HRS DOCUMENTATION RECORD COVER SHEET

Name of Site: Leeds Metal

EPA ID No.: MEN000103584

Contact Persons

Site Investigation:	Weston Solutions, Inc. (WESTON®)/ Superfund Technical Assessment and Response Team III (START) 3 Riverside Drive Andover, MA 01810 (Mr. Gerald A. Hornok and Mr. John F. Kelly)	(978) 552-2100
Documentation Record:	U.S. Environmental Protection Agency (EPA) Region I 5 Post Office Square, Suite 100 Boston, MA 02109-3912 (Ms. Nancy Smith)	(617) 918-1436

Pathways, Components, or Threats Not Scored

The surface water migration, soil exposure and air migration pathways were not scored in this HRS documentation record because the ground water pathway is sufficient to qualify the site for the National Priority List (NPL).

Surface Water Migration Pathway

Three HRS watersheds have been identified for the Leeds Metal property: a stream flowing northerly away from the Leeds Metal property; a stream flowing southerly away from the Leeds Metal property; and an isolated wetland on the northwestern portion of the Leeds Metal property. Sampling from these HRS watersheds documented an Observed Release of metals to the on-property wetland.

Soil Exposure Pathway

Sampling has documented the presence of significant surface soil contamination on the Leeds Metal property. However, there is no resident population, and no nearby residences are suspected to be contaminated by site wastes.

Air Migration Pathway

To date, a release of hazardous substances to air from on-site sources has not been documented.

SDMS DocID 475949

HRS DOCUMENTATION RECORD

Name of Site: Leeds Metal Date Prepared: September 2011

EPA Region: Region I

Street Address of Site*: Off of Blue Rock Road

City, County, State, Zip Code: Leeds, Androscoggin County, Maine, 04263

General Location in the State: Southwestern Maine

Topographic Map: U.S. Geological Survey, Monmouth, Maine 7.5-minute series Topographical Map. 1979 [7].

Latitude:** 44° 14′ 13.5″ North

Longitude:** 70° 04′ 48.9″ West

Scores

Air Pathway	NS
Ground Water Pathway	100.00
Soil Exposure Pathway	NS
Surface Water Pathway	NS
HRS SITE SCORE	**50.00**

NS = Not Scored

* The street address, coordinates, and contaminant locations presented in this Hazard Ranking System (HRS) documentation record identify the general area the site is located. They represent one or more locations U.S. Environmental Protection Agency (EPA) considers to be part of the site based on the screening information EPA used to evaluate the site for National Priorities List (NPL) listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

** The geographic coordinates of the site were measured from its approximate center [4, p. 1]. See Figure 2 for the location of the latitude and longitude measurement point.

WORKSHEET FOR COMPUTING HRS SITE SCORE

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw})	100.00	10,000
2.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	NS	--
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	NS	--
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	NS	--
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		10,000
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root		50.00

HRS Table 3-1 – Ground Water Migration Pathway Scoresheet

Factor Categories and Factors	Maximum Value	Value Assigned
Likelihood of Release to an Aquifer:		
1. Observed Release	550	550
2. Potential to Release:		
2a. Containment	10	NS
2b. Net Precipitation	10	NS
2c. Depth to Aquifer	5	NS
2d. Travel Time	35	NS
2e. Potential to Release [lines 2a x (2b + 2c + 2d)]	500	NS
3. Likelihood of Release (higher of lines 1 and 2e)	550	550
Waste Characteristics:		
4. Toxicity/Mobility	(a)	10,000
5. Hazardous Waste Quantity	(a)	10,000
6. Waste Characteristics	100	100
Targets:		
7. Nearest Well	50	50
8. Population:		
8a. Level I Concentrations	(b)	170
8b. Level II Concentrations	(b)	NS
8c. Potential Contamination	(b)	NS
8d. Population (lines 8a + 8b + 8c)	(b)	170
9. Resources	5	NS
10. Wellhead Protection Area	20	NS
11. Targets (lines 7 + 8d + 9 + 10)	(b)	220
Ground Water Migration Score For An Aquifer:		
12. Aquifer Score [(lines 3 x 6 x 11)/82,500] (c)	100	100.00
Ground Water Migration Pathway Score:		
13. Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evaluated)[c]	100	100.00

(a) Maximum value applies to waste characteristics category.
(b) Maximum value not applicable.
(c) Do not round to nearest integer.

ACRONYM/ABBREVIATION LIST

%	Percent
1,1-DCE	1,1-Dichloroethene
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
Cis-1,2-DCE	Cis-1,2-dichloroethene
CLP	Contract Laboratory Program
Co.	Company
COC	Chain of Custody
Cm/s	Centimeters per second
CRQL	Contract Required Quantitation Limit
DNAPL	Dense Non-Aqueous Phase Liquid
DRO	Diesel Range Organics
EPA	U.S. Environmental Protection Agency
ERM	Environmental Resource Management
GPS	Global Positioning System
GRO	Gasoline Range Organics
HAE	Height Above Ellipsoid
HRS	Hazardous Ranking System
ICP	Inductively Coupled Plasma
MA	Massachusetts
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
ME	Maine
ME DEP	Maine Department of Environmental Protection
ME DHS	Maine Department of Human Services
MEG	Maximum Exposure Guidelines
MEK	Methyl Ethyl Ketone
µg/Kg	Micrograms Per Kilogram
µg/L	Micrograms Per Liter
mg/Kg	Milligrams Per Kilogram
mg/L	Milligrams Per Liter
MTBE	Methyl Tert-Butyl Ether
No.	Number
NPL	National Priorities List
OEME	Office of Environmental Measurement and Evaluation
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PID	Photoionization Detector
Pine & Swallow	Pine & Swallow Associates, Inc.
ppm	Parts Per Million
PVC	Poly Vinyl Chloride
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RL	Reporting Limit
Roux Associates	Roux Associates, Inc.

