphatics	7300	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	3.37E-03		
C11-C22 Aromatics	1670	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	7.71E-04		
Metals													
Arsenic	11	1.00E-06	3477	0.290	0.03	120	1	71.8	365	1	1.52E-06	75	1.02E-08
Cadmium	20	1.00E-06	3477	0.290	0.1	120	1	71.8	365	1	9.23E-06		
Lead	2230	1.00E-06	3477	0.290	0.01	120	1	71.8	365	1	1.03E-04		

TABLE 35
AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
CONSTRUCTION WORKER SCENARIO (SITE WIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	78	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.23E-06	3.09E-07	1.54E-06	75	8.23E-09	2.06E-09	1.03E-08
EPH																
C9-C18 Aliphatics	45	6.00E-02	28.8	120	1	1.00E-06	72	365	1	7.12E-07	1.78E-07	8.90E-07				
C19-C36 Aliphatics	7300	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.16E-04	2.89E-05	1.44E-04				
C11-C22 Aromatics	1670	6.00E-02	28.8	120	1	1.00E-06	72	365	1	2.64E-05	6.61E-06	3.30E-05				
Metals																
Arsenic	11	6.00E-02	28.8	120	1	1.00E-06	72	365	1	1.74E-07	4.35E-08	2.18E-07	75	1.16E-09	2.90E-10	1.45E-09
cadmium	20	6.00E-02	28.8	120	1	1.00E-06	72	365	1	3.16E-07	7.91E-08	3.96E-07				
Lead	2230	6.00E-02	28.8	120	1	1.00E-06	72	365	1	3.53E-05	8.82E-06	4.41E-05				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	Fraction from Soil	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals											
Cadmium	20	6.00E-02	1.0	120	8	1	1.00E-06	4.17E-02	365	75	8.77E-07

[redacted]E 3[redacted]

AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
UTILITY MAINTENANCE WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	21.960	330	5	25	1.00E-06	72	25	1.38E-06	365	75	4.61E-07
EPH											
C9-C18 Aliphatics	2400	330	5	25	1.00E-06	72	25	1.51E-04	365		
C19-C36 Aliphatics	23800	330	5	25	1.00E-06	72	25	1.50E-03	365		
C11-C22 Aromatics	983	330	5	25	1.00E-06	72	25	6.19E-05	365		
SVOCs											
Benzo(a)anthracene	58.6	330	5	25	1.00E-06	72	25	3.69E-06	365	75	1.23E-06
Benzo(a)pyrene	44	330	5	25	1.00E-06	72	25	2.77E-06	365	75	9.23E-07
Benzo(b)fluoranthene	40	330	5	25	1.00E-06	72	25	2.52E-06	365	75	8.39E-07
Benzo(k)fluoranthene	34	330	5	25	1.00E-06	72	25	2.14E-06	365	75	7.14E-07
Chrysene	60.4	330	5	25	1.00E-06	72	25	3.80E-06	365	75	1.27E-06
Indeno(1,2,3-cd)pyrene	42	330	5	25	1.00E-06	72	25	2.64E-06	365	75	8.81E-07
Metals											
Arsenic	14.58	330	5	25	1.00E-06	72	25	9.18E-07	365	75	3.06E-07
Cadmium	716	330	5	25	1.00E-06	72	25	4.51E-05	365		
Lead	3470	330	5	25	1.00E-06	72	25	2.62E-05	365		
VPH											
C5-C8 Aliphatics	0.51	330	5	25	1.00E-06	72	25	3.21E-08	365		
C9-C12 Aliphatics	2.7	330	5	25	1.00E-06	72	25	1.70E-07	365		
C9-C10 Aromatics	8.100	330	5	25	1.00E-06	72	25	5.10E-07	365		

TABLE 37
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
UTILITY MAINTENANCE WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	21.960	1.00E-06	3477	0.290	0.14	5	25.0	71.8	365	25.0	5.91E-07	75	1.97E-07
EPH													
C9-C18 Aliphatics	2400	1.00E-06	3477	0.290	0.5	5	25.0	71.8	365	25.0	2.31E-04		
C19-C36 Aliphatics	23800	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	4.58E-04		
C11-C22 Aromatics	983	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	1.89E-05		
SVOCs													
Benzo(a)anthracene	58.6	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	1.47E-06	75	4.89E-07
Benzo(a)pyrene	44	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	1.10E-06	75	3.67E-07
Benzo(b)fluoranthene	40	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	1.00E-06	75	3.33E-07
Benzo(k)fluoranthene	34	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	8.50E-07	75	2.83E-07
Chrysene	60.4	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	1.51E-06	75	5.04E-07
Indeno(1,2,3-cd)pyrene	42	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	1.05E-06	75	3.50E-07
Metals													
Arsenic	14.58	1.00E-06	3477	0.290	0.03	5	25.0	71.8	365	25.0	8.41E-08	75	2.80E-08
Cadmium	716	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	1.38E-05		
Lead	3470	1.00E-06	3477	0.290	0.01	5	25.0	71.8	365	25.0	6.68E-06		
VPH													
C5-C8 Aliphatics	0.51	1.00E-06	3477	0.290	1	5	25.0	71.8	365	25.0	9.81E-08		
C9-C12 Aliphatics	2.7	1.00E-06	3477	0.290	0.5	5	25.0	71.8	365	25.0	2.60E-07		
C9-C10 Aromatics	8.100	1.00E-06	3477	0.290	0.2	5	25.0	71.8	365	25.0	3.12E-07		

TABLE 38
AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
UTILITY MAINTENANCE WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	21.960	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.45E-08	3.62E-09	1.81E-08	75	4.83E-09	1.21E-09	6.03E-09
EPH																
C9-C18 Aliphatics	2400	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.58E-06	3.96E-07	1.98E-06				
C19-C36 Aliphatics	23800	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.57E-05	3.92E-06	1.96E-05				
C11-C22 Aromatics	983	6.00E-02	28.8	5	25	1.00E-06	72	365	25	6.48E-07	1.62E-07	8.10E-07				
SVOCs																
Benzo(a)anthracene	58.6	6.00E-02	28.8	5	25	1.00E-06	72	365	25	3.86E-08	9.66E-09	4.83E-08	75	1.29E-08	3.22E-09	1.61E-08
Benzo(a)pyrene	44	6.00E-02	28.8	5	25	1.00E-06	72	365	25	2.90E-08	7.25E-09	3.63E-08	75	9.67E-09	2.42E-09	1.21E-08
Benzo(b)fluoranthene	40	6.00E-02	28.8	5	25	1.00E-06	72	365	25	2.64E-08	6.59E-09	3.30E-08	75	8.79E-09	2.20E-09	1.10E-08
Benzo (k) fluoranthene	34	6.00E-02	28.8	5	25	1.00E-06	72	365	25	2.24E-08	5.60E-09	2.80E-08	75	7.47E-09	1.87E-09	9.34E-09
Chrysene	60.4	6.00E-02	28.8	5	25	1.00E-06	72	365	25	3.98E-08	9.96E-09	4.98E-08	75	1.33E-08	3.32E-09	1.66E-08
Indeno(1,2,3-c,d)pyrene	42	6.00E-02	28.8	5	25	1.00E-06	72	365	25	2.77E-08	6.92E-09	3.46E-08	75	9.23E-09	2.31E-09	1.15E-08
Metals																
Arsenic	14.58	6.00E-02	28.8	5	25	1.00E-06	72	365	25	9.61E-09	2.40E-09	1.20E-08	75	3.20E-09	8.01E-10	4.01E-09
cadmium	716	6.00E-02	28.8	5	25	1.00E-06	72	365	25	4.72E-07	1.18E-07	5.90E-07				
Lead	3470	6.00E-02	28.8	5	25	1.00E-06	72	365	25	2.29E-06	5.72E-07	2.86E-06				
VPH																
C5-C8 Aliphatics	0.51	6.00E-02	28.8	5	25	1.00E-06	72	365	25	3.36E-10	8.41E-11	4.20E-10				
C9-C12 Aliphatics	2.7	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.78E-09	4.45E-10	2.23E-09				
C9-C10 Aromatics	8.100	6.00E-02	28.8	5	25	1.00E-06	72	365	25	5.34E-09	1.34E-09	6.68E-09				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	Fraction from Soil	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals											
Cadmium	716	6.00E-02	1.0	5	8	25	1.00E-06	4.17E-02	365	75	6.54E-05

TABLE 39
AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT WSB-6 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	13000	330	5	25	1.00E-06	72	25	8.18E-04	365	75	2.73E-04
EPH											
C9-C18 Aliphatics		330	5	25	1.00E-06	72	25	0.00E+00	365		
C19-C36 Aliphatics	311	330	5	25	1.00E-06	72	25	1.96E-05	365		
C11-C22 Aromatics	527	330	5	25	1.00E-06	72	25	3.32E-05	365		
SVOCs											
Benzo(a)anthracene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Benzo(a)pyrene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Benzo(b)fluoranthene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Benzo(k)fluoranthene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Chrysene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Indeno(1,2,3-cd)pyrene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Metals											
Arsenic	17.9	330	5	25	1.00E-06	72	25	1.13E-06	365	75	3.76E-07
Cadmium	1.6 t	330	5	25	1.00E-06	72	25	1.01E-07	365		
Lead	92.2	330	5	25	1.00E-06	72	25	6.97E-07	365		
VPH											
C5-C8 Aliphatics		330	5	25	1.00E-06	72	25	0.00E+00	365		
C9-C12 Aliphatics		330	5	25	1.00E-06	72	25	0.00E+00	365		
C9-C10 Aromatics		330	5	25	1.00E-06	72	25	0.00E+00	365		

TABLE 40
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT WSB-6 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	13000	1.00E-06	3477	0.290	0.14	5	25.0	71.8	365	25.0	3.50E-04	75	1.17E-04
EPH													
C9-C18 Aliphatics		1.00E-06	3477	0.290	0.5	5	25.0	71.8	365	25.0	0.00E+00		
C19-C36 Aliphatics	311	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	5.98E-06		
C11-C22 Aromatics	527	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	1.01E-05		
SVOCs													
Benzo(a)anthracene		1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	0.00E+00	75	0.00E+00
Benzo(a)pyrene		1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	0.00E+00	75	0.00E+00
Benzo(b)fluoranthene		1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	0.00E+00	75	0.00E+00
Benzo(k)fluoranthene		1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	0.00E+00	75	0.00E+00
Chrysene		1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	0.00E+00	75	0.00E+00
Indeno(1,2,3-cd)pyrene		1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	0.00E+00	75	0.00E+00
Metals													
Arsenic	17.9	1.00E-06	3477	0.290	0.03	5	25.0	71.8	365	25.0	1.03E-07	75	3.44E-08
Cadmium	1.61	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	3.10E-08		
Lead	92.2	1.00E-06	3477	0.290	0.01	5	25.0	71.8	365	25.0	1.77E-07		
VPH													
C5-C8 Aliphatics		1.00E-06	3477	0.290	1	5	25.0	71.8	365	25.0	0.00E+00		
C9-C12 Aliphatics		1.00E-06	3477	0.290	0.5	5	25.0	71.8	365	25.0	0.00E+00		
C9-C10 Aromatics		1.00E-06	3477	0.290	0.2	5	25.0	71.8	365	25.0	0.00E+00		

TABLE 41
AVERAGE EXPOSURE DOSES -- INHALATION OF PARTICULATE MATTER
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT WSB-6 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	13000	6.00E-02	28.8	5	25	1.00E-06	72	365	25	8.57E-06	2.14E-06	1.07E-05	75	2.86E-06	7.14E-07	3.57E-06
EPH																
C9-C18 Aliphatics		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00				
C19-C36 Aliphatics	311	6.00E-02	28.8	5	25	1.00E-06	72	365	25	2.05E-07	5.13E-08	2.56E-07				
C11-C22 Aromatics	527	6.00E-02	28.8	5	25	1.00E-06	72	365	25	3.47E-07	8.69E-08	4.34E-07				
SVOCs																
Benzo(a)anthracene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo(a)pyrene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo (k) fluoranthene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Chrysene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-c,d)pyrene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Metals																
Arsenic	17.9	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.18E-08	2.95E-09	1.48E-08	75	3.93E-09	9.84E-10	4.92E-09
cadmium	1.61	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.06E-09	2.65E-10	1.33E-09				
Lead	92.2	6.00E-02	28.8	5	25	1.00E-06	72	365	25	6.08E-08	1.52E-08	7.60E-08				
VPH																
C5-C8 Aliphatics		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00				
C9-C12 Aliphatics		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00				
C9-C10 Aromatics		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	Fraction from Soil	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals											
Cadmium	1.61	6.00E-02	1.0	5	8	25	1.00E-06	4.17E-02	365	75	1.47E-07

TABLE 42
AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT CD 45 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	530	330	5	25	1.00E-06	72	25	3.34E-05	365	75	1.11E-05
EPH											
C9-C18 Aliphatics		330	5	25	1.00E-06	72	25	0.00E+00	365		
C19-C36 Aliphatics	545	330	5	25	1.00E-06	72	25	3.43E-05	365		
C11-C22 Aromatics	1140	330	5	25	1.00E-06	72	25	7.18E-05	365		
SVOCs											
Benzo(a)anthracene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Benzo(a)pyrene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Benzo(b)fluoranthene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Benzo(k)fluoranthene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Chrysene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Indeno(1,2,3-cd)pyrene		330	5	25	1.00E-06	72	25	0.00E+00	365	75	0.00E+00
Metals											
Arsenic	6.75	330	5	25	1.00E-06	72	25	4.25E-07	365	75	1.42E-07
Cadmium	3.86	330	5	25	1.00E-06	72	25	2.43E-07	365		
Lead	563	330	5	25	1.00E-06	72	25	4.25E-06	365		
VPH											
C5-C8 Aliphatics		330	5	25	1.00E-06	72	25	0.00E+00	365		
C9-C12 Aliphatics		330	5	25	1.00E-06	72	25	0.00E+00	365		
C9-C10 Aromatics		330	5	25	1.00E-06	72	25	0.00E+00	365		

TABLE 43
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT CD 45 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	530	1.00E-06	3477	0.290	0.14	5	25	71.8	365	25	1.43E-05	75	4.76E-06
EPH													
C9-C18 Aliphatics		1.00E-06	3477	0.290	0.5	5	25	71.8	365	25	0.00E+00		
C19-C36 Aliphatics	545	1.00E-06	3477	0.290	0.1	5	25	71.8	365	25	1.05E-05		
C11-C22 Aromatics	1140	1.00E-06	3477	0.290	0.1	5	25	71.8	365	25	2.19E-05		
SVOCs													
Benzo(a)anthracene		1.00E-06	3477	0.290	0.13	5	25	71.8	365	25	0.00E+00	75	0.00E+00
Benzo(a)pyrene		1.00E-06	3477	0.290	0.13	5	25	71.8	365	25	0.00E+00	75	0.00E+00
Benzo(b)fluoranthene		1.00E-06	3477	0.290	0.13	5	25	71.8	365	25	0.00E+00	75	0.00E+00
Benzo(k)fluoranthene		1.00E-06	3477	0.290	0.13	5	25	71.8	365	25	0.00E+00	75	0.00E+00
Chrysene		1.00E-06	3477	0.290	0.13	5	25	71.8	365	25	0.00E+00	75	0.00E+00
Indeno(1,2,3-cd)pyrene		1.00E-06	3477	0.290	0.13	5	25	71.8	365	25	0.00E+00	75	0.00E+00
Metals													
Arsenic	6.75	1.00E-06	3477	0.290	0.03	5	25	71.8	365	25	3.90E-08	75	1.30E-08
Cadmium	3.86	1.00E-06	3477	0.290	0.1	5	25	71.8	365	25	7.43E-08		
Lead	563	1.00E-06	3477	0.290	0.01	5	25	71.8	365	25	1.08E-06		
VPH													
C5-C8 Aliphatics		1.00E-06	3477	0.290	1	5	25	71.8	365	25	0.00E+00		
C9-C12 Aliphatics		1.00E-06	3477	0.290	0.5	5	25	71.8	365	25	0.00E+00		
C9-C10 Aromatics		1.00E-06	3477	0.290	0.2	5	25	71.8	365	25	0.00E+00		

TABLE 44
AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT CD 45 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	530	6.00E-02	28.8	5	25	1.00E-06	72	365	25	3.49E-07	8.74E-08	4.37E-07	75	1.16E-07	2.91E-08	1.46E-07
EPH																
C9-C18 Aliphatics		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00				
C19-C36 Aliphatics	545	6.00E-02	28.8	5	25	1.00E-06	72	365	25	3.59E-07	8.98E-08	4.49E-07				
C11-C22 Aromatics	1140	6.00E-02	28.8	5	25	1.00E-06	72	365	25	7.52E-07	1.88E-07	9.40E-07				
SVOCs																
Benzo(a)anthracene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo(a)pyrene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Benzo (k) fluoranthene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Chrysene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Indeno(1,2,3-c,d)pyrene		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00	75	0.00E+00	0.00E+00	0.00E+00
Metals																
Arsenic	6.75	6.00E-02	28.8	5	25	1.00E-06	72	365	25	4.45E-09	1.11E-09	5.56E-09	75	1.48E-09	3.71E-10	1.85E-09
cadmium	3.86	6.00E-02	28.8	5	25	1.00E-06	72	365	25	2.55E-09	6.36E-10	3.18E-09				
Lead	563	6.00E-02	28.8	5	25	1.00E-06	72	365	25	3.71E-07	9.28E-08	4.64E-07				
VPH																
C5-C8 Aliphatics		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00				
C9-C12 Aliphatics		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00				
C9-C10 Aromatics		6.00E-02	28.8	5	25	1.00E-06	72	365	25	0.00E+00	0.00E+00	0.00E+00				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	Fraction from Soil	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals											
Cadmium	3.86	6.00E-02	1.0	5	8	25	1.00E-06	4.17E-02	365	75	3.53E-07

TABLE 45
AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
UTILITY MAINTENANCE WORKER SCENARIO (SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	16.9	330	5	25	1.00E-06	72	25	1.06E-06	365	75	3.55E-07
EPH											
C9-C18 Aliphatics	2000	330	5	25	1.00E-06	72	25	1.26E-04	365		
C19-C36 Aliphatics	8800	330	5	25	1.00E-06	72	25	5.54E-04	365		
C11-C22 Aromatics	1955	330	5	25	1.00E-06	72	25	1.23E-04	365		
SVOCs											
Benzo(a)anthracene	72	330	5	25	1.00E-06	72	25	4.53E-06	365	75	1.51E-06
Benzo(a)pyrene	38	330	5	25	1.00E-06	72	25	2.39E-06	365	75	7.97E-07
Benzo(b)fluoranthene	61	330	5	25	1.00E-06	72	25	3.84E-06	365	75	1.28E-06
Benzo(k)fluoranthene	53	330	5	25	1.00E-06	72	25	3.34E-06	365	75	1.11E-06
Chrysene	84	330	5	25	1.00E-06	72	25	5.29E-06	365	75	1.76E-06
Indeno(1,2,3-cd)pyrene	9.1	330	5	25	1.00E-06	72	25	5.73E-07	365	75	1.91E-07
Metals											
Arsenic	14.05	330	5	25	1.00E-06	72	25	8.85E-07	365	75	2.95E-07
Cadmium	8.19	330	5	25	1.00E-06	72	25	5.16E-07	365		
Lead	1240	330	5	25	1.00E-06	72	25	9.37E-06	365		
VPH											
C5-C8 Aliphatics	0.062	330	5	25	1.00E-06	72	25	3.90E-09	365		
C9-C12 Aliphatics	1.7	330	5	25	1.00E-06	72	25	1.07E-07	365		
C9-C10 Aromatics	0.58	330	5	25	1.00E-06	72	25	3.65E-08	365		

TABLE 46
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
UTILITY MAINTENANCE WORKER SCENARIO (SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	16.9	1.00E-06	3477	0.290	0.14	5	25.0	71.8	365	25.0	4.55E-07	75	1.52E-07
EPH													
C9-C18 Aliphatics	2000	1.00E-06	3477	0.290	0.5	5	25.0	71.8	365	25.0	1.92E-04		
C19-C36 Aliphatics	8800	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	1.69E-04		
C11-C22 Aromatics	1955	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	3.76E-05		
SVOCs													
Benzo(a)anthracene	72	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	1.80E-06	75	6.00E-07
Benzo(a)pyrene	38	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	9.50E-07	75	3.17E-07
Benzo(b)fluoranthene	61	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	1.53E-06	75	5.09E-07
Benzo(k)fluoranthene	53	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	1.33E-06	75	4.42E-07
Chrysene	84	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	2.10E-06	75	7.00E-07
Indeno(1,2,3-cd)pyrene	9.1	1.00E-06	3477	0.290	0.13	5	25.0	71.8	365	25.0	2.28E-07	75	7.59E-08
Metals													
Arsenic	14.05	1.00E-06	3477	0.290	0.03	5	25.0	71.8	365	25.0	8.11E-08	75	2.70E-08
Cadmium	8.19	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	1.58E-07		
Lead	1240	1.00E-06	3477	0.290	0.01	5	25.0	71.8	365	25.0	2.39E-06		
VPH													
C5-C8 Aliphatics	0.062	1.00E-06	3477	0.290	1	5	25.0	71.8	365	25.0	1.19E-08		
C9-C12 Aliphatics	1.7	1.00E-06	3477	0.290	0.5	5	25.0	71.8	365	25.0	1.64E-07		
C9-C10 Aromatics	0.58	1.00E-06	3477	0.290	0.2	5	25.0	71.8	365	25.0	2.23E-08		

TABLE 47
AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
UTILITY MAINTENANCE WORKER SCENARIO (SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	16.9	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.11E-08	2.79E-09	1.39E-08	75	3.71E-09	9.29E-10	4.64E-09
EPH																
C9-C18 Aliphatics	2000	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.32E-06	3.30E-07	1.65E-06				
C19-C36 Aliphatics	8800	6.00E-02	28.8	5	25	1.00E-06	72	365	25	5.80E-06	1.45E-06	7.25E-06				
C11-C22 Aromatics	1955	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.29E-06	3.22E-07	1.61E-06				
SVOCs																
Benzo(a)anthracene	72	6.00E-02	28.8	5	25	1.00E-06	72	365	25	4.75E-08	1.19E-08	5.93E-08	75	1.58E-08	3.96E-09	1.98E-08
Benzo(a)pyrene	38	6.00E-02	28.8	5	25	1.00E-06	72	365	25	2.51E-08	6.26E-09	3.13E-08	75	8.35E-09	2.09E-09	1.04E-08
Benzo(b)fluoranthene	61	6.00E-02	28.8	5	25	1.00E-06	72	365	25	4.02E-08	1.01E-08	5.03E-08	75	1.34E-08	3.35E-09	1.68E-08
Benzo (k) fluoranthene	53	6.00E-02	28.8	5	25	1.00E-06	72	365	25	3.49E-08	8.74E-09	4.37E-08	75	1.16E-08	2.91E-09	1.46E-08
Chrysene	84	6.00E-02	28.8	5	25	1.00E-06	72	365	25	5.54E-08	1.38E-08	6.92E-08	75	1.85E-08	4.62E-09	2.31E-08
Indeno(1,2,3-c,d)pyrene	9.1	6.00E-02	28.8	5	25	1.00E-06	72	365	25	6.00E-09	1.50E-09	7.50E-09	75	2.00E-09	5.00E-10	2.50E-09
Metals																
Arsenic	14.05	6.00E-02	28.8	5	25	1.00E-06	72	365	25	9.26E-09	2.32E-09	1.16E-08	75	3.09E-09	7.72E-10	3.86E-09
cadmium	8.19	6.00E-02	28.8	5	25	1.00E-06	72	365	25	5.40E-09	1.35E-09	6.75E-09				
Lead	1240	6.00E-02	28.8	5	25	1.00E-06	72	365	25	8.18E-07	2.04E-07	1.02E-06				
VPH																
C5-C8 Aliphatics	0.062	6.00E-02	28.8	5	25	1.00E-06	72	365	25	4.09E-11	1.02E-11	5.11E-11				
C9-C12 Aliphatics	1.7	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.12E-09	2.80E-10	1.40E-09				
C9-C10 Aromatics	0.58	6.00E-02	28.8	5	25	1.00E-06	72	365	25	3.82E-10	9.56E-11	4.78E-10				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	Fraction from Soil	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals											
Cadmium	8.19	6.00E-02	1.0	5	8	25	1.00E-06	4.17E-02	365	75	7.48E-07

TABLE 48
AVERAGE DAILY EXPOSURE DOSES – INGESTION OF SOIL
UTILITY MAINTENANCE WORKER SCENARIO (SITE WIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Exposure Point Concentration (mg/kg)	IR (mg/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	AP (yr)	CADD (mg/kg/d)	C_2 (d/yr)	AP (yr)	LADD (mg/kg/d)
PCBs	78	330	5	25	1.00E-06	72	25	4.91E-06	365	75	1.64E-06
EPH											
C9-C18 Aliphatics	45	330	5	25	1.00E-06	72	25	2.83E-06	365		
C19-C36 Aliphatics	7300	330	5	25	1.00E-06	72	25	4.60E-04	365		
C11-C22 Aromatics	1670	330	5	25	1.00E-06	72	25	1.05E-04	365		
Metals											
Arsenic	11	330	5	25	1.00E-06	72	25	6.93E-07	365	75	2.31E-07
Cadmium	20	330	5	25	1.00E-06	72	25	1.26E-06	365		
Lead	2230	330	5	25	1.00E-06	72	25	1.68E-05	365		

TABLE 49
AVERAGE DAILY DOSES -- DERMAL CONTACT WITH SOIL
UTILITY MAINTENANCE WORKER SCENARIO (SITEWIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

COMPOUNDS	Exposure Point Concentration (mg/kg)	C_1 (kg/mg)	SA (cm^2)	AF (mg/cm^2)	ABS	EF (d/yr)	EP (yr)	BW (kg)	C_2 (d/yr)	AP (yr)	CADD (mg/kg/d)	AP (yr)	LADD (mg/kg/d)
PCBs	78	1.00E-06	3477	0.290	0.14	5	25.0	71.8	365	25.0	2.10E-06	75	7.00E-07
EPH													
C9-C18 Aliphatics	45	1.00E-06	3477	0.290	0.5	5	25.0	71.8	365	25.0	4.33E-06		
C19-C36 Aliphatics	7300	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	1.40E-04		
C11-C22 Aromatics	1670	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	3.21E-05		
Metals													
Arsenic	11	1.00E-06	3477	0.290	0.03	5	25.0	71.8	365	25.0	6.35E-08	75	2.12E-08
Cadmium	20	1.00E-06	3477	0.290	0.1	5	25.0	71.8	365	25.0	3.85E-07		
Lead	2230	1.00E-06	3477	0.290	0.01	5	25.0	71.8	365	25.0	4.29E-06		

TABLE 50
AVERAGE EXPOSURE DOSES – INHALATION OF PARTICULATE MATTER
UTILITY MAINTENANCE WORKER SCENARIO (SITEWIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	VR (m^3/d)	EF (d/yr)	EP (yr)	C_1 (kg/mg)	BW (kg)	C_2 (d/yr)	AP (yr)	GI ADD (mg/kg/d)	Lung ADD (mg/kg/d)	Total ADD	AP (yr)	GI LADD (mg/kg/d)	Lung LADD (mg/kg/d)	Total LADD (mg/kg/d)
PCBs	78	6.00E-02	28.8	5	25	1.00E-06	72	365	25	5.14E-08	1.29E-08	6.43E-08	75	1.71E-08	4.29E-09	2.14E-08
EPH																
C9-C18 Aliphatics	45	6.00E-02	28.8	5	25	1.00E-06	72	365	25	2.97E-08	7.42E-09	3.71E-08				
C19-C36 Aliphatics	7300	6.00E-02	28.8	5	25	1.00E-06	72	365	25	4.81E-06	1.20E-06	6.02E-06				
C11-C22 Aromatics	1670	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.10E-06	2.75E-07	1.38E-06				
Metals																
Arsenic	11	6.00E-02	28.8	5	25	1.00E-06	72	365	25	7.25E-09	1.81E-09	9.07E-09	75	2.42E-09	6.04E-10	3.02E-09
cadmium	20	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.32E-08	3.30E-09	1.65E-08				
Lead	2230	6.00E-02	28.8	5	25	1.00E-06	72	365	25	1.47E-06	3.68E-07	1.84E-06				

CHEMICALS	Particulate Concentration (mg/kg)	RP (mg/m^3)	Fraction from Soil	EF (d/yr)	ED (hr/d)	EP (yr)	C_1 (kg/mg)	C_2 (d/hr)	C_3 (d/yr)	AP (yr)	LADE (ug/m^3)
Metals											
Cadmium	20	6.00E-02	1.0	5	8	25	1.00E-06	4.17E-02	365	75	1.83E-06

TABLE 51
CHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
TRESPASSER SCENARIO (OUTSIDE HOT SPOT AREAS)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	
PCBs	2.10E-06	2.00E-05	1.05E-01	2.41E-06	2.00E-05	1.21E-01	1.27E-10	2.00E-05	6.37E-06	2.26E-01
EPH										
C9-C18 Aliphatics	1.82E-04	1.00E-01	1.82E-03	7.47E-04	1.00E-01	7.47E-03	1.11E-08	1.00E-01	1.11E-07	9.30E-03
C19-36 Aliphatics	1.81E-03	2.00E+00	9.04E-04	1.48E-03	2.00E+00	7.41E-04	1.10E-07	2.00E+00	5.48E-08	1.65E-03
C11-22 Aromatics	2.65E-05	3.00E-02	8.83E-04	6.03E-05	3.00E-02	2.01E-03	4.46E-09	3.00E-02	1.49E-07	2.89E-03
SVOCs										
Benzo(a)anthracene	4.45E-06	4.00E-02	1.11E-04	4.74E-06	4.00E-02	1.19E-04	2.70E-10	4.00E-02	6.75E-09	2.30E-04
Benzo(a)pyrene	3.34E-06	4.00E-02	8.36E-05	3.56E-06	4.00E-02	8.91E-05	2.03E-10	4.00E-02	5.06E-09	1.73E-04
Benzo(b)fluoranthene	3.04E-06	4.00E-02	7.60E-05	3.24E-06	4.00E-02	8.10E-05	1.84E-10	4.00E-02	4.60E-09	1.57E-04
Benzo(k)fluoranthene	2.58E-06	4.00E-02	6.46E-05	2.75E-06	4.00E-02	6.88E-05	1.57E-10	4.00E-02	3.91E-09	1.33E-04
Chrysene	4.59E-06	4.00E-02	1.15E-04	4.89E-06	4.00E-02	1.22E-04	2.78E-10	4.00E-02	6.95E-09	2.37E-04
Indeno(1,2,3-cd)pyrene	3.19E-06	4.00E-02	7.98E-05	3.40E-06	4.00E-02	8.50E-05	1.93E-10	4.00E-02	4.83E-09	1.65E-04
Metals										
Arsenic	1.48E-06	3.00E-04	4.92E-03	3.63E-07	3.00E-04	1.21E-03	8.94E-11	3.00E-04	2.98E-07	6.13E-03
Cadmium	8.05E-07	5.00E-04	1.61E-03	6.60E-07	5.00E-04	1.32E-03	4.88E-11	5.00E-04	9.76E-08	2.93E-03
Lead	3.16E-05	7.50E-04	4.22E-02	2.16E-05	7.50E-04	2.88E-02	1.60E-08	7.50E-04	2.13E-05	7.10E-02
VPH										
C5-C8 Aliphatics	3.87E-08	6.00E-02	6.46E-07	3.18E-07	6.00E-02	5.29E-06	2.35E-12	6.00E-02	3.91E-11	5.94E-06
C9-C12 Aliphatics	2.05E-07	1.00E-01	2.05E-06	8.41E-07	1.00E-01	8.41E-06	1.24E-11	1.00E-01	1.24E-10	1.05E-05
C9-C10 Aromatics	6.15E-07	1.00E-01	6.15E-06	1.01E-06	1.00E-01	1.01E-05	3.73E-11	1.00E-01	3.73E-10	1.62E-05
Total			**1.58E-01**			**1.63E-01**			**2.84E-05**	**3.21E-01**