ACRONYM/ABBREVIATION LIST

SCDM	Superfund Chemical Data Matrix
SI	Site Inspection
START	Superfund Technical Assessment and Response Team III
SVOC	Semivolatile Organic Compounds
TCE	Trichloroethene
TPH	Total Petroleum Hydrocarbons
Trans-DCE	Trans-dichloroethene
USGS	United States Geological Survey
VOA	Volatile Organic Analytes
VOC	Volatile Organic Compound
WESTON®	Weston Solutions, Inc.
XRF	X-Ray Fluorescence
Yd^3	Cubic Yards

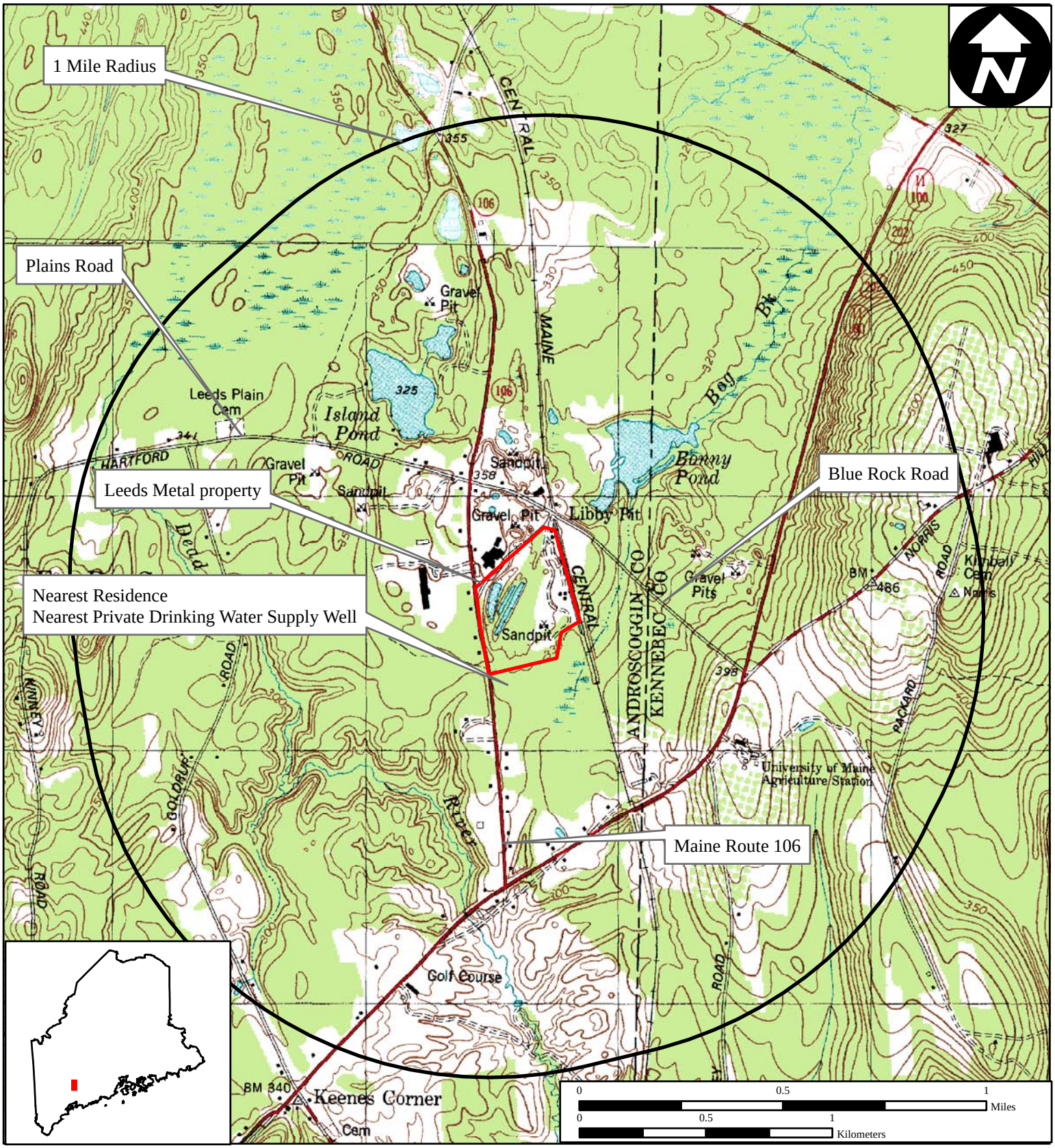

Figure 1

Property Location Map

Leeds Metal
Along Blue Rock Road
Leeds, Maine

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	10-03-0002
Created by:	G. Hornok
Created on:	16 August 2010
Modified by:	G. Hornok
Modified on:	13 July 2011

Data Sources:
Topos: MicroPath/USGS
Quadrangle Name(s): Wayne and Monmouth, ME
All other data: START GPS Data Collected as part of EPA Site Inspection, References 14, 15, 16, and 17

Figure 2

Property Map

Leeds Metal
Along Blue Rock Road
Leeds, Maine

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	10-03-0002
Created by:	G. Hornok
Created on:	16 August 2010
Modified by:	G. Hornok
Modified on:	13 July 2011