[redacted] LE 52[redacted]

INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
TRESPASSER SCENARIO (OUTSIDE HOT SPOT AREAS)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	TOTAL
PCBs	3.36E-07	2.00E+00	6.72E-07	3.86E-07	2.00E+00	7.72E-07	2.04E-11	2.00E+00	4.07E-11	1.44E-06
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	7.12E-07	7.30E-01	5.20E-07	7.59E-07	7.30E-01	5.54E-07	4.32E-11	7.30E-01	3.15E-11	1.07E-06
Benzo(a)pyrene	5.35E-07	7.30E+00	3.90E-06	5.70E-07	7.30E+00	4.16E-06	3.24E-11	7.30E+00	2.37E-10	8.07E-06
Benzo(b)fluoranthene	4.86E-07	7.30E-01	3.55E-07	5.18E-07	7.30E-01	3.78E-07	2.95E-11	7.30E-01	2.15E-11	7.33E-07
Benzo(k)fluoranthene	4.13E-07	7.30E-02	3.02E-08	4.40E-07	7.30E-02	3.22E-08	2.50E-11	7.30E-02	1.83E-12	6.23E-08
Chrysene	7.34E-07	7.30E-03	5.36E-09	7.83E-07	7.30E-03	5.71E-09	4.45E-11	7.30E-03	3.25E-13	1.11E-08
Indeno(1,2,3-cd)pyrene	5.11E-07	7.30E-01	3.73E-07	5.44E-07	7.30E-01	3.97E-07	3.09E-11	7.30E-01	2.26E-11	7.70E-07
Metals										
Arsenic	2.36E-07	1.50E+00	3.54E-07	5.81E-08	1.50E+00	8.71E-08	1.43E-11	1.50E+00	2.15E-11	4.41E-07
Cadmium							1.53E-08	1.80E-03	2.75E-11	2.75E-11
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			6.21E-06			6.39E-06			4.04E-10	1.26E-05

TABLE 53
CHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
TRESPASSER SCENARIO (HOT SPOT WSB-6 - 0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	
PCBs	9.88E-04	2.00E-05	4.94E+01	1.13E-03	2.00E-05	5.67E+01	5.99E-08	2.00E-05	2.99E-03	1.06E+02
EPH										
C9-C18 Aliphatics	1.08E-06	1.00E-01	1.08E-05	4.42E-06	1.00E-01	4.42E-05	6.54E-11	1.00E-01	6.54E-10	5.50E-05
C19-36 Aliphatics	2.36E-05	2.00E+00	1.18E-05	1.94E-05	2.00E+00	9.69E-06	1.43E-09	2.00E+00	7.16E-10	2.15E-05
C11-22 Aromatics	1.44E-05	3.00E-02	4.80E-04	3.28E-05	3.00E-02	1.09E-03	2.43E-09	3.00E-02	8.09E-08	1.57E-03
SVOCs										
Benzo(a)anthracene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Chrysene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Fluoranthene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Fluorene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Metals										
Arsenic	1.36E-06	3.00E-04	4.53E-03	3.34E-07	3.00E-04	1.11E-03	8.24E-11	3.00E-04	2.75E-07	5.65E-03
Cadmium	1.22E-07	5.00E-04	2.45E-04	1.00E-07	5.00E-04	2.01E-04	7.41E-12	5.00E-04	1.48E-08	4.45E-04
Lead	8.41E-07	7.50E-04	1.12E-03	5.74E-07	7.50E-04	7.66E-04	4.25E-10	7.50E-04	5.66E-07	1.89E-03
VPH										
C5-C8 Aliphatics	0.00E+00	6.00E-02	0.00E+00	0.00E+00	6.00E-02	0.00E+00	0.00E+00	6.00E-02	0.00E+00	0.00E+00
C9-C12 Aliphatics	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00
C9-C10 Aromatics	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00
Total			**4.94E+01**			**5.67E+01**			**2.99E-03**	**1.06E+02**

TABLE 54

INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL

TRESPASSER SCENARIO (HOT SPOT WSB-6 - 0-1' bgs)

FORMER TOMBARELLO SITE

LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	TOTAL
PCBs	1.58E-04	2.00E+00	3.16E-04	1.81E-04	2.00E+00	3.63E-04	9.58E-09	2.00E+00	1.92E-08	6.79E-04
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00
Chrysene	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Metals										
Arsenic	2.18E-07	1.50E+00	3.26E-07	5.35E-08	1.50E+00	8.03E-08	1.32E-11	1.50E+00	1.98E-11	4.07E-07
Cadmium							2.32E-09	1.80E-03	4.17E-12	4.17E-12
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			3.16E-04			3.63E-04			1.92E-08	6.79E-04

TABLE 55
CHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
TRESPASSER SCENARIO (SOUTHEAST CORNER 0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	
PCBs	1.28E-06	2.00E-05	6.42E-02	1.47E-06	2.00E-05	7.37E-02	7.78E-11	2.00E-05	3.89E-06	1.38E-01
EPH										
C9-C18 Aliphatics	1.52E-04	1.00E-01	1.52E-03	6.23E-04	1.00E-01	6.23E-03	9.21E-09	1.00E-01	9.21E-08	7.75E-03
C19-36 Aliphatics	6.69E-04	2.00E+00	3.34E-04	5.48E-04	2.00E+00	2.74E-04	4.05E-08	2.00E+00	2.03E-08	6.08E-04
C11-22 Aromatics	1.70E-05	3.00E-02	5.65E-04	3.86E-05	3.00E-02	1.29E-03	2.85E-09	3.00E-02	9.52E-08	1.85E-03
SVOCs										
Benzo(a)anthracene	5.47E-06	4.00E-02	1.37E-04	5.83E-06	4.00E-02	1.46E-04	3.32E-10	4.00E-02	8.29E-09	2.83E-04
Benzo(a)pyrene	2.89E-06	4.00E-02	7.22E-05	3.08E-06	4.00E-02	7.69E-05	1.75E-10	4.00E-02	4.37E-09	1.49E-04
Benzo(b)fluoranthene	4.63E-06	4.00E-02	1.16E-04	4.94E-06	4.00E-02	1.23E-04	2.81E-10	4.00E-02	7.02E-09	2.39E-04
Benzo(k)fluoranthene	4.03E-06	4.00E-02	1.01E-04	4.29E-06	4.00E-02	1.07E-04	2.44E-10	4.00E-02	6.10E-09	2.08E-04
Chrysene	6.38E-06	4.00E-02	1.60E-04	6.80E-06	4.00E-02	1.70E-04	3.87E-10	4.00E-02	9.67E-09	3.30E-04
Indeno(1,2,3-cd)pyrene	6.91E-07	4.00E-02	1.73E-05	7.37E-07	4.00E-02	1.84E-05	4.19E-11	4.00E-02	1.05E-09	3.57E-05
Metals										
Arsenic	8.13E-07	3.00E-04	2.71E-03	2.00E-07	3.00E-04	6.66E-04	4.93E-11	3.00E-04	1.64E-07	3.38E-03
Cadmium	6.22E-07	5.00E-04	1.24E-03	5.10E-07	5.00E-04	1.02E-03	3.77E-11	5.00E-04	7.54E-08	2.26E-03
Lead	8.93E-06	7.50E-04	1.19E-02	6.10E-06	7.50E-04	8.14E-03	4.51E-09	7.50E-04	6.02E-06	2.01E-02
VPH										
C5-C8 Aliphatics	4.71E-09	6.00E-02	7.85E-08	3.86E-08	6.00E-02	6.44E-07	2.85E-13	6.00E-02	4.76E-12	7.22E-07
C9-C12 Aliphatics	1.29E-07	1.00E-01	1.29E-06	5.29E-07	1.00E-01	5.29E-06	7.83E-12	1.00E-01	7.83E-11	6.59E-06
C9-C10 Aromatics	4.41E-08	1.00E-01	4.41E-07	7.23E-08	1.00E-01	7.23E-07	2.67E-12	1.00E-01	2.67E-11	1.16E-06
Total			**8.31E-02**			**9.19E-02**			**1.04E-05**	**1.75E-01**

TABLE 56

INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
TRESPASSER SCENARIO (SOUTHEAST CORNER 0-1' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	TOTAL
PCBs	2.05E-07	2.00E+00	4.11E-07	2.36E-07	2.00E+00	4.72E-07	1.25E-11	2.00E+00	2.49E-11	8.82E-07
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	8.75E-07	7.30E-01	6.39E-07	9.33E-07	7.30E-01	6.81E-07	5.30E-11	7.30E-01	3.87E-11	1.32E-06
Benzo(a)pyrene	4.62E-07	7.30E+00	3.37E-06	4.92E-07	7.30E+00	3.59E-06	2.80E-11	7.30E+00	2.04E-10	6.97E-06
Benzo(b)fluoranthene	7.42E-07	7.30E-01	5.41E-07	7.90E-07	7.30E-01	5.77E-07	4.49E-11	7.30E-01	3.28E-11	1.12E-06
Benzo(k)fluoranthene	6.44E-07	7.30E-02	4.70E-08	6.87E-07	7.30E-02	5.01E-08	3.90E-11	7.30E-02	2.85E-12	9.72E-08
Chrysene	1.02E-06	7.30E-03	7.45E-09	1.09E-06	7.30E-03	7.94E-09	6.19E-11	7.30E-03	4.52E-13	1.54E-08
Indeno(1,2,3-cd)pyrene	1.11E-07	7.30E-01	8.08E-08	1.18E-07	7.30E-01	8.61E-08	6.70E-12	7.30E-01	4.89E-12	1.67E-07
Metals										
Arsenic	1.30E-07	1.50E+00	1.95E-07	3.20E-08	1.50E+00	4.80E-08	7.88E-12	1.50E+00	1.18E-11	2.43E-07
Cadmium							1.18E-08	1.80E-03	2.12E-11	2.12E-11
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			5.29E-06			5.52E-06			3.42E-10	1.08E-05

TABLE 57
SUBCHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	
PCBs	3.32E-05	5.00E-05	6.64E-01	1.42E-05	5.00E-05	2.84E-01	4.34E-07	5.00E-05	8.69E-03	9.56E-01
EPH										
C9-C18 Aliphatics	3.63E-03	1.00E+00	3.63E-03	5.54E-03	1.00E+00	5.54E-03	4.75E-05	1.00E+00	4.75E-05	9.21E-03
C19-36 Aliphatics	3.60E-02	2.00E+01	1.80E-03	1.10E-02	2.00E+01	5.49E-04	4.71E-04	2.00E+01	2.35E-05	2.37E-03
C11-22 Aromatics	1.49E-03	3.00E-01	4.95E-03	4.54E-04	3.00E-01	1.51E-03	1.94E-05	3.00E-01	6.48E-05	6.53E-03
SVOCs										
Benzo(a)anthracene	8.85E-05	4.00E-01	2.21E-04	3.52E-05	4.00E-01	8.79E-05	1.16E-06	4.00E-01	2.90E-06	3.12E-04
Benzo(a)pyrene	6.65E-05	4.00E-01	1.66E-04	2.64E-05	4.00E-01	6.60E-05	8.70E-07	4.00E-01	2.18E-06	2.34E-04
Benzo(b)fluoranthene	6.04E-05	4.00E-01	1.51E-04	2.40E-05	4.00E-01	6.00E-05	7.91E-07	4.00E-01	1.98E-06	2.13E-04
Benzo(k)fluoranthene	5.14E-05	4.00E-01	1.28E-04	2.04E-05	4.00E-01	5.10E-05	6.73E-07	4.00E-01	1.68E-06	1.81E-04
Chrysene	9.13E-05	4.00E-01	2.28E-04	3.63E-05	4.00E-01	9.06E-05	1.19E-06	4.00E-01	2.99E-06	3.22E-04
Indeno(1,2,3-cd)pyrene	6.35E-05	4.00E-01	1.59E-04	2.52E-05	4.00E-01	6.30E-05	8.31E-07	4.00E-01	2.08E-06	2.24E-04
Metals										
Arsenic	2.20E-05	3.00E-04	7.34E-02	2.02E-06	3.00E-04	6.73E-03	2.88E-07	3.00E-04	9.61E-04	8.11E-02
Cadmium	1.08E-03	5.00E-04	2.16E+00	3.31E-04	5.00E-04	6.61E-01	1.42E-05	5.00E-04	2.83E-02	2.85E+00
Lead	6.29E-04	7.50E-04	8.39E-01	1.60E-04	7.50E-04	2.14E-01	6.86E-05	7.50E-04	9.15E-02	1.14E+00
VPH										
C5-C8 Aliphatics	7.71E-07	6.00E-01	1.28E-06	2.35E-06	6.00E-01	3.92E-06	1.01E-08	6.00E-01	1.68E-08	5.23E-06
C9-C12 Aliphatics	4.08E-06	1.00E+00	4.08E-06	6.23E-06	1.00E+00	6.23E-06	5.34E-08	1.00E+00	5.34E-08	1.04E-05
C9-C10 Aromatics	1.22E-05	1.00E+00	1.22E-05	7.48E-06	1.00E+00	7.48E-06	1.60E-07	1.00E+00	1.60E-07	1.99E-05
Total			**3.75E+00**			**1.17E+00**			**1.30E-01**	**5.05E+00**

HAZARD INDICES SEPARATED BY MECHANISM OF ACTION

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	
PCBs	3.32E-05	5.00E-05	6.64E-01	1.42E-05	5.00E-05	2.84E-01	4.34E-07	5.00E-05	8.69E-03	9.56E-01
Benzo(a)anthracene	8.85E-05	4.00E-01	2.21E-04	3.52E-05	4.00E-01	8.79E-05	1.16E-06	4.00E-01	2.90E-06	3.12E-04
Benzo(a)pyrene	6.65E-05	4.00E-01	1.66E-04	2.64E-05	4.00E-01	6.60E-05	8.70E-07	4.00E-01	2.18E-06	2.34E-04
Benzo(b)fluoranthene	6.04E-05	4.00E-01	1.51E-04	2.40E-05	4.00E-01	6.00E-05	7.91E-07	4.00E-01	1.98E-06	2.13E-04
Benzo(k)fluoranthene	5.14E-05	4.00E-01	1.28E-04	2.04E-05	4.00E-01	5.10E-05	6.73E-07	4.00E-01	1.68E-06	1.81E-04
Chrysene	9.13E-05	4.00E-01	2.28E-04	3.63E-05	4.00E-01	9.06E-05	1.19E-06	4.00E-01	2.99E-06	3.22E-04
Indeno(1,2,3-cd)pyrene	6.35E-05	4.00E-01	1.59E-04	2.52E-05	4.00E-01	6.30E-05	8.31E-07	4.00E-01	2.08E-06	2.24E-04
C11-22 Aromatics	1.49E-03	3.00E-01	4.95E-03	4.54E-04	3.00E-01	1.51E-03	1.94E-05	3.00E-01	6.48E-05	6.53E-03
Total PCB/PAH										**9.64E-01**
Arsenic	2.20E-05	3.00E-04	7.34E-02	2.02E-06	3.00E-04	6.73E-03	2.88E-07	3.00E-04	9.61E-04	**8.11E-02**
Cadmium	1.08E-03	5.00E-04	2.16E+00	3.31E-04	5.00E-04	6.61E-01	1.42E-05	5.00E-04	2.83E-02	**2.85E+00**
Lead	6.29E-04	7.50E-04	8.39E-01	1.60E-04	7.50E-04	2.14E-01	6.86E-05	7.50E-04	9.15E-02	**1.14E+00**
C9-C18 Aliphatics	3.63E-03	1.00E+00	3.63E-03	5.54E-03	1.00E+00	5.54E-03	4.75E-05	1.00E+00	4.75E-05	9.21E-03
C19-36 Aliphatics	3.60E-02	2.00E+01	1.80E-03	1.10E-02	2.00E+01	5.49E-04	4.71E-04	2.00E+01	2.35E-05	2.37E-03
C5-C8 Aliphatics	7.71E-07	6.00E-01	1.28E-06	2.35E-06	6.00E-01	3.92E-06	1.01E-08	6.00E-01	1.68E-08	5.23E-06
C9-C12 Aliphatics	4.08E-06	1.00E+00	4.08E-06	6.23E-06	1.00E+00	6.23E-06	5.34E-08	1.00E+00	5.34E-08	1.04E-05
C9-C10 Aromatics	1.22E-05	1.00E+00	1.22E-05	7.48E-06	1.00E+00	7.48E-06	1.60E-07	1.00E+00	1.60E-07	1.99E-05
Petroleum compounds										**1.16E-02**

[redacted]LE 5

INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	
PCBs	4.42E-07	2.00E+00	8.85E-07	1.89E-07	2.00E+00	3.79E-07	5.79E-09	2.00E+00	1.16E-08	1.27E-06
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	1.18E-06	7.30E-01	8.62E-07	4.69E-07	7.30E-01	3.42E-07	1.55E-08	7.30E-01	1.13E-08	1.22E-06
Benzo(a)pyrene	8.86E-07	7.30E+00	6.47E-06	3.52E-07	7.30E+00	2.57E-06	1.16E-08	7.30E+00	8.47E-08	9.13E-06
Benzo(b)fluoranthene	8.06E-07	7.30E-01	5.88E-07	3.20E-07	7.30E-01	2.34E-07	1.05E-08	7.30E-01	7.70E-09	8.30E-07
Benzo(k)fluoranthene	6.85E-07	7.30E-02	5.00E-08	2.72E-07	7.30E-02	1.99E-08	8.97E-09	7.30E-02	6.55E-10	7.05E-08
Chrysene	1.22E-06	7.30E-03	8.88E-09	4.83E-07	7.30E-03	3.53E-09	1.59E-08	7.30E-03	1.16E-10	1.25E-08
Indeno(1,2,3-cd)pyrene	8.46E-07	7.30E-01	6.18E-07	3.36E-07	7.30E-01	2.45E-07	1.11E-08	7.30E-01	8.09E-09	8.71E-07
Metals										
Arsenic	2.94E-07	1.50E+00	4.40E-07	2.69E-08	1.50E+00	4.04E-08	3.84E-09	1.50E+00	5.77E-09	4.87E-07
Cadmium							6.28E-05	1.80E-03	1.13E-07	1.13E-07
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			**9.92E-06**			**3.83E-06**			**2.43E-07**	**1.40E-05**

TABLE 59
SUBCHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (HOT SPOT WSB-6)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	TOTAL
PCBs	1.96E-02	5.00E-05	3.93E+02	8.40E-03	5.00E-05	1.68E+02	2.57E-04	5.00E-05	5.14E+00	5.66E+02
EPH										
C9-C18 Aliphatics	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
C19-36 Aliphatics	4.70E-04	2.00E+01	2.35E-05	1.44E-04	2.00E+01	7.18E-06	6.15E-06	2.00E+01	3.08E-07	3.10E-05
C11-22 Aromatics	7.96E-04	3.00E-01	2.65E-03	2.43E-04	3.00E-01	8.11E-04	1.04E-05	3.00E-01	3.47E-05	3.50E-03
SVOCs										
Benzo(a)anthracene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Chrysene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Metals										
Arsenic	2.70E-05	3.00E-04	9.02E-02	2.48E-06	3.00E-04	8.26E-03	3.54E-07	3.00E-04	1.18E-03	9.96E-02
Cadmium	2.43E-06	5.00E-04	4.87E-03	7.43E-07	5.00E-04	1.49E-03	3.18E-08	5.00E-04	6.37E-05	6.42E-03
Lead	1.67E-05	7.50E-04	2.23E-02	4.26E-06	7.50E-04	5.68E-03	1.82E-06	7.50E-04	2.43E-03	3.04E-02
VPH										
C5-C8 Aliphatics	0.00E+00	6.00E-01	0.00E+00	0.00E+00	6.00E-01	0.00E+00	0.00E+00	6.00E-01	0.00E+00	0.00E+00
C9-C12 Aliphatics	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
C9-C10 Aromatics	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
Total			**3.93E+02**			**1.68E+02**			**5.15E+00**	**5.66E+02**

[redacted]LE 6[redacted]

INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (HOT SPOT WSB-6)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	TOTAL
PCBs	2.62E-04	2.00E+00	5.24E-04	1.12E-04	2.00E+00	2.24E-04	3.43E-06	2.00E+00	6.86E-06	7.55E-04
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00
Chrysene	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Metals										
Arsenic	3.61E-07	1.50E+00	5.41E-07	3.31E-08	1.50E+00	4.96E-08	4.72E-09	1.50E+00	7.08E-09	5.98E-07
Cadmium							1.41E-07	1.80E-03	2.54E-10	2.54E-10
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			**5.24E-04**			**2.24E-04**			**6.86E-06**	**7.55E-04**

TABLE 61
SUBCHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (HOT SPOT CD 4-5)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	TOTAL
PCBs	8.01E-04	5.00E-05	1.60E+01	3.43E-04	5.00E-05	6.85E+00	1.05E-05	5.00E-05	2.10E-01	2.31E+01
EPH										
C9-C18 Aliphatics	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
C19-36 Aliphatics	8.24E-04	2.00E+01	4.12E-05	2.52E-04	2.00E+01	1.26E-05	1.08E-05	2.00E+01	5.39E-07	5.43E-05
C11-22 Aromatics	1.72E-03	3.00E-01	5.74E-03	5.26E-04	3.00E-01	1.75E-03	2.26E-05	3.00E-01	7.52E-05	7.57E-03
SVOCs										
Benzo(a)anthracene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Chrysene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00	4.00E-01	0.00E+00	0.00E+00
Metals										
Arsenic	1.02E-05	3.00E-04	3.40E-02	9.35E-07	3.00E-04	3.12E-03	1.34E-07	3.00E-04	4.45E-04	3.76E-02
Cadmium	5.83E-06	5.00E-04	1.17E-02	1.78E-06	5.00E-04	3.56E-03	7.64E-08	5.00E-04	1.53E-04	1.54E-02
Lead	1.02E-04	7.50E-04	1.36E-01	2.60E-05	7.50E-04	3.47E-02	1.11E-05	7.50E-04	1.48E-02	1.86E-01
VPH										
C5-C8 Aliphatics	0.00E+00	6.00E-01	0.00E+00	0.00E+00	6.00E-01	0.00E+00	0.00E+00	6.00E-01	0.00E+00	0.00E+00
C9-C12 Aliphatics	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
C9-C10 Aromatics	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
Total			**1.62E+01**			**6.89E+00**			**2.25E-01**	**2.33E+01**

[redacted] LE 6[redacted]

INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (HOT SPOT CD 4-5)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	
PCBs	1.07E-05	2.00E+00	2.14E-05	4.57E-06	2.00E+00	9.14E-06	1.40E-07	2.00E+00	2.80E-07	3.08E-05
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00
Chrysene	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Metals										
Arsenic	1.36E-07	1.50E+00	2.04E-07	1.25E-08	1.50E+00	1.87E-08	1.78E-09	1.50E+00	2.67E-09	2.25E-07
Cadmium							3.38E-07	1.80E-03	6.09E-10	6.09E-10
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			**2.16E-05**			**9.15E-06**			**2.83E-07**	**3.10E-05**

TABLE 63
SUBCHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	TOTAL
PCBs	2.55E-05	5.00E-05	5.11E-01	1.09E-05	5.00E-05	2.18E-01	3.34E-07	5.00E-05	6.69E-03	7.36E-01
EPH										
C9-C18 Aliphatics	3.02E-03	1.00E+00	3.02E-03	4.62E-03	1.00E+00	4.62E-03	3.96E-05	1.00E+00	3.96E-05	7.68E-03
C19-36 Aliphatics	1.33E-02	2.00E+01	6.65E-04	4.06E-03	2.00E+01	2.03E-04	1.74E-04	2.00E+01	8.70E-06	8.77E-04
C11-22 Aromatics	2.95E-03	3.00E-01	9.85E-03	9.03E-04	3.00E-01	3.01E-03	3.87E-05	3.00E-01	1.29E-04	1.30E-02
SVOCs										
Benzo(a)anthracene	1.09E-04	4.00E-01	2.72E-04	4.32E-05	4.00E-01	1.08E-04	1.42E-06	4.00E-01	3.56E-06	3.84E-04
Benzo(a)pyrene	5.74E-05	4.00E-01	1.44E-04	2.28E-05	4.00E-01	5.70E-05	7.52E-07	4.00E-01	1.88E-06	2.02E-04
Benzo(b)fluoranthene	9.22E-05	4.00E-01	2.30E-04	3.66E-05	4.00E-01	9.15E-05	1.21E-06	4.00E-01	3.02E-06	3.25E-04
Benzo(k)fluoranthene	8.01E-05	4.00E-01	2.00E-04	3.18E-05	4.00E-01	7.95E-05	1.05E-06	4.00E-01	2.62E-06	2.82E-04
Chrysene	1.27E-04	4.00E-01	3.17E-04	5.04E-05	4.00E-01	1.26E-04	1.66E-06	4.00E-01	4.15E-06	4.48E-04
Indeno(1,2,3-cd)pyrene	1.38E-05	4.00E-01	3.44E-05	5.46E-06	4.00E-01	1.37E-05	1.80E-07	4.00E-01	4.50E-07	4.85E-05
Metals										
Arsenic	2.12E-05	3.00E-04	7.08E-02	1.95E-06	3.00E-04	6.49E-03	2.78E-07	3.00E-04	9.26E-04	7.82E-02
Cadmium	1.24E-05	5.00E-04	2.48E-02	3.78E-06	5.00E-04	7.56E-03	1.62E-07	5.00E-04	3.24E-04	3.26E-02
Lead	2.25E-04	7.50E-04	3.00E-01	5.73E-05	7.50E-04	7.63E-02	2.45E-05	7.50E-04	3.27E-02	4.09E-01
VPH										
C5-C8 Aliphatics	9.37E-08	6.00E-01	1.56E-07	2.86E-07	6.00E-01	4.77E-07	1.23E-09	6.00E-01	2.04E-09	6.35E-07
C9-C12 Aliphatics	2.57E-06	1.00E+00	2.57E-06	3.92E-06	1.00E+00	3.92E-06	3.36E-08	1.00E+00	3.36E-08	6.53E-06
C9-C10 Aromatics	8.76E-07	1.00E+00	8.76E-07	5.36E-07	1.00E+00	5.36E-07	1.15E-08	1.00E+00	1.15E-08	1.42E-06
Total			**9.21E-01**			**3.17E-01**			**4.08E-02**	**1.28E+00**

[redacted] LE 6 [redacted]

INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	TOTAL
PCBs	3.40E-07	2.00E+00	6.81E-07	1.46E-07	2.00E+00	2.91E-07	4.46E-09	2.00E+00	8.91E-09	9.81E-07
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	1.45E-06	7.30E-01	1.06E-06	5.76E-07	7.30E-01	4.21E-07	1.90E-08	7.30E-01	1.39E-08	1.49E-06
Benzo(a)pyrene	7.66E-07	7.30E+00	5.59E-06	3.04E-07	7.30E+00	2.22E-06	1.00E-08	7.30E+00	7.32E-08	7.88E-06
Benzo(b)fluoranthene	1.23E-06	7.30E-01	8.97E-07	4.88E-07	7.30E-01	3.56E-07	1.61E-08	7.30E-01	1.17E-08	1.27E-06
Benzo(k)fluoranthene	1.07E-06	7.30E-02	7.79E-08	4.24E-07	7.30E-02	3.10E-08	1.40E-08	7.30E-02	1.02E-09	1.10E-07
Chrysene	1.69E-06	7.30E-03	1.24E-08	6.72E-07	7.30E-03	4.91E-09	2.22E-08	7.30E-03	1.62E-10	1.74E-08
Indeno(1,2,3-cd)pyrene	1.83E-07	7.30E-01	1.34E-07	7.28E-08	7.30E-01	5.32E-08	2.40E-09	7.30E-01	1.75E-09	1.89E-07
Metals										
Arsenic	2.83E-07	1.50E+00	4.25E-07	2.59E-08	1.50E+00	3.89E-08	3.71E-09	1.50E+00	5.56E-09	4.69E-07
Cadmium							7.18E-07	1.80E-03	1.29E-09	1.29E-09
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			**8.87E-06**			**3.42E-06**			**1.17E-07**	**1.24E-05**

TABLE 65
SUBCHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (SITE WIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	TOTAL
PCBs	1.18E-04	5.00E-05	2.36E+00	5.04E-05	5.00E-05	1.01E+00	1.54E-06	5.00E-05	3.09E-02	3.40E+00
EPH										
C9-C18 Aliphatics	6.80E-05	1.00E+00	6.80E-05	1.04E-04	1.00E+00	1.04E-04	8.90E-07	1.00E+00	8.90E-07	1.73E-04
C19-36 Aliphatics	1.10E-02	2.00E+01	5.52E-04	3.37E-03	2.00E+01	1.69E-04	1.44E-04	2.00E+01	7.22E-06	7.27E-04
C11-22 Aromatics	2.52E-03	3.00E-01	8.41E-03	7.71E-04	3.00E-01	2.57E-03	3.30E-05	3.00E-01	1.10E-04	1.11E-02
Metals										
Arsenic	1.66E-05	3.00E-04	5.54E-02	1.52E-06	3.00E-04	5.08E-03	2.18E-07	3.00E-04	7.25E-04	6.12E-02
Cadmium	3.02E-05	5.00E-04	6.04E-02	9.23E-06	5.00E-04	1.85E-02	3.96E-07	5.00E-04	7.91E-04	7.97E-02
Lead	4.04E-04	7.50E-04	5.39E-01	1.03E-04	7.50E-04	1.37E-01	4.41E-05	7.50E-04	5.88E-02	7.35E-01
Total			**3.02E+00**			**1.17E+00**			**9.13E-02**	**4.28E+00**