LEGEND

- **Property**
- **Monitoring Wells**
- **Access Road**
- **Former Operations Area**
- **Drum Disposal Area**
- **Extent of Operations**
- **Debris Pile**
- **Container Disposal Area**
- **Concrete Disposal Area**
- **Lagoons**
- **Battery Drop Area**
- **Wetland**

N

0 50 100 200 300 400 500 600 Feet

Data Sources:
Imagery: Me GIS Spring 2003 Orthoimagery
All other data: START GPS Data Collected as part of EPA Site Inspection, References 14, 15, 16, and 17

WESTON SOLUTIONS
Restoring Resource Efficiency

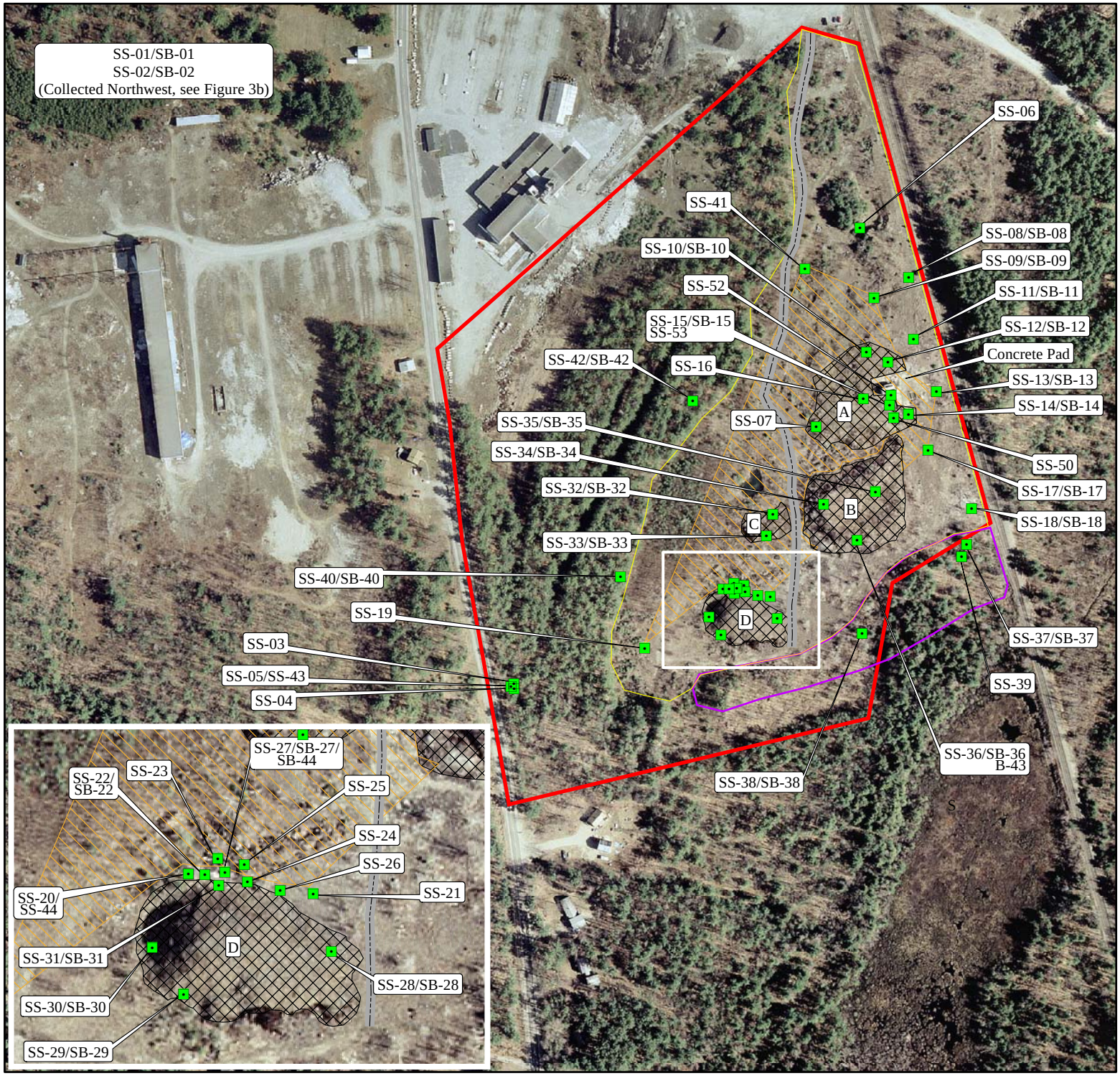

Figure 3a

Surface and Subsurface Soil/Source Sample Location Map

Leeds Metal
Along Blue Rock Road
Leeds, Maine

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	10-03-0002
Created by:	G. Hornok
Created on:	23 July 2010
Modified by:	G. Hornok
Modified on:	13 July 2011

LEGEND

- Soil/Source Sample
- Access Road
- Debris Pile
- Extent of Operations
- Drum Disposal Area
- Property Boundary
- Former Operations Area
- B Debris Pile Designation

0 50 100 200 300 400 Feet

Data Sources:
Imagery: Me GIS Spring 2003 Orthoimagery
All other data: START GPS Data Collected as part of EPA Site Inspection, References 14, 15, 16, and 17

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Restoring Resource Efficiency

Figure 3b
Background Surface and Subsurface Soil Sample Location Map
Leeds Metal
Along Blue Rock Road
Leeds, Maine

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number: 10-03-0002
Created by: G. Hornok
Created on: 23 July 2010
Modified by: G. Hornok
Modified on: 13 July 2011

LEGEND

- **Background Sample**
- **Former Operations Area**
- **Property Boundary**
- **Extent of Operations**
- **Access Road**
- **Debris Pile**
- B **Debris Pile Designation**

0 50 100 200 300 400 Feet

Data Sources:
Imagery: Me GIS Spring 2003 Orthoimagery
All other data: START GPS Data Collected as part of EPA Site Inspection, References 14, 15, 16, and 17

WESTON SOLUTIONS
Restoring Resource Efficiency

Figure 4

Ground Water Sample Location Map

Leeds Metal
Along Blue Rock Road
Leeds, Maine

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	10-03-0002
Created by:	G. Hornok
Created on:	19 October 2010
Modified by:	D. Brammer
Modified on:	13 July 2011

LEGEND

Leeds Metal Property

Ground Water Sample

Ground Water monitoring well couplets represented by single symbol.