[redacted]LE A

INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
CONSTRUCTION WORKER SCENARIO (SITE WIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	TOTAL
PCBs	7.86E-07	2.00E+00	1.57E-06	3.36E-07	2.00E+00	6.72E-07	1.03E-08	2.00E+00	2.06E-08	2.26E-06
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
Metals										
Arsenic	1.11E-07	1.50E+00	1.66E-07	1.02E-08	1.50E+00	1.52E-08	1.45E-09	1.50E+00	2.18E-09	1.84E-07
Cadmium							8.77E-07	1.80E-03	1.58E-09	1.58E-09
Lead										
TOTAL			**1.74E-06**			**6.87E-07**			**2.43E-08**	**2.45E-06**

TABLE 67
CHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	
PCBs	1.38E-06	2.00E-05	6.91E-02	5.91E-07	2.00E-05	2.96E-02	1.81E-08	2.00E-05	9.05E-04	9.96E-02
EPH										
C9-C18 Aliphatics	1.51E-04	1.00E-01	1.51E-03	2.31E-04	1.00E-01	2.31E-03	1.98E-06	1.00E-01	1.98E-05	3.84E-03
C19-36 Aliphatics	1.50E-03	2.00E+00	7.49E-04	4.58E-04	2.00E+00	2.29E-04	1.96E-05	2.00E+00	9.81E-06	9.88E-04
C11-22 Aromatics	6.19E-05	3.00E-02	2.06E-03	1.89E-05	3.00E-02	6.30E-04	8.10E-07	3.00E-02	2.70E-05	2.72E-03
SVOCs										
Benzo(a)anthracene	3.69E-06	4.00E-02	9.22E-05	1.47E-06	4.00E-02	3.66E-05	4.83E-08	4.00E-02	1.21E-06	1.30E-04
Benzo(a)pyrene	2.77E-06	4.00E-02	6.93E-05	1.10E-06	4.00E-02	2.75E-05	3.63E-08	4.00E-02	9.07E-07	9.77E-05
Benzo(b)fluoranthene	2.52E-06	4.00E-02	6.30E-05	1.00E-06	4.00E-02	2.50E-05	3.30E-08	4.00E-02	8.24E-07	8.88E-05
Benzo(k)fluoranthene	2.14E-06	4.00E-02	5.35E-05	8.50E-07	4.00E-02	2.13E-05	2.80E-08	4.00E-02	7.01E-07	7.55E-05
Chrysene	3.80E-06	4.00E-02	9.51E-05	1.51E-06	4.00E-02	3.78E-05	4.98E-08	4.00E-02	1.24E-06	1.34E-04
Indeno(1,2,3-cd)pyrene	2.64E-06	4.00E-02	6.61E-05	1.05E-06	4.00E-02	2.63E-05	3.46E-08	4.00E-02	8.65E-07	9.32E-05
Metals										
Arsenic	9.18E-07	3.00E-04	3.06E-03	2.80E-08	3.00E-04	9.35E-05	1.20E-08	3.00E-04	4.01E-05	3.19E-03
Cadmium	4.51E-05	5.00E-04	9.02E-02	1.38E-05	5.00E-04	2.75E-02	5.90E-07	5.00E-04	1.18E-03	1.19E-01
Lead	2.62E-05	7.50E-04	3.50E-02	6.68E-06	7.50E-04	8.90E-03	2.86E-06	7.50E-04	3.81E-03	4.77E-02
VPH										
C5-C8 Aliphatics	3.21E-08	6.00E-02	5.35E-07	9.81E-08	6.00E-02	1.64E-06	4.20E-10	6.00E-02	7.01E-09	2.18E-06
C9-C12 Aliphatics	1.70E-07	1.00E-01	1.70E-06	2.60E-07	1.00E-01	2.60E-06	2.23E-09	1.00E-01	2.23E-08	4.32E-06
C9-C10 Aromatics	5.10E-07	1.00E-01	5.10E-06	3.12E-07	1.00E-01	3.12E-06	6.68E-09	1.00E-01	6.68E-08	8.28E-06
Total			**2.02E-01**			**6.95E-02**			**6.00E-03**	**2.78E-01**

TABLE 68

INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (OUTSIDE HOT SPOTS 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	
PCBs	4.61E-07	2.00E+00	9.22E-07	1.97E-07	2.00E+00	3.94E-07	6.03E-09	2.00E+00	1.21E-08	1.33E-06
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	1.23E-06	7.30E-01	8.98E-07	4.89E-07	7.30E-01	3.57E-07	1.61E-08	7.30E-01	1.18E-08	1.27E-06
Benzo(a)pyrene	9.23E-07	7.30E+00	6.74E-06	3.67E-07	7.30E+00	2.68E-06	1.21E-08	7.30E+00	8.82E-08	9.51E-06
Benzo(b)fluoranthene	8.39E-07	7.30E-01	6.13E-07	3.33E-07	7.30E-01	2.43E-07	1.10E-08	7.30E-01	8.02E-09	8.64E-07
Benzo(k)fluoranthene	7.14E-07	7.30E-02	5.21E-08	2.83E-07	7.30E-02	2.07E-08	9.34E-09	7.30E-02	6.82E-10	7.35E-08
Chrysene	1.27E-06	7.30E-03	9.25E-09	5.04E-07	7.30E-03	3.68E-09	1.66E-08	7.30E-03	1.21E-10	1.31E-08
Indeno(1,2,3-cd)pyrene	8.81E-07	7.30E-01	6.43E-07	3.50E-07	7.30E-01	2.56E-07	1.15E-08	7.30E-01	8.42E-09	9.07E-07
Metals										
Arsenic	3.06E-07	1.50E+00	4.59E-07	1.34E-07	1.50E+00	2.00E-07	4.01E-09	1.50E+00	6.01E-09	6.65E-07
Cadmium							6.54E-05	1.80E-03	1.18E-07	1.18E-07
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			1.03E-05			4.15E-06			2.53E-07	1.47E-05

TABLE 69
CHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT WSB-6 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	TOTAL
PCBs	8.18E-04	2.00E-05	4.09E+01	3.50E-04	2.00E-05	1.75E+01	1.07E-05	2.00E-05	5.36E-01	5.90E+01
EPH										
C9-C18 Aliphatics	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00
C19-36 Aliphatics	1.96E-05	2.00E+00	9.79E-06	5.98E-06	2.00E+00	2.99E-06	2.56E-07	2.00E+00	1.28E-07	1.29E-05
C11-22 Aromatics	3.32E-05	3.00E-02	1.11E-03	1.01E-05	3.00E-02	3.38E-04	4.34E-07	3.00E-02	1.45E-05	1.46E-03
SVOCs										
Benzo(a)anthracene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Chrysene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Metals										
Arsenic	1.13E-06	3.00E-04	3.76E-03	1.03E-07	3.00E-04	3.44E-04	1.48E-08	3.00E-04	4.92E-05	4.15E-03
Cadmium	1.01E-07	5.00E-04	2.03E-04	3.10E-08	5.00E-04	6.19E-05	1.33E-09	5.00E-04	2.65E-06	2.67E-04
Lead	6.97E-07	7.50E-04	9.29E-04	1.77E-07	7.50E-04	2.36E-04	7.60E-08	7.50E-04	1.01E-04	1.27E-03
VPH										
C5-C8 Aliphatics	0.00E+00	6.00E-02	0.00E+00	0.00E+00	6.00E-02	0.00E+00	0.00E+00	6.00E-02	0.00E+00	0.00E+00
C9-C12 Aliphatics	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00
C9-C10 Aromatics	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00
Total			**4.09E+01**			**1.75E+01**			**5.36E-01**	**5.90E+01**

TABLE 70
INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT WSB-6 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	TOTAL
PCBs	2.73E-04	2.00E+00	5.46E-04	1.17E-04	2.00E+00	2.33E-04	3.57E-06	2.00E+00	7.14E-06	7.86E-04
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00
Chrysene	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Metals										
Arsenic	3.76E-07	1.50E+00	5.63E-07	3.44E-08	1.50E+00	5.17E-08	4.92E-09	1.50E+00	7.38E-09	6.23E-07
Cadmium							1.47E-07	1.80E-03	2.65E-10	2.65E-10
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			**5.46E-04**			**2.33E-04**			**7.15E-06**	**7.87E-04**

TABLE 71
CHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT CD 45 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	
PCBs	3.34E-05	2.00E-05	1.67E+00	1.43E-05	2.00E-05	7.14E-01	4.37E-07	2.00E-05	2.18E-02	2.40E+00
EPH										
C9-C18 Aliphatics		1.00E-01	0.00E+00		1.00E-01	0.00E+00		1.00E-01	0.00E+00	0.00E+00
C19-36 Aliphatics	3.43E-05	2.00E+00	1.72E-05	1.05E-05	2.00E+00	5.24E-06	4.49E-07	2.00E+00	2.25E-07	2.26E-05
C11-22 Aromatics	7.18E-05	3.00E-02	2.39E-03	2.19E-05	3.00E-02	7.31E-04	9.40E-07	3.00E-02	3.13E-05	3.15E-03
SVOCs										
Benzo(a)anthracene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Chrysene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00	4.00E-02	0.00E+00	0.00E+00
Metals										
Arsenic	4.25E-07	3.00E-04	1.42E-03	3.90E-08	3.00E-04	1.30E-04	5.56E-09	3.00E-04	1.85E-05	1.57E-03
Cadmium	2.43E-07	5.00E-04	4.86E-04	7.43E-08	5.00E-04	1.49E-04	3.18E-09	5.00E-04	6.36E-06	6.41E-04
Lead	4.25E-06	7.50E-04	5.67E-03	1.08E-06	7.50E-04	1.44E-03	4.64E-07	7.50E-04	6.19E-04	7.73E-03
VPH										
C5-C8 Aliphatics	0.00E+00	6.00E-02	0.00E+00	0.00E+00	6.00E-02	0.00E+00	0.00E+00	6.00E-02	0.00E+00	0.00E+00
C9-C12 Aliphatics	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00
C9-C10 Aromatics	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00	1.00E-01	0.00E+00	0.00E+00
Total			**1.68E+00**			**7.16E-01**			**2.25E-02**	**2.42E+00**

TABLE 72
INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (HOT SPOT CD 45 - 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	TOTAL
PCBs	1.11E-05	2.00E+00	2.22E-05	4.76E-06	2.00E+00	9.52E-06	1.46E-07	2.00E+00	2.91E-07	3.21E-05
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(a)pyrene	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00	7.30E+00	0.00E+00	0.00E+00
Benzo(b)fluoranthene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Benzo(k)fluoranthene	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00	7.30E-02	0.00E+00	0.00E+00
Chrysene	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00	7.30E-03	0.00E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00
Metals										
Arsenic	1.42E-07	1.50E+00	2.12E-07	1.30E-08	1.50E+00	1.95E-08	1.85E-09	1.50E+00	2.78E-09	2.35E-07
Cadmium							3.53E-07	1.80E-03	6.35E-10	6.35E-10
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			**2.25E-05**			**9.54E-06**			**2.95E-07**	**3.23E-05**

TABLE 73
CHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	
PCBs	1.06E-06	2.00E-05	5.32E-02	4.55E-07	2.00E-05	2.28E-02	1.39E-08	2.00E-05	6.96E-04	7.67E-02
EPH										
C9-C18 Aliphatics	1.26E-04	1.00E-01	1.26E-03	1.92E-04	1.00E-01	1.92E-03	1.65E-06	1.00E-01	1.65E-05	3.20E-03
C19-36 Aliphatics	5.54E-04	2.00E+00	2.77E-04	1.69E-04	2.00E+00	8.46E-05	7.25E-06	2.00E+00	3.63E-06	3.65E-04
C11-22 Aromatics	1.23E-04	3.00E-02	4.10E-03	3.76E-05	3.00E-02	1.25E-03	1.61E-06	3.00E-02	5.37E-05	5.41E-03
SVOCs										
Benzo(a)anthracene	4.53E-06	4.00E-02	1.13E-04	1.80E-06	4.00E-02	4.50E-05	5.93E-08	4.00E-02	1.48E-06	1.60E-04
Benzo(a)pyrene	2.39E-06	4.00E-02	5.98E-05	9.50E-07	4.00E-02	2.38E-05	3.13E-08	4.00E-02	7.83E-07	8.44E-05
Benzo(b)fluoranthene	3.84E-06	4.00E-02	9.60E-05	1.53E-06	4.00E-02	3.81E-05	5.03E-08	4.00E-02	1.26E-06	1.35E-04
Benzo(k)fluoranthene	3.34E-06	4.00E-02	8.34E-05	1.33E-06	4.00E-02	3.31E-05	4.37E-08	4.00E-02	1.09E-06	1.18E-04
Chrysene	5.29E-06	4.00E-02	1.32E-04	2.10E-06	4.00E-02	5.25E-05	6.92E-08	4.00E-02	1.73E-06	1.86E-04
Indeno(1,2,3-cd)pyrene	5.73E-07	4.00E-02	1.43E-05	2.28E-07	4.00E-02	5.69E-06	7.50E-09	4.00E-02	1.88E-07	2.02E-05
Metals										
Arsenic	8.85E-07	3.00E-04	2.95E-03	8.11E-08	3.00E-04	2.70E-04	1.16E-08	3.00E-04	3.86E-05	3.26E-03
Cadmium	5.16E-07	5.00E-04	1.03E-03	1.58E-07	5.00E-04	3.15E-04	6.75E-09	5.00E-04	1.35E-05	1.36E-03
Lead	9.37E-06	7.50E-04	1.25E-02	2.39E-06	7.50E-04	3.18E-03	1.02E-06	7.50E-04	1.36E-03	1.70E-02
VPH										
C5-C8 Aliphatics	3.90E-09	6.00E-02	6.51E-08	1.19E-08	6.00E-02	1.99E-07	5.11E-11	6.00E-02	8.52E-10	2.65E-07
C9-C12 Aliphatics	1.07E-07	1.00E-01	1.07E-06	1.64E-07	1.00E-01	1.64E-06	1.40E-09	1.00E-01	1.40E-08	2.72E-06
C9-C10 Aromatics	3.65E-08	1.00E-01	3.65E-07	2.23E-08	1.00E-01	2.23E-07	4.78E-10	1.00E-01	4.78E-09	5.93E-07
Total			**7.58E-02**			**3.00E-02**			**2.19E-03**	**1.08E-01**