'S' designates shallow ground water monitoring well, while 'D' designates the accompanying deep well.

0 0.0625 Miles

Data Sources:
Imagery: Me GIS Spring 2003 Orthoimagery
All other data: START GPS Data Collected as part of EPA Site Inspection, References 14, 15, 16, and 17

WESTON SOLUTIONS
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Figure 5

Drinking Water Sample Location Map

Leeds Metal
Along Blue Rock Road
Leeds, Maine

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number: 10-03-0002
Created by: G. Hornok
Created on: 19 October 2010
Modified by: G. Hornok
Modified on: 13 July 2011

LEGEND

Leeds Metal Property
Drinking Water Sample

0 0.125 0.25 Miles

Data Sources:

Imagery: Me GIS Spring 2003 Orthoimagery
All other data: START GPS Data Collected as part of EPA Site Inspection, Town of Leeds, ME
Tax Assessors Maps, References 14, 15, 16, and 17

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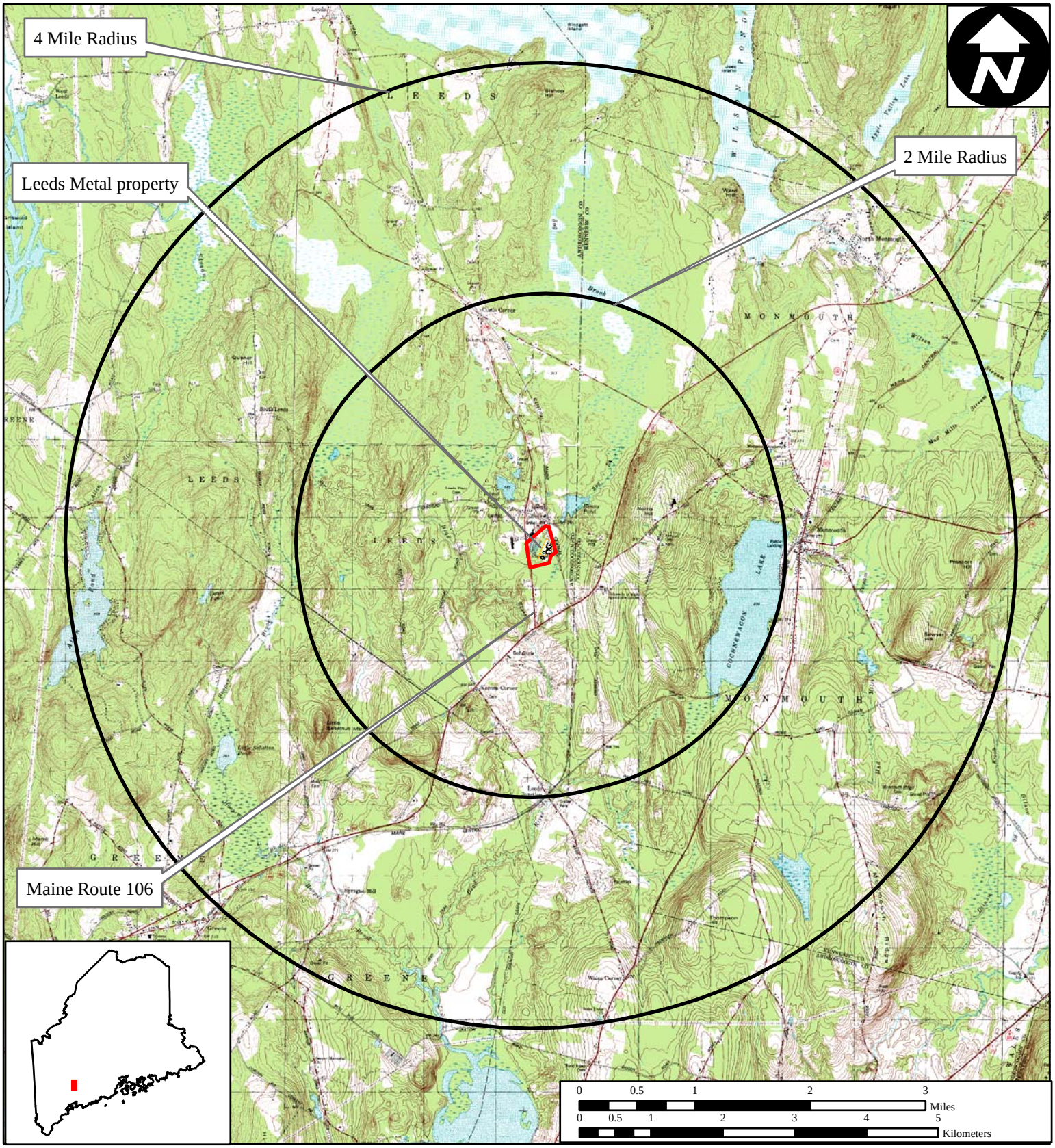

Figure 6

4 Mile Target Distance Limit Map

Leeds Metal
Along Blue Rock Road
Leeds, Maine

EPA Region I
Superfund Technical Assessment and Response Team (START) III
Contract No. EP-W-05-042

TDD Number:	10-03-0002
Created by:	G. Hornok
Created on:	16 August 2010
Modified by:	G. Hornok
Modified on:	13 July 2011

Data Sources:
Topos: MicroPath/USGS
Quadrangle Name(s): Wayne, Monmouth, Purgatory, Lake Auburn East, and Turner Center, ME
All other data: START GPS Data Collected as part of EPA Site Inspection, References 14, 15, 16, and 17

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SITE SUMMARY – Leeds Metal

The Leeds Metal property is located along Blue Rock Road in Leeds, Androscoggin County, Maine (ME) [5, p. 1]. The geographic coordinates of the property, as measured from its approximate center, are 44° 14′ 13.5″ north latitude and 70° 04′ 48.9″ west longitude (see Figure 1) [4, p. 1; 7]. The Leeds Metal property is depicted on the Town of Leeds Tax Assessor's Map Number (No.) 4, as Lot No. 38 [9; 12, p. 1]. According to the Town of Leeds Tax Assessor's records, the 36-acre property is currently owned by Maine Central Railroad Guilford Transportation Industries, Inc., which was rebranded under the name of Pan AM Railways in March 2006 [9; 12, p. 1; 13; 18, pp. 1-3; 52]. According to information compiled by the State of Maine, from approximately 1969 to 1984, scrap metal recovery processes were conducted on the property by various entities [18, pp. 1-2; 19, p. 1, Figure 2]. In addition, available file information indicates that cast concrete manufacturing and disposal took place on the northwestern portion of the property, and on an adjacent property, during a period from approximately 1956 through the 1990s [20, pp. 2-3; 21, pp. 3-4].

The Leeds Metal site consists of five sources [four pile sources (Debris Piles A through D) and one contaminated soil source (Former Operations Area)], which were documented and sampled as part of the 2010 EPA Site Inspection (SI), and are located on the central-southeastern portion of the property (see Figure 2) [see Source Characterization sections of this HRS Documentation Record]. These on-site sources have been documented to contain one volatile organic compound (VOC) [tetrachloroethene (PCE)], two polychlorinated biphenyls (PCBs) (Aroclor-1254 and Aroclor-1260), and three total metals (arsenic, chromium, and lead) [see Source Characterization sections of this HRS Documentation Record]. As part of this HRS Documentation Record, a release of PCE from on-site sources to ground water monitoring wells located on the property has been documented [see Ground Water Migration Pathway section of this HRS Documentation Record]. In addition, a release of PCE, and its breakdown product trichloroethene (TCE), to downgradient residential drinking water supply wells was documented in seven drinking water wells affecting 17 residents [see Ground Water Migration Pathway section of this HRS Documentation Record].

Prior to 1969, the Leeds Metal property, then known as Libby's Pit, was mined for sand and gravel [18, p. 1]. According to records summarized by a lawyer representing Maine Central Railroad, National Metal Converters, Inc. leased the Leeds Metal property in 1969, to conduct a metal shredding operation at the property [136, pp. 1-2; 137, pp. 1-7]. In addition, in a 1968 internal letter between railroad employees, Saco Steel Company (Co.) (believed by the lawyer representing the railroad to be the predecessor of National Metal Converters, Inc.) proposed the use of a machine known as a 'fragmentizer' to demolish junked cars [136, pp. 1-2]. The material would then be separated into ferrous and non-ferrous material, and the non-ferrous material would be discarded as waste suitable to be used as fill material [136, pp. 1-2]. A newspaper article published in April 1970 stated that operations at the Leeds Metal property had recently been initiated [136, p. 4]. In February 1976, National Metal Converters, Inc. sought and obtained consent from the railroad to transfer their 10-year lease at the Leeds Metal property to Michael Schiavone & Sons, Inc. [136, pp. 2, 4]. Available records indicate that Michael Schiavone & Sons, Inc. operated an automobile shredding plant on the property until 1978 [18, p. 2]. From 1978 to 1980, Lucas Salvage Company operated a scrap metal recovery facility as a tenant of Michael Schiavone & Sons, Inc. [18, p. 2]. In 1980, Leeds Metal acquired the assets of Michael Schiavone & Sons, Inc., and operated a scrap metal recovery operation on the property until 1982 [18, p. 2]. Available file information indicates that the last operations on the Leeds Metal property were conducted by a private individual, who operated a scrap metal recovery facility on the property for a portion of 1984 [18, p. 2].

On 2 June 1983, Maine Department of Environmental Protection (ME DEP) personnel responded to a complaint of a leaking transformer at the Leeds Metal property (Spill No. P-10-83) [22, pp. 1-3]. ME DEP personnel performed a reconnaissance of the property, noting the presence of five transformers and 27 drums, some of which were leaking [22, p. 3]. In addition, as part of the investigation, ME DEP personnel collected

two soil samples, one from around a leaking transformer and one from around leaking drums, which were submitted to the ME DEP Laboratory Services section for PCB analysis [22, pp. 3, 9-10]. Analytical results of the soil samples indicated the presence of two PCBs (Aroclor-1248 and Aroclor-1260) in both of the soil samples [22, pp. 9-10].

On 30 June 1983, in response to Spill No. P-10-83, ME DEP personnel mobilized to the Leeds Metal property to collect 13 drum samples, and one sludge sample from a lagoon located on the property [22, pp. 3-4, 6, 11-14]. Analytical results of the 13 drum samples did not indicate the presence of PCBs above the analytical detection limit of 50 milligrams per kilogram (mg/Kg) following a 100-fold dilution [22, pp. 11-12]. Analytical results of the sludge sample indicated the presence of Aroclor-1260 at an estimated concentration of 3.6 mg/Kg [22, pp. 13-14].