TABLE 74
INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (SOUTHEAST CORNER 0-3' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			TOTAL
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	
PCBs	3.55E-07	2.00E+00	7.09E-07	1.52E-07	2.00E+00	3.03E-07	4.64E-09	2.00E+00	9.29E-09	1.02E-06
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
SVOCs										
Benzo(a)anthracene	1.51E-06	7.30E-01	1.10E-06	6.00E-07	7.30E-01	4.38E-07	1.98E-08	7.30E-01	1.44E-08	1.56E-06
Benzo(a)pyrene	7.97E-07	7.30E+00	5.82E-06	3.17E-07	7.30E+00	2.31E-06	1.04E-08	7.30E+00	7.62E-08	8.21E-06
Benzo(b)fluoranthene	1.28E-06	7.30E-01	9.35E-07	5.09E-07	7.30E-01	3.71E-07	1.68E-08	7.30E-01	1.22E-08	1.32E-06
Benzo(k)fluoranthene	1.11E-06	7.30E-02	8.12E-08	4.42E-07	7.30E-02	3.23E-08	1.46E-08	7.30E-02	1.06E-09	1.15E-07
Chrysene	1.76E-06	7.30E-03	1.29E-08	7.00E-07	7.30E-03	5.11E-09	2.31E-08	7.30E-03	1.68E-10	1.81E-08
Indeno(1,2,3-cd)pyrene	1.91E-07	7.30E-01	1.39E-07	7.59E-08	7.30E-01	5.54E-08	2.50E-09	7.30E-01	1.83E-09	1.97E-07
Metals										
Arsenic	2.95E-07	1.50E+00	4.42E-07	2.70E-08	1.50E+00	4.05E-08	3.86E-09	1.50E+00	5.79E-09	4.89E-07
Cadmium							7.48E-07	1.80E-03	1.35E-09	1.35E-09
Lead										
VPH										
C5-C8 Aliphatics										
C9-C12 Aliphatics										
C9-C10 Aromatics										
TOTAL			**9.24E-06**			**3.56E-06**			**1.22E-07**	**1.29E-05**

TABLE 75
CHRONIC HAZARD INDICES - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (SITE WIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	CADD (mg/kg/d)	RfD (mg/kg/d)	HI	TOTAL
PCBs	4.91E-06	2.00E-05	2.46E-01	2.10E-06	2.00E-05	1.05E-01	6.43E-08	2.00E-05	3.21E-03	3.54E-01
EPH										
C9-C18 Aliphatics	2.83E-06	1.00E-01	2.83E-05	4.33E-06	1.00E-01	4.33E-05	3.71E-08	1.00E-01	3.71E-07	7.20E-05
C19-36 Aliphatics	4.60E-04	2.00E+00	2.30E-04	1.40E-04	2.00E+00	7.02E-05	6.02E-06	2.00E+00	3.01E-06	3.03E-04
C11-22 Aromatics	1.05E-04	3.00E-02	3.50E-03	3.21E-05	3.00E-02	1.07E-03	1.38E-06	3.00E-02	4.59E-05	4.62E-03
Metals										
Arsenic	6.93E-07	3.00E-04	2.31E-03	6.35E-08	3.00E-04	2.12E-04	9.07E-09	3.00E-04	3.02E-05	2.55E-03
Cadmium	1.26E-06	5.00E-04	2.52E-03	3.85E-07	5.00E-04	7.70E-04	1.65E-08	5.00E-04	3.30E-05	3.32E-03
Lead	1.68E-05	7.50E-04	2.25E-02	4.29E-06	7.50E-04	5.72E-03	1.84E-06	7.50E-04	2.45E-03	3.06E-02
Total			**2.77E-01**			**1.13E-01**			**5.78E-03**	**3.95E-01**

TABLE 76
INCREMENTAL LIFETIME CARCINOGENIC RISKS - CONTACT WITH SURFACE SOIL
UTILITY MAINTENANCE WORKER SCENARIO (SITEWIDE DEEP SOIL 3-15' bgs)
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	INGESTION			DERMAL CONTACT			INHALATION - PARTICULATES			
CHEMICALS	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD (mg/kg/d)	SF (mg/kg/d)-1	ILCR	LADD/ADE	SF/Unit Risk	ILCR	TOTAL
PCBs	1.64E-06	2.00E+00	3.27E-06	7.00E-07	2.00E+00	1.40E-06	2.14E-08	2.00E+00	4.29E-08	4.72E-06
EPH										
C9-C18 Aliphatics										
C19-36 Aliphatics										
C11-22 Aromatics										
Metals										
Arsenic	2.31E-07	1.50E+00	3.46E-07	2.12E-08	1.50E+00	3.17E-08	3.02E-09	1.50E+00	4.53E-09	3.83E-07
Cadmium							1.83E-06	1.80E-03	3.29E-09	3.29E-09
Lead										
TOTAL			**3.62E-06**			**1.43E-06**			**5.07E-08**	**5.10E-06**

TABLE 77
SUMMARY OF HUMAN HEALTH RISKS FOR TRESPASSER
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	OUTSIDE HOT SPOTS (0-1' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	3.21E-01	YES	1.26E-05	YES

	HOT SPOT WSB-6 (0-1' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	1.06E+02	NO	6.79E-04	NO

	SOUTHEAST CORNER (0-1' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	1.75E-01	YES	1.08E-05	YES

TABLE 78
SUMMARY OF HUMAN HEALTH RISKS FOR CONSTRUCTION WORKER
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	OUTSIDE HOT SPOTS (0-3' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	5.05E+00	ABOVE SCREENING	1.40E-05	YES

OUTSIDE HOT SPOT	Hazard Indices by Mechanism of Action	Acceptable Noncancer Risk?
PCBs and PAHS	9.64E-01	YES
Metals		
Arsenic	8.11E-02	YES
Cadmium	2.85E+00	NO
Lead	1.14E+00	YES
Total Petroleum Fractions	1.16E-02	YES
Total Hazard Index	5.05E+00	

	HOT SPOT WSB-6 (0-3' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	5.66E+02	NO	7.55E-04	NO

	HOT SPOT CD 4-5 (0-3' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	2.33E+01	NO	3.10E-05	NO

	SOUTHEAST CORNER (0-3' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	1.28E+00	YES	1.24E-05	YES

	DEEPER SOIL (3-15' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	4.28E+00	NO	2.45E-06	YES

TABLE 79
SUMMARY OF HUMAN HEALTH RISKS FOR UTILITY WORKER
FORMER TOMBARELLO SITE
LAWRENCE, MASSACHUSETTS

	OUTSIDE HOT SPOTS (0-3' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	2.78E-01	YES	1.47E-05	YES

	HOT SPOT WSB-6 (0-3' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	5.90E+01	NO	7.87E-04	NO

	HOT SPOT CD 4-5 (0-3' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	2.42E+00	NO	3.23E-05	NO

	SOUTHEAST CORNER (0-3' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	1.08E-01	YES	1.29E-05	YES

	DEEPER SOIL (3-15' bgs)			
	Hazard Index	Acceptable Noncancer Risk?	ILCR	Acceptable Cancer Risk?
Exposure Pathway				
Direct contact with soil	3.95E-01	YES	5.10E-06	YES

11.0 APPENDICES

[redacted] APPENDIX A [redacted]

SOIL ANALYTICAL DATA (0-1' bgs)

Sample ID	B4	D5	E4	F2	F4	G3	BLR-TP2	G4	H2	H3	H6	I3	I4	J1	J5	SCC-1	L5	M2
Depth	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'	0-1'
Date	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001
PCBs	**0.85**	**52**	**15**	**26**	**11**	**64**	**2**	**21**	**11**	**43.5**	**16.9**	**43**	**3.01**	**2.6**	**0.74**	**3.2**	**3.8**	**1.4**
EPH																		
C9-C18 Aliphatics																		
C19-C36 Aliphatics																		
C11-C22 Aromatics																		
SVOCs																		
Acenaphthalene																		
Acenaphthene																		
Anthracene																		
Benzo(a)Anthracene																		
Benzo(a)Pyrene																		
Benzo(b)fluoranthene																		
Benzo(g,h,I)Perylene																		
Benzo(k)fluoranthene																		
Chrysene																		
Dibenzo(a,h)Anthracene																		
Fluoroanthene																		
Fluorene																		
Indeno(1,2,3-cd)Pyrene																		
2-Methylnaphthalene																		
Naphthalene																		
Phenanthrene																		
Pyrene																		
Dibenzofuran																		
Carbazole																		
Butylbenzylphthalate																		
Bis(2-ethylhexyl)phthalate																		
Metals																		
Arsenic																		
Barium																		
Cadmium																		
Chromium																		
Lead																		
Mercury																		
Selenium																		
Silver																		
VPH																		
C5-C8 Aliphatics																		
C9-C12 Aliphatics																		
C9-C10 Aromatics																		
Target VOCs																		
Benzene																		
Ethylbenzene																		
MtBE																		
Naphthalene																		
Toluene																		
Xylenes																		
VOCSs																		
Trichlorofluoromethane																		
Tetrachloroethene																		
1,1,1-Trichloroethane																		

APPENDIX A-1
SOIL ANALYTICAL DATA (0-1' bgs)

Sample ID	BRM-TP10	SM2-3	M3	M4	SB1	SB2	SB3	SB4	SB5	SB6	SS-7	SS-8	SS-9	SB5 North	SB5 South	SB5 East	SB5 West	SS8
Depth	0-1'	0-1'	0-1'	0-1'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
Date	2001	2001	2001	2001	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998	4/28/1999	4/28/1999	4/28/1999	4/28/1999	4/28/1999
PCBs	1.96	2.8	11.6	66	7.01	1.3853	59.27	0.6094	9.491	0.6793	6.403	10.59	<0.333	2.1	<0.1	2.0	2.3	1.0
EPH																		
C9-C18 Aliphatics														2,000	<1.4	<1.41	<13.7	<1.39
C19-C36 Aliphatics														6,600	770	2,700	5,000	1,350
C11-C22 Aromatics														<3.4	<1.4	620	<13.7	<1.39
SVOCs																		
Acenaphthalene					2.28	<8.3	<0.33	19.4	0.367	<0.33	N/A	N/A	N/A	<3.4	<1.4	<1.41	<13.7	<1.39
Acenaphthene					<1.65	<8.3	<0.33	<6.67	<0.33	<0.33	N/A	N/A	N/A	<3.4	3	<1.41	<13.7	<1.39
Anthracene					6.71	<8.3	0.493	36	1.19	<0.33	N/A	N/A	N/A	<3.4	6	2	<13.7	4
Benzo(a)Anthracene					24.6	<8.3	1.96	58.6	3.95	<0.33	N/A	N/A	N/A	10	8	6	<13.7	5
Benzo(a)Pyrene					15.3	<8.3	1.71	32.2	3.1	<0.33	N/A	N/A	N/A	11	9	7	<13.7	9
Benzo(b)fluoranthene					19.3	<8.3	2.07	39.5	2	<0.33	N/A	N/A	N/A	15	12	13	<13.7	9
Benzo(g,h,I)Perylene					3.94	<8.3	0.455	6.84	0.715	<0.33	N/A	N/A	N/A	12	8	10	<13.7	13
Benzo(k)fluoranthene					8.96	<8.3	1.49	22.6	0.718	<0.33	N/A	N/A	N/A	11	8	10	<13.7	8
Chrysene					25	<8.3	2.14	60.4	4.09	<0.33	N/A	N/A	N/A	18	11	10	21	12
Dibenzo(a,h)Anthracene					<1.65	<8.3	<0.33	<6.67	<0.33	<0.33	N/A	N/A	N/A	<3.4	<1.4	<1.41	<13.7	<1.39
Fluoroanthene					42.9	<8.3	2.7	118	7.28	<0.33	N/A	N/A	N/A	24	18	12	26	15
Fluorene					2.69	<8.3	<0.33	25.8	0.42	<0.33	N/A	N/A	N/A	<3.4	4	<1.41	<13.7	2
Indeno(1,2,3-cd)Pyrene					4.39	<8.3	0.48	7.63	0.826	<0.33	N/A	N/A	N/A	9	6	7	<13.7	<1.39
2-Methylnaphthalene					<1.65	<8.3	<0.33	<6.67	<0.33	<0.33	N/A	N/A	N/A	<3.4	<1.4	<1.41	<13.7	<1.39
Naphthalene					<1.65	<8.3	<0.33	<6.67	<0.33	<0.33	N/A	N/A	N/A	<3.4	<1.4	<1.41	<13.7	<1.39
Phenanthrene					29.4	<8.3	1.99	143	4.23	<0.33	N/A	N/A	N/A	13	15	5	<13.7	9
Pyrene					56	12.1	4.24	141	9.56	<0.33	N/A	N/A	N/A	23	16	12	25	14
Dibenzofuran					<1.65	<8.3	<0.33	14	<0.33	<0.33	N/A	N/A	N/A					
Carbazole					2.41	<8.3	<0.33	16.2	0.442	<0.33	N/A	N/A	N/A					
Butylbenzylphthalate					<1.65	<8.3	<0.33	<6.67	0.372	<0.33	N/A	N/A	N/A					
Bis(2-ethylhexyl)phthalate					<1.65	15.8	<0.33	<6.67	2.24	0.524	N/A	N/A	N/A					
Metals																		
Arsenic						2.74	9.52	5.73	13.3	3.62	10.7	11.8	4.98					
Barium						13.3	333	54	197	44.3	141	552	52.9					
Cadmium						<0.98	2.67	<0.99	5.78	<1.01	8.19	4.95	<0.96	6.6	0.59	5.45	5.4	2.72
Chromium						6.46	60.4	33	57.4	14.5	62.3	64	38.3					
Lead						26.8	918	106	3470	37.4	672	1110	172	550	100	980	670	270
Mercury						0.43	0.97	0.5	2.13	<0.1	4.19	7.13	1.06					
Selenium						<0.98	<0.95	<0.99	<0.96	<1.01	<0.95	<0.95	<0.96					
Silver						<0.98	1.71	<0.99	<0.96	<1.01	20.8	<0.95	<0.96					
VPH																		
C5-C8 Aliphatics														<0.021	0.062	<0.021	<0.02	N/A
C9-C12 Aliphatics														2	<0.025	<0.021	<0.02	N/A
C9-C10 Aromatics														0.58	<0.025	<0.021	<0.02	N/A
Target VOCs																		
Benzene					<0.1	<0.1	<0.1	<0.1	<0.002	<0.002	N/A	N/A	N/A	<0.021	0.130	<0.021	<0.02	N/A
Ethylbenzene					<0.1	<0.1	<0.1	<0.1	<0.002	<0.002	N/A	N/A	N/A	<0.021	<0.025	0.044	0.050	N/A
MtBE					NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.021	0.480	<0.021	<0.02	N/A
Naphthalene					<0.1	<0.1	<0.1	<0.1	<0.002	<0.002	N/A	N/A	N/A	<0.021	1.900	<0.021	<0.02	N/A
Toluene					<0.1	<0.1	<0.1	<0.1	<0.002	<0.002	N/A	N/A	N/A	0.047	0.040	0.058	0.087	N/A
Xylenes					<0.1	<0.1	<0.1	<0.1	<0.002	<0.002	N/A	N/A	N/A	0.114	<0.025	0.350	0.300	
VOCSs																		
Trichlorofluoromethane					<0.1	<0.1	<0.1	<0.1	<0.002	<0.002	N/A	N/A	N/A	1	0.2	0.69	0.72	N/A
Tetrachloroethene					<0.1	<0.1	<0.1	<0.1	<0.002	<0.002	N/A	N/A	N/A	0.22	<0.001	<0.001	0.079	N/A
1,1,1-Trichloroethane					<0.1	<0.1	<0.1	<0.1	<0.002	<0.002	N/A	N/A	N/A	<0.001	<0.001	<0.001	<0.001	N/A

[redacted] APPENDIX [redacted]

SOIL ANALYTICAL DATA (0-1' bgs)