On 30 April 1987, ME DEP personnel responded to a report of abandoned drums at the Leeds Metal property (Spill No. A/158/87) [23, pp. 1-2]. The ME DEP investigator, who was also involved in the June 1983 complaint, indicated that the drums on the property had not been disposed of, although the property owner had stated that the drum disposal had been completed [23, pp. 1-2]. In response to Spill No. A/158/87, the property owner contracted Seacoast Ocean Services to remove 1,045 gallons of drum contents as well as an additional 19 drums from the property [23, pp. 1-2].

On 21 May 1998, ME DEP completed a Site Discovery for the Leeds Metal property [19, pp. 1-3]. On 24 October 1997, as part of the Site Discovery, ME DEP personnel collected 15 surface soil samples (sampling interval of 2 to 8 inches below the soil surface) to determine if a release of hazardous substances to soils had occurred [19, p. 2, Figures 2 and 3]. The 15 soil samples were collected from the following locations on the property: near the suspected loading dock and incinerator; near a foundation of a building located adjacent to the railroad tracks on the southeastern portion of the property; in the wooded area located on the southern portion of the property; and an area of drainage into the pond on the property [19, p. 2, Figures 2 and 3]. ME DEP personnel determined the sampling locations based on analysis of aerial photographs taken when metal reclamation activities were conducted on the property, as well as on conditions during the October 1997 sampling event [19, p. 2]. The soil samples were submitted to the Maine Department of Human Services (ME DHS) Health and Environmental Testing Laboratory for PCB, Resource Conservation and Recovery Act (RCRA) 8 metals, and Fuel Oil analyses [19, Appendix A (pp. 1-3, 8-23)]. PCB analytical results of the surface soil samples indicated the presence of two PCB Aroclors, Aroclor-1248 and -1260, above laboratory reporting limits (RLs) [19, p. 3, Appendix A (pp. 8-21)]. Each of the RCRA 8 metals, including arsenic, cadmium, chromium, and lead was detected above laboratory RLs [19, p. 3, Appendix A (pp. 4-7)]. Fuel Oil analysis indicated the samples contained diesel range organics (DRO) and total petroleum hydrocarbons (TPH) [19, p. 3, Appendix A (pp. 24-53)].

On 16 and 17 September 1998, Environmental Resources Management (ERM), on behalf of Maine Central Railroad, installed 11 temporary ground water monitoring wells at various locations throughout the Leeds Metal property [24, pp. 1-2, 7, 11]. Temporary ground water monitoring wells were installed, based on consultation with ME DEP, to evaluate ground water flow direction beneath the property as well as ground water quality in relation to documented soil contamination [24, pp. 2-3]. The temporary ground water monitoring wells were installed to a maximum depth of 28 feet below ground surface (bgs) using a direct-push system, and were allowed to equilibrate prior to depth sounding [24, p. 2]. The ground water elevation survey performed on the installed wells indicated that the depth to ground water on the property ranged from between 5.5 and 22.0 feet bgs, and that ground water flow beneath the property was generally from north to south [24, pp. 3, 12]. In addition, on 16 and 17 September 1998, 11 ground water samples were collected from the temporary ground water monitoring wells, after stagnant water was purged [24, pp. 2-3, 13-14]. The ground water samples were collected in laboratory-prepared containers and shipped to Alpha Analytical Laboratories for VOC, PCB, total RCRA 8 metals, and TPH analyses [24, p. 3]. Analytical results of the

ground water samples indicated the presence of one VOC (PCE) above method detection limits (MDLs), at concentrations of 0.27 milligrams per Liter (mg/L) in sample MW-8 and 0.13 mg/L in sample MW-9 [24, pp. 4, 11, 16-48]. These two temporary monitoring wells were located along the southeastern property boundary [24, p. 12]. Analytical results of the ground water samples also indicated the presence of four RCRA 8 metals, including arsenic, chromium, and lead, at concentrations above MDLs [24, pp. 4, 11, 16-48].

On 1 through 3 November 1999, on behalf of Maine Central Railroad, ERM installed nine overburden ground water monitoring wells on the Leeds Metal property [25, pp. 2-3, 12]. Eight of the ground water monitoring wells (ERM-1S, ERM-1D, ERM-2S, ERM-2D, ERM-3S, ERM-3D, ERM-4S, and ERM-4D) were installed as shallow and deep couplets on the southern portion of the Leeds Metal property [25, pp. 2-3, 12]. One ground water monitoring well (ERM-5S) was installed on the central portion of the Leeds Metal property [25, pp. 2-3, 12]. The shallow ground water monitoring wells (ERM-1S, ERM-2S, ERM-3S, ERM-4S, and ERM-5S) were installed to a maximum depth of 22 feet bgs, with 10-foot slotted well screens set at the bottom of the wells to intersect the ground water table [25, pp. 2-3, 12, 14-26]. The deep overburden ground water monitoring wells (ERM-1D, ERM-2D, ERM-3D, and ERM-4D) were installed to a maximum depth of 47 feet bgs, with 5-foot slotted well screens set at the bottom of the wells [25, pp. 2-3, 12, 14-26]. On 18 November 1999, ERM conducted a ground water elevation survey of the newly installed wells, and noted that ground water in the shallow overburden was predominately from the southeast to the northwest across the property [25, pp. 3-5, 13]. On 18 and 19 November 1999, ERM collected 10 ground water samples, including one field duplicate, from the nine wells installed on the property [25, pp. 3-4, 12, 27-28, 43]. The ground water samples were collected using low-flow techniques, and were submitted to Alpha Analytical Laboratories for VOC analysis by Method 8260 and dissolved and total RCRA 8 metals analysis by Method 3015; and were submitted to the Binax+nel laboratory for DRO analysis by Maine Method 4.1.25 [25, pp. 3-4, 12, 27-28, 43]. Analytical results of the ground water samples indicated the presence of two VOCs, 1,1,1-trichloroethane and PCE, above laboratory RLs, at concentrations of 2.6 micrograms per liter (µg/L) and 140 µg/L, respectively [25, pp. 6, 11-12, 44-77]. One dissolved RCRA 8 metal (barium) and one total RCRA 8 metal (barium) were detected in ground water samples above the laboratory RLs [25, pp. 6, 11-12, 44-76].

Due to ground water sampling results from the previous investigations, which indicated the presence of chlorinated solvents in ground water on the Leeds Metal property, ME DEP initiated an inventory of downgradient local drinking water supply wells in anticipation of collecting drinking water samples [135]. Between February 2000 and December 2005, ME DEP personnel collected drinking water samples from residential drinking water supply wells located south and southwest of the Leeds Metal property [135]. The drinking water samples were submitted to the State of Maine Health and Environmental Testing Laboratory for VOC analysis [135]. Analytical results of the ME DEP drinking water samples collected during this time period indicated the presence of several VOCs above MDLs, including cis-1,2-dichloroethene (cis-1,2-DCE), PCE, and TCE [135]. None of the VOCs detected in ME DEP drinking water samples were detected at concentrations above ME DEP Maximum Exposure Guidelines (MEGs) or EPA Maximum Contaminant Levels (MCLs) for drinking water [135; 139; 140].

On 2 March 2000, as part of the investigation of past industrial practices at the Leeds Metal property, ME DEP personnel interviewed the former assistant fire chief of the Town of Leeds, ME, who stated that cars were transported to the property via truck for “shredding” [26]. He also stated that within a cement building on the property, lead batteries and other auto parts were cleaned for resale [26]. The former assistant fire chief stated that metal from the shredded cars was salvaged (sent off the property via railroad), while upholstery was piled in former gravel excavation pits [26]. He also stated that such materials as “gasoline, diesel, transformer oil, brake fluid, oils, battery acid, and antifreeze” were dumped on the ground and that approximately 100 “barrels” were staged along the southern property boundary [26]. The former assistant fire chief recalled that the Leeds and Monmouth Fire Departments responded to fires at the property, and that gasoline tanks would ignite and cause oil-saturated soil to burn [26].

On 28 September 2000, ME DEP designated the Leeds Metal property as an Uncontrolled Hazardous Substance Site based on previous investigations and known operational history [27, pp. 1-10].

From 27 through 29 November 2000, on behalf of Maine Central Railroad, ERM oversaw a shallow ground water investigation at the Leeds Metal property, which was completed by Pine & Swallow Associates, Inc. (Pine & Swallow) [28, pp. 1-4]. As part of the investigation, Pine & Swallow installed temporary well points at locations throughout the property, and collected ground water samples to further delineate VOC contamination in the overburden ground water [28, pp. 1-4]. A total of 12 temporary monitoring well points were installed from 8 to 24 feet bgs, at locations near existing permanent and temporary ground water monitoring wells on the property where PCE had previously been detected in ground water samples [28, pp. 1-4, 10, 16-25]. As part of the ERM investigation, 13 ground water samples were collected from the 12 newly installed temporary ground water monitoring wells, and five samples were collected from previously installed ground water monitoring wells [28, p. 19]. All 18 ground water samples were collected using a peristaltic pump and dedicated tubing, and were submitted to Pine & Swallow personnel for field analysis of target compounds [1,1-dichloroethene (1,1-DCE), cis-1,2-DCE, trans-dichloroethene (trans-DCE), PCE, TCE, and vinyl chloride) using a gas chromatograph [28, pp. 3-4, 19-20]. In addition, ME DEP submitted the five ground water samples collected from the previously installed ground water monitoring wells to the Maine Health and Environmental Testing Laboratory for VOC analysis by Method 8260 [28, pp. 4, 31-88]. Field screening analytical results of the samples collected from the newly installed temporary ground water monitoring wells indicated the presence of PCE in four of the wells, at a maximum concentration of 4.3 µg/L [28, pp. 4-6, 10, 12-13, 30]. In addition, field screening indicated the presence of PCE in three of the ground water samples collected from the previously installed monitoring wells, at a maximum concentration of 46 µg/L [28, pp. 4-6, 10-13, 30]. Laboratory analytical results of ground water samples collected from the previously installed monitoring wells indicated the presence of PCE and 1,1,1-trichloroethane at maximum concentrations of 120 µg/L and 2.8 µg/L, respectively [28, pp. 4-6, 12-13, 31-47].