Sample ID	SS8 North	SS8 South	SS8 East	SS8 West	SS7	SS7 North	SS7 South	SS7 East	SS7 West	F2	F7	SB2-SS1	ALL	SB6-SS1	SB6-SS2	SB6-N1	SB6-E1	SB6-S1
Depth	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
Date	4/28/1999	4/28/1999	4/28/1999	4/28/1999	4/28/1999	4/28/1999	4/28/1999	4/28/1999	4/28/1999	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998	6/4/1999	6/4/1999	6/4/1999	6/4/1999
PCBs	**3.0**	**3.4**	**2.7**	**2.3**	**3.2**	**2.6**	**3.2**	**3.5**	**2.9**	<0.1	<0.1	<0.1	<0.1	**57.0**	<0.1	**92.0**	**3.8**	<0.1
EPH																		
C9-C18 Aliphatics				**1,200**			**1,100**			**2,400**	**550**	<3.45	<3.44	<3.62	N/A	N/A	N/A	N/A
C19-C36 Aliphatics				**8,900**			**8,800**			**23,800**	**5,500**	**1,900**	**700**	**1,300**	N/A	N/A	N/A	N/A
C11-C22 Aromatics				<3.49			<7.05			<38	<3.41	<3.45	<3.44	<3.62	N/A	N/A	N/A	N/A
SVOCs																		
Acenaphthalene	N/A	N/A	N/A	<3.49	N/A	N/A	<7.05	N/A	N/A	<38	<3.41	<3.45	<3.44	<3.62	N/A	N/A	N/A	N/A
Acenaphthene	N/A	N/A	N/A	<3.49	N/A	N/A	<7.05	N/A	N/A	<38	**6**	<3.45	<3.44	**8**	N/A	N/A	N/A	N/A
Anthracene	N/A	N/A	N/A	**14**	N/A	N/A	**35**	N/A	N/A	<38	**19**	<3.45	**4**	**15**	N/A	N/A	N/A	N/A
Benzo(a)Anthracene	N/A	N/A	N/A	**24**	N/A	N/A	**72**	N/A	N/A	<38	**25**	<3.45	**8**	**24**	N/A	N/A	N/A	N/A
Benzo(a)Pyrene	N/A	N/A	N/A	**44**	N/A	N/A	**38**	N/A	N/A	<38	**26**	<3.45	**10**	**26**	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A	N/A	N/A	**40**	N/A	N/A	**61**	N/A	N/A	<38	**32**	**5**	**10**	**32**	N/A	N/A	N/A	N/A
Benzo(g,h,I)Perylene	N/A	N/A	N/A	**51**	N/A	N/A	**69**	N/A	N/A	<38	**46**	<3.45	<3.44	**51**	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A	N/A	N/A	**34**	N/A	N/A	**53**	N/A	N/A	<38	**22**	**5**	**9**	**24**	N/A	N/A	N/A	N/A
Chrysene	N/A	N/A	N/A	**51**	N/A	N/A	**84**	N/A	N/A	<38	**51**	**7**	**15**	**45**	N/A	N/A	N/A	N/A
Dibenzo(a,h)Anthracene	N/A	N/A	N/A	<3.49	N/A	N/A	<7.05	N/A	N/A	<38	<3.41	<3.45	<3.44	<3.62	N/A	N/A	N/A	N/A
Fluoroanthene	N/A	N/A	N/A	**68**	N/A	N/A	**120**	N/A	N/A	<38	**87**	**8**	**18**	**61**	N/A	N/A	N/A	N/A
Fluorene	N/A	N/A	N/A	<3.49	N/A	N/A	**52**	N/A	N/A	<38	**10**	<3.45	<3.44	**11**	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)Pyrene	N/A	N/A	N/A	**42**	N/A	N/A	<7.05	N/A	N/A	<38	**39**	<3.45	<3.44	**37**	N/A	N/A	N/A	N/A
2-Methylnaphthalene	N/A	N/A	N/A	<3.49	N/A	N/A	<7.05	N/A	N/A	<38	<3.41	<3.45	<3.44	**5**	N/A	N/A	N/A	N/A
Naphthalene	N/A	N/A	N/A	<3.49	N/A	N/A	<7.05	N/A	N/A	<38	<3.41	<3.45	<3.44	<3.62	N/A	N/A	N/A	N/A
Phenanthrene	N/A	N/A	N/A	**32**	N/A	N/A	**72**	N/A	N/A	<38	**67**	**6**	**13**	**62**	N/A	N/A	N/A	N/A
Pyrene	N/A	N/A	N/A	**69**	N/A	N/A	**120**	N/A	N/A	<38	**71**	**7**	**16**	**50**	N/A	N/A	N/A	N/A
Dibenzofuran																		
Carbazole																		
Butylbenzylphthalate																		
Bis(2-ethylhexyl)phthalate																		
Metals																		
Arsenic																		
Barium																		
Cadmium	**4.58**	**3.42**	**3.36**	**2.98**	N/A	N/A	N/A	N/A	N/A	**6.4**	**4.58**	**3.24**	**4.57**	**8.21**	N/A	N/A	N/A	N/A
Chromium																		
Lead	**500**	**310**	**490**	**330**	N/A	N/A	N/A	N/A	N/A	**610**	**770**	**210**	**160**	**790**	N/A	N/A	N/A	N/A
Mercury																		
Selenium																		
Silver																		
VPH																		
C5-C8 Aliphatics	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.51**	<0.023	N/A	<0.026	<0.028	N/A	N/A	N/A	N/A
C9-C12 Aliphatics	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**2.7**	<0.023	N/A	<0.026	<0.028	N/A	N/A	N/A	N/A
C9-C10 Aromatics	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**8.1**	**0.29**	N/A	<0.026	<0.028	N/A	N/A	N/A	N/A
Target VOCs																		
Benzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.081**	<0.023	N/A	<0.026	<0.028	N/A	N/A	N/A	N/A
Ethylbenzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.190**	**0.280**	N/A	<0.026	<0.028	N/A	N/A	N/A	N/A
MtBE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.340**	<0.023	N/A	<0.026	<0.028	N/A	N/A	N/A	N/A
Naphthalene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**1.900**	**3.400**	N/A	**2.900**	<0.028	N/A	N/A	N/A	N/A
Toluene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**0.850**	**0.065**	N/A	<0.026	<0.028	N/A	N/A	N/A	N/A
Xylenes										1.710	**2.170**		<0.026	<0.028				
VOCSs																		
Trichlorofluoromethane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**3**	**3**	N/A	**0.11**	**0.47**	N/A	N/A	N/A	N/A
Tetrachloroethene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	N/A	<0.001	<0.001	N/A	N/A	N/A	N/A
1,1,1-Trichloroethane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.001	<0.001	N/A	<0.001	**0.25**	N/A	N/A	N/A	N/A

APPENDIX A-1
SOIL ANALYTICAL DATA (0-1' bgs)

Sample ID	SB6-W1	WSB-3	WSB-4	WSB-5	WSB-6	WSB-7	WSB-9	WSB-10	WSB-11	WSB-12	WSB-14	WSB-16	WSB-17	WSB-18	WSB-21	WSB-22	WSB-25	WSB-26
Depth	0-6"	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1
Date	6/4/1999	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03
PCBs	<0.1	**0.27**	**9.8**	**1.9**	**2,700**	**0.8**	**0.36**	**4.8**	**0.45**	**7.1**	**0.15**	**3.1**	**3.1**	**1.7**	**18.2**	**17**	**14.9**	**44.5**
EPH																		
C9-C18 Aliphatics	N/A	<29.2	<27.5	<90.1	<28.4	<27.9	<31.6	<137	<144	<142	<28.2							
C19-C36 Aliphatics	N/A	**545**	**399**	**345**	**311**	**582**	**104**	**2310**	**361**	**396**	**250**							
C11-C22 Aromatics	N/A	**182**	**150**	**968**	**527**	**136**	<31.6	**70.6**	**739**	**156**	**72.1**							
SVOCs																		
Acenaphthalene	N/A																	
Acenaphthene	N/A																	
Anthracene	N/A																	
Benzo(a)Anthracene	N/A																	
Benzo(a)Pyrene	N/A																	
Benzo(b)fluoranthene	N/A																	
Benzo(g,h,i)Perylene	N/A																	
Benzo(k)fluoranthene	N/A																	
Chrysene	N/A																	
Dibenzo(a,h)Anthracene	N/A																	
Fluoroanthene	N/A																	
Fluorene	N/A																	
Indeno(1,2,3-cd)Pyrene	N/A																	
2-Methylnaphthalene	N/A																	
Naphthalene	N/A																	
Phenanthrene	N/A																	
Pyrene	N/A																	
Dibenzofuran																		
Carbazole																		
Butylbenzylphthalate																		
Bis(2-ethylhexyl)phthalate																		
Metals																		
Arsenic		5.49	8.97	13.6	17.9	9.89	7.33	69.4	6.04	8.51	<3.69							
Barium		**74.4**	**156**	**344**	**55.8**	**70.6**	**228**	**195**	**82.3**	**376**	**45.8**							
Cadmium	N/A	**1.82**	**2.88**	**3.75**	**1.61**	**2.3**	**1.42**	**0.977**	**1.68**	**10.6**	**2.11**							
Chromium		**27.5**	**29.1**	**40**	**29.6**	**48.6**	**20.6**	**40.1**	**28.7**	**40.7**	**24.6**							
Lead	N/A	**389**	**381**	**2700**	**92.2**	**215**	**94.9**	**789**	**216**	**652**	**115**							
Mercury		**3.07**	**0.912**	**1.07**	**0.327**	**1.39**	**0.174**	**0.323**	**0.661**	**0.715**	**1.28**							
Selenium		<7.94	<6.87	<7.48	<6.89	<7.12	<8.38	<7.18	<7.51	<7.33	<7.38							
Silver		<0.794	<0.687	<0.748	<0.689	<0.712	<0.838	<0.718	<0.751	<0.733	<0.738							
VPH																		
C5-C8 Aliphatics	N/A																	
C9-C12 Aliphatics	N/A																	
C9-C10 Aromatics	N/A																	
Target VOCs																		
Benzene	N/A																	
Ethylbenzene	N/A																	
MtBE	N/A																	
Naphthalene	N/A																	
Toluene	N/A																	
Xylenes																		
VOCSs																		
Trichlorofluoromethane	N/A																	
Tetrachloroethene	N/A																	
1,1,1-Trichloroethane	N/A																	

[redacted] DIX [redacted]

SOIL ANALYTICAL DATA (0-1' bgs)

Sample ID	WSB-27	WSB-30	WSB-31	WSB-32	AB13	AB35	BC13	BC35	CD13	DE35	EF13	EF35	GH24	GH46	HI24	HI46	IJ24	IJ46
Depth	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1
Date	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03
PCBs	**24**	<20	**13,000**	<3	**1.1**	**17.2**	**10.2**	**3.75**	**22.1**	**3.4**	**11**	**24.5**	**3.7**	**28**	**2.8**	**11.4**	**18.1**	**12.4**
EPH																		
C9-C18 Aliphatics																		
C19-C36 Aliphatics																		
C11-C22 Aromatics																		
SVOCs																		
Acenaphthalene																		
Acenaphthene																		
Anthracene																		
Benzo(a)Anthracene																		
Benzo(a)Pyrene																		
Benzo(b)fluoranthene																		
Benzo(g,h,I)Perylene																		
Benzo(k)fluoranthene																		
Chrysene																		
Dibenzo(a,h)Anthracene																		
Fluoroanthene																		
Fluorene																		
Indeno(1,2,3-cd)Pyrene																		
2-Methylnaphthalene																		
Naphthalene																		
Phenanthrene																		
Pyrene																		
Dibenzofuran																		
Carbazole																		
Butylbenzylphthalate																		
Bis(2-ethylhexyl)phthalate																		
Metals																		
Arsenic																		
Barium																		
Cadmium																		
Chromium																		
Lead																		
Mercury																		
Selenium																		
Silver																		
VPH																		
C5-C8 Aliphatics																		
C9-C12 Aliphatics																		
C9-C10 Aromatics																		
Target VOCs																		
Benzene																		
Ethylbenzene																		
MtBE																		
Naphthalene																		
Toluene																		
Xylenes																		
VOCSs																		
Trichlorofluoromethane																		
Tetrachloroethene																		
1,1,1-Trichloroethane																		

APPENDIX A-1
SOIL ANALYTICAL DATA (0-1' bgs)

Sample ID	JK24	LM24	KL24	WSB-35	WSB-41	WSB-45	WSB-50	WSB-56	WSB-61	WSB-65	WSB-70	WSB-73	WSB-76	WSB-77	WSB-78	WSB-79	WSB-80
Depth	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1	0-1
Date	7/14/03	7/14/03	7/14/03	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003
PCBs	**5.75**	**25.7**	**4.9**	**38**	**16.3**	**16**	**71**	<0.5	**31**	**25**	<0.5	**4.9**	**0.7**	**2.2**	**15.6**	**10**	**8.3**
EPH																	
C9-C18 Aliphatics																	
C19-C36 Aliphatics																	
C11-C22 Aromatics																	
SVOCs																	
Acenaphthalene																	
Acenaphthene																	
Anthracene																	
Benzo(a)Anthracene																	
Benzo(a)Pyrene																	
Benzo(b)fluoranthene																	
Benzo(g,h,I)Perylene																	
Benzo(k)fluoranthene																	
Chrysene																	
Dibenzo(a,h)Anthracene																	
Fluoroanthene																	
Fluorene																	
Indeno(1,2,3-cd)Pyrene																	
2-Methylnaphthalene																	
Naphthalene																	
Phenanthrene																	
Pyrene																	
Dibenzofuran																	
Carbazole																	
Butylbenzylphthalate																	
Bis(2-ethylhexyl)phthalate																	
Metals																	
Arsenic																	
Barium																	
Cadmium																	
Chromium																	
Lead																	
Mercury																	
Selenium																	
Silver																	
VPH																	
C5-C8 Aliphatics																	
C9-C12 Aliphatics																	
C9-C10 Aromatics																	
Target VOCs																	
Benzene																	
Ethylbenzene																	
MtBE																	
Naphthalene																	
Toluene																	
Xylenes																	
VOCSs																	
Trichlorofluoromethane																	
Tetrachloroethene																	
1,1,1-Trichloroethane																	

[redacted] APPENDIX A-2 [redacted]
SOIL ANALYTICAL DATA (1-3' bgs)

Sample ID	BLR-TP1	SB1	SB2	SB3	SB4	SB5	SB6	WSB-1	WSB-2	WSB-3	WSB-4	WSB-5	WSB-6	WSB-7	WSB-8	WSB-9	WSB-10	WSB-11
Depth	1.5-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
Date	2001	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03
PCBs	**6**	**7.01**	**1.3853**	**59.27**	**0.6094**	**9.491**	**0.6793**	**1.6**	**26.4**	**21.8**	**0.25**	**7**	**34**	**7.1**	**7.3**	**0.04**	**26**	**4.5**
EPH																		
C9-C18 Aliphatics								<27.1	369	<138	<30.9	<164	<32.1	<27.5	<133	<32.4	63.5	<144
C19-C36 Aliphatics								123	1650	497	<30.9	812	<32.1	126	219	<32.4	557	918
C11-C22 Aromatics								375	983	1140	<30.9	272	<32.1	83.9	240	<32.4	214	649
SVOCs																		
Acenaphthalene		**2.28**	<8.3	<0.33	**19.4**	**0.367**	<0.33											
Acenaphthene		<1.65	<8.3	<0.33	<6.67	<0.33	<0.33											
Anthracene		**6.71**	<8.3	**0.493**	**36**	**1.19**	<0.33											
Benzo(a)Anthracene		**24.6**	<8.3	**1.96**	**58.6**	**3.95**	<0.33											
Benzo(a)Pyrene		**15.3**	<8.3	**1.71**	**32.2**	**3.1**	<0.33											
Benzo(b)fluoranthene		**19.3**	<8.3	**2.07**	**39.5**	**2**	<0.33											
Benzo(g,h,I)Perylene		**3.94**	<8.3	**0.455**	**6.84**	**0.715**	<0.33											
Benzo(k)fluoranthene		**8.96**	<8.3	**1.49**	**22.6**	**0.718**	<0.33											
Chrysene		**25**	<8.3	**2.14**	**60.4**	**4.09**	<0.33											
Dibenzo(a,h)Anthracene		<1.65	<8.3	<0.33	<6.67	<0.33	<0.33											
Fluoroanthene		**42.9**	<8.3	**2.7**	**118**	**7.28**	<0.33											
Fluorene		**2.69**	<8.3	<0.33	**25.8**	**0.42**	<0.33											
Indeno(1,2,3-cd)Pyrene		**4.39**	<8.3	**0.48**	**7.63**	**0.826**	<0.33											
2-Methylnaphthalene		<1.65	<8.3	<0.33	<6.67	<0.33	<0.33											
Naphthalene		<1.65	<8.3	<0.33	<6.67	<0.33	<0.33											
Phenanthrene		**29.4**	<8.3	**1.99**	**143**	**4.23**	<0.33											
Pyrene		**56**	**12.1**	**4.24**	**141**	**9.56**	<0.33											
Dibenzofuran		<1.65	<8.3	<0.33	**14**	<0.33	<0.33											
Carbazole		**2.41**	<8.3	<0.33	**16.2**	**0.442**	<0.33											
Butylbenzylphthalate		<1.65	<8.3	<0.33	<6.67	**0.372**	<0.33											
Bis(2-ethylhexyl)phthalate		<1.65	**15.8**	<0.33	<6.67	**2.24**	**0.524**											
Metals																		
Arsenic			**2.74**	**9.52**	**5.73**	**13.3**	**3.62**	**6.1**	**7.42**	**6.75**	**15.6**	**14.2**	**8.52**	**6.13**	**4.49**	**5.56**	**10.8**	**14.3**
Barium			**13.3**	**333**	**54**	**197**	**44.3**	**106**	**107**	**142**	**52.9**	**867**	**19.4**	**197**	**35.3**	**18.9**	**526**	**176**
Cadmium			<0.98	**2.67**	<0.99	**5.78**	<1.01	**4.01**	**716**	**3.86**	<0.796	**5.77**	<0.801	**3.07**	<0.669	<0.866	**4.1**	**12.5**
Chromium			**6.46**	**60.4**	**33**	**57.4**	**14.5**	**23.2**	**34.4**	**30.7**	**15.5**	**52.2**	**12.6**	**28.9**	**15.5**	**12.6**	**47**	**57.9**
Lead			**26.8**	**918**	**106**	**3470**	**37.4**	**1180**	**1330**	**563**	**30.2**	**1260**	<8.01	**517**	**99.2**	<8.66	**1320**	**709**
Mercury			**0.43**	**0.97**	**0.5**	**2.13**	<0.1	**2.71**	**1.17**	**2.42**	<0.0392	<1.86	<0.0414	**0.535**	**0.401**	<0.0433	**2.08**	**2.26**
Selenium			<0.98	<0.95	<0.99	<0.96	<1.01	<7.1	<6.89	<7.12	<7.96	<8.66	<8.01	<7.2	<6.69	<8.66	<7.41	<7.51
Silver			<0.98	**1.71**	<0.99	<0.96	<1.01	<0.71	<0.689	<0.712	<0.796	<0.866	<0.801	**1.62**	<0.669	<0.866	<0.741	<0.751
VPH																		
C5-C8 Aliphatics																		
C9-C12 Aliphatics																		
C9-C10 Aromatics																		
Target VOCs																		
Benzene		<0.1	<0.1	<0.1	<0.1	<0.002	<0.002											
Ethylbenzene		<0.1	<0.1	<0.1	<0.1	<0.002	<0.002											
MtBE		NA	NA	NA	NA	NA	NA											
Naphthalene		<0.1	<0.1	<0.1	<0.1	<0.002	<0.002											
Toluene		<0.1	<0.1	<0.1	<0.1	<0.002	<0.002											
Xylenes		<0.1	<0.1	<0.1	<0.1	<0.002	<0.002											
VOCSs																		
Trichlorofluoromethane		<0.1	<0.1	<0.1	<0.1	<0.002	<0.002											
Tetrachloroethene		<0.1	<0.1	<0.1	<0.1	<0.002	<0.002											
1,1,1-Trichloroethane		<0.1	<0.1	<0.1	<0.1	<0.002	<0.002											

APPENDIX A-2
SOIL ANALYTICAL DATA (1-3' bgs)

Sample ID	WSB-12	WSB-14	WSB-16	WSB-16	WSB-17	WSB-17	WSB-18	WSB-18	WSB-21	WSB-21	WSB-22	WSB-22	WSB-25	WSB-25	WSB-26	WSB-26	WSB-27	WSB-27
Depth	1-3	1-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3
Date	2/12/03	2/12/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03
PCBs	**0.09**	**7.85**	<0.5	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	**510**	**7.1**	<0.6	<0.6
EPH																		
C9-C18 Aliphatics	<30.1	**1750**																
C19-C36 Aliphatics	<30.1	**6980**																
C11-C22 Aromatics	<30.1	**1955**																
SVOCs																		
Acenaphthalene																		
Acenaphthene																		
Anthracene																		
Benzo(a)Anthracene																		
Benzo(a)Pyrene																		
Benzo(b)fluoranthene																		
Benzo(g,h,I)Perylene																		
Benzo(k)fluoranthene																		
Chrysene																		
Dibenzo(a,h)Anthracene																		
Fluoroanthene																		
Fluorene																		
Indeno(1,2,3-cd)Pyrene																		
2-Methylnaphthalene																		
Naphthalene																		
Phenanthrene																		
Pyrene																		
Dibenzofuran																		
Carbazole																		
Butylbenzylphthalate																		
Bis(2-ethylhexyl)phthalate																		
Metals																		
Arsenic	<3.91	**14.05**																
Barium	**46.6**	**765**																
Cadmium	<0.782	**6.245**																
Chromium	**10.1**	**52.15**																
Lead	**13.7**	**1240**																
Mercury	<0.0382	**1.41**																
Selenium	<7.82	<7.7																
Silver	<0.782	**0.99**																
VPH																		
C5-C8 Aliphatics																		
C9-C12 Aliphatics																		
C9-C10 Aromatics																		
Target VOCs																		
Benzene																		
Ethylbenzene																		
MtBE																		
Naphthalene																		
Toluene																		
Xylenes																		
VOCSs																		
Trichlorofluoromethane																		
Tetrachloroethene																		
1,1,1-Trichloroethane																		

[redacted] DIX [redacted]

SOIL ANALYTICAL DATA (1-3' bgs)

Sample ID	WSB-30	WSB-30	WSB-31	WSB-31	WSB-32	WSB-32	AB13	AB35	BC13	BC35	CD13	DE35	EF13	EF35	GH24	GH46	HI24	HI46
Depth	1-2	2-3	1-2	2-3	1-2	2-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
Date	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03
PCBs	<20	<0.6	2.7	<0.6	<3	<0.6	<0.6	<0.7	1.2	<0.7	<0.6	<0.6	<0.6	7.8	<0.6	<0.5	<0.6	1.5
EPH																		
C9-C18 Aliphatics																		
C19-C36 Aliphatics																		
C11-C22 Aromatics																		
SVOCs																		
Acenaphthalene																		
Acenaphthene																		
Anthracene																		
Benzo(a)Anthracene																		
Benzo(a)Pyrene																		
Benzo(b)fluoranthene																		
Benzo(g,h,I)Perylene																		
Benzo(k)fluoranthene																		
Chrysene																		
Dibenzo(a,h)Anthracene																		
Fluoroanthene																		
Fluorene																		
Indeno(1,2,3-cd)Pyrene																		
2-Methylnaphthalene																		
Naphthalene																		
Phenanthrene																		
Pyrene																		
Dibenzofuran																		
Carbazole																		
Butylbenzylphthalate																		
Bis(2-ethylhexyl)phthalate																		
Metals																		
Arsenic																		
Barium																		
Cadmium																		
Chromium																		
Lead																		
Mercury																		
Selenium																		
Silver																		
VPH																		
C5-C8 Aliphatics																		
C9-C12 Aliphatics																		
C9-C10 Aromatics																		
Target VOCs																		
Benzene																		
Ethylbenzene																		
MtBE																		
Naphthalene																		
Toluene																		
Xylenes																		
VOCSs																		
Trichlorofluoromethane																		
Tetrachloroethene																		
1,1,1-Trichloroethane																		

APPENDIX A-2
SOIL ANALYTICAL DATA (1-3' bgs)

Sample ID	IJ24	IJ46	JK24	LM24	KL24	WSB-35	WSB-35	WSB-41	WSB-41	WSB-45	WSB-45	WSB-50	WSB-50	WSB-56	WSB-56	WSB-61	WSB-61	WSB-65
Depth	1-3	1-3	1-3	1-3	1-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2
Date	7/14/03	7/14/03	7/14/03	7/14/03	7/14/03	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003
PCBs	<0.6	<0.6	**3.5**	<0.6	**5.9**	**1.9**	<0.6	**41**	<0.5	<0.6	<0.6	**0.8**	**39**	**3.5**	**7.9**	<0.6	<0.6	<0.6
EPH																		
C9-C18 Aliphatics																		
C19-C36 Aliphatics																		
C11-C22 Aromatics																		
SVOCs																		
Acenaphthalene																		
Acenaphthene																		
Anthracene																		
Benzo(a)Anthracene																		
Benzo(a)Pyrene																		
Benzo(b)fluoranthene																		
Benzo(g,h,I)Perylene																		
Benzo(k)fluoranthene																		
Chrysene																		
Dibenzo(a,h)Anthracene																		
Fluoroanthene																		
Fluorene																		
Indeno(1,2,3-cd)Pyrene																		
2-Methylnaphthalene																		
Naphthalene																		
Phenanthrene																		
Pyrene																		
Dibenzofuran																		
Carbazole																		
Butylbenzylphthalate																		
Bis(2-ethylhexyl)phthalate																		
Metals																		
Arsenic																		
Barium																		
Cadmium																		
Chromium																		
Lead																		
Mercury																		
Selenium																		
Silver																		
VPH																		
C5-C8 Aliphatics																		
C9-C12 Aliphatics																		
C9-C10 Aromatics																		
Target VOCs																		
Benzene																		
Ethylbenzene																		
MtBE																		
Naphthalene																		
Toluene																		
Xylenes																		
VOCSs																		
Trichlorofluoromethane																		
Tetrachloroethene																		
1,1,1-Trichloroethane																		

[redacted] APPENDIX A [redacted]

SOIL ANALYTICAL DATA (1-3' bgs)

Sample ID	WSB-65	WSB-70	WSB-70	WSB-73	WSB-73	WSB-76	WSB-76	WSB-77	WSB-77	WSB-78	WSB-78	WSB-79	WSB-79	WSB-80	WSB-80
Depth	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3	1-2	2-3
Date	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003	9/2/2003
PCBs	<0.6	<0.5	<0.7	**22**	<0.5	**530**	**0.7**	**37**	**220**	**86**	**14**	**107**	**22**	**20.1**	**62**
EPH															
C9-C18 Aliphatics															
C19-C36 Aliphatics															
C11-C22 Aromatics															
SVOCs															
Acenaphthalene															
Acenaphthene															
Anthracene															
Benzo(a)Anthracene															
Benzo(a)Pyrene															
Benzo(b)fluoranthene															
Benzo(g,h,I)Perylene															
Benzo(k)fluoranthene															
Chrysene															
Dibenzo(a,h)Anthracene															
Fluoroanthene															
Fluorene															
Indeno(1,2,3-cd)Pyrene															
2-Methylnaphthalene															
Naphthalene															
Phenanthrene															
Pyrene															
Dibenzofuran															
Carbazole															
Butylbenzylphthalate															
Bis(2-ethylhexyl)phthalate															
Metals															
Arsenic															
Barium															
Cadmium															
Chromium															
Lead															
Mercury															
Selenium															
Silver															
VPH															
C5-C8 Aliphatics															
C9-C12 Aliphatics															
C9-C10 Aromatics															
Target VOCs															
Benzene															
Ethylbenzene															
MtBE															
Naphthalene															
Toluene															
Xylenes															
VOCSs															
Trichlorofluoromethane															
Tetrachloroethene															
1,1,1-Trichloroethane															

APPENDIX A-3
SOIL ANALYTICAL DATA (3-15' bgs)

Sample ID	BLR-TP1	BRM-TP1	BRM-TP3	BRM-TP4	BRM-TP4	BRM-TP5	BRM-TP9/9A	BRM-TP8	BRM-TP8	BRM-TP7	BRM-TP7	BRM-TP6	SB1	SB1	SB2	SB3	SB5	SB6
Depth	3-4.5'	4-6'	9-11'	3.5-5'	6-7'	9-11'	4-6'	4-5'	5-6'	3-6'	12-15'	11-13'	2'-4'	9'-11'	2'-4'	2'-4'	4-6'	4-6'
Date	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998	7/8/1998
PCBs	**5.7**	**13**	**11.9**	**78**	**71.3**	**71**	**42**	**11**	**1.15**	**9.9**	**0.94**	**15.5**	NA	NA	NA	NA	NA	NA
EPH																		
C9-C18 Aliphatics																		
C19-C36 Aliphatics																		
C11-C22 Aromatics																		
Metals																		
Arsenic													**3.22**	N/A	**3.18**	**4.4**	**3.99**	**4.2**
Barium													**25.6**	N/A	**16.7**	**12.5**	**16.4**	**19.8**
Cadmium													**2.62**	N/A	<0.99	<1.1	<1	<0.95
Chromium													**10.1**	N/A	**8.55**	**8.69**	**7.19**	**7.63**
Lead													**712**	N/A	**9.74**	**5.45**	**8.58**	**4.01**
Mercury													<0.1	N/A	<0.1	<0.1	<0.1	<0.1
Selenium													<1.1	N/A	<0.99	<1.1	<1	<0.95
Silver													**2.21**	N/A	<0.99	<1.1	<1	<0.95

APPENDIX A-3
SOIL ANALYTICAL DATA (3-15' bgs)

Sample ID	WSB-1	WSB-2	WSB-8	WSB-14	WSB-14	WSB-73	WSB-77
Depth	3-5	3-5	3-5	3-5	5-7	3-4	3-4
Date	2/12/03	2/12/03	2/12/03	2/12/03	2/12/03	9/2/2003	9/2/2003
PCBs	**0.05**	<0.05	<0.04	<0.04	<0.04	<0.5	**8.4**
EPH							
C9-C18 Aliphatics	<31.4	<619	**45**	<31.6	<30.9		
C19-C36 Aliphatics	<31.4	**7300**	**826**	**77.6**	<30.9		
C11-C22 Aromatics	<31.4	**1670**	**255**	<31.6	<30.9		
Metals							
Arsenic	**5.88**	**11**	**8.1**	**10.7**	**4.66**		
Barium	**64**	**166**	**184**	**1480**	**18.1**		
Cadmium	<0.796	**20**	**3.55**	<0.808	<0.786		
Chromium	**12.4**	**220**	**35.5**	**15.1**	**8.34**		
Lead	**159**	**168**	**464**	**2230**	<0.786		
Mercury	**0.145**	**0.367**	**1.29**	**0.28**	0.0199		
Selenium	<7.96	<10.7	<7.58	<8.08	<7.86		
Silver	<0.796	<1.07	<0.758	<0.808	<0.786		