On 27 November 2000, as part of the shallow ground water investigation, ERM collected sediment and surface water samples from three locations on and around the Leeds Metal property [28, pp. 4-5, 10, 14-15, 48-88]. Sediment and surface water samples were collected from the following locations [sediment (SS-#) and surface water (SW-#) sample locations in parentheses]: the lagoon/trench areas located on the western portion of the property (SS-1 and SW-1); the wetland area located south of the property (SS-2 and SW-2); and the pond located in the central portion of the property (SS-3 and SW-3) [28, pp. 4-5, 10, 14-15, 48-88]. The sediment and surface water samples were submitted to Alpha Analytical Laboratories for analysis of VOCs by EPA Method 8260b, PCBs by EPA Method 8082, total RCRA 8 metals by EPA Method 6010B/7470A, and DRO by Maine Method 4.1.25 [28, pp. 5, 10, 14-15, 48-88]. Analytical results of the sediment samples indicated the presence of two VOCs (acetone and PCE), one PCB (Aroclor-1260), five RCRA 8 total metals (arsenic, barium, cadmium, chromium, and lead), and DRO above the reporting detection limit [28, pp. 5, 10, 14, 61-69]. Analytical results of the surface water samples indicated the presence of one VOC (toluene) and five RCRA 8 total metals (barium, cadmium, chromium, lead, and mercury) above the reporting detection limit [28, pp. 5, 10, 15, 48-60].

On 10 November 2003, on behalf of Maine Central Railroad, ERM began the evaluation of the four debris piles (Debris Piles A through D) located on the Leeds Metal property [29, pp. 1-4]. As part of the Debris Pile Evaluation, ERM conducted test pitting activities in each of the four debris piles to determine the type and chemical composition of the material contained within the piles [29, pp. 4-5]. Test pits were excavated to a maximum depth of 13 feet bgs, and the material encountered within the test pit was documented by ERM personnel [29, pp. 4-5, Appendix B]. Soil samples were collected from the excavator bucket used in test pitting activities, and each sample was comprised of soil not in contact with the bucket [29, p. 6]. One composite soil sample was collected from each of the test pits and screened in the field for PCBs and total

metals, and two grab samples were collected from east test pit and screened in the field for VOCs [29, p.5]. VOC field screening was performed using two separate photoionization detectors (PIDs); PCB field screening was performed with D-tech field test kits; and total metals field screening was performed using a Niton X-ray fluorescence (XRF) unit [29, pp. 5-6]. In addition, 49 soil samples were submitted to Alpha Analytical Laboratories for VOC analysis by EPA Method 8260, semivolatile organic compounds (SVOC) analysis by EPA Method 8270, PCB analysis by EPA Method 8080, and total RCRA 8 metals analysis by EPA Methods 6010A and 7471 [29, p. 7, Appendix D (pp. 155-159)].

As part of the Debris Pile Evaluation, ERM personnel described Debris Pile A as being "vegetated with invasive vegetation up to 1.5″ in diameter in a relatively dry matrix of sand with minor silt, metal pieces (up to 3' long), rubber, plastic, plant matter, fabric, and metal oxides" [29, pp. 9-10]. A total of 30 test pits were excavated in Debris Pile A [29, p. 4, 70-71]. Screening results of soil samples indicated the presence of total VOCs at a concentration of 54.1 parts per million (ppm) and total PCBs at concentrations greater than 25 ppm [29, 12-15, 70-71]. In addition, metals screening analysis of soil samples indicated the presence of 12 total metals, including arsenic and lead [29, pp. 2-15, 70-71]. Eight test pit soil samples collected from Debris Pile A were submitted to Alpha Analytical Laboratories for the laboratory analyses described above [29, pp. 65, 70-71, Appendix D (pp. 155-159). Laboratory analytical results indicated the presence of four SVOCs, three PCBs, and six total metals above laboratory reporting detection limits, including Aroclor-1260, cadmium, chromium, and lead [29, pp. 65, 70-71, Appendix D (pp. 1-154)].

ERM personnel described Debris Pile B as being "heavily vegetated with trees up to 3″ in diameter in a moist matrix of silt with minor sand and clay, plant matter, metal, rubber, plastic, fabric, and metal oxides" [29, pp. 9-10]. A total of 100 test pits were excavated in Debris Pile B [29, pp. 4, 70, 72]. Screening results of soil samples indicated concentrations of total VOCs at 20.3 ppm and total PCBs greater than 25 ppm [29, pp. 16-35, 70, 72]. In addition, metals screening analysis indicated the presence of 10 total metals including arsenic and lead [29, pp. 16-35, 70, 72]. Fifteen test pit soil samples collected from Debris Pile B were submitted to Alpha Analytical Laboratories for the laboratory analyses described above [29, pp. 65-66, 70, 72, Appendix D (pp. 155-159)]. Laboratory analytical results indicated the presence of 13 VOCs, four SVOCs, four PCBs, and six total metals above laboratory reporting detection limits, including Aroclor-1260, arsenic, cadmium, chromium, and lead [29, pp. 65-66, 70, 72, Appendix D (pp. 1-154)].

ERM described Debris Pile C as being "heavily vegetated with trees up to 3″ in diameter in a moist matrix of silt and minor sand, plant matter, oxidized metal, occasional metal pieces, metal oxides, rubber, and plastic" [29, pp. 9-10]. A total of 20 test pits were excavated in Debris Pile C [29, pp. 4, 36-38, 70, 73]. Screening results of soil samples indicated the presence of total VOCs at a concentration of 12 ppm and total PCBs at concentrations ranging between 4.1 and 15 ppm [29, pp. 36-38, 70, 73]. In addition, metals screening analysis indicated the presence of nine total metals, including lead [29, pp. 36-38, 70, 73]. Four test pit soil samples collected from Debris Pile C were submitted to Alpha Analytical Laboratories for the laboratory analyses described above [29, pp. 66-67, 70, 73, Appendix D (pp. 155-159)]. Laboratory analytical results indicated the presence of 11 VOCs, three SVOCs, two PCBs, and six total metals above laboratory reporting detection limits, including Aroclor-1260, arsenic, cadmium, chromium, and lead [29, pp. 66-67, 70, 73, Appendix D (pp. 1-154)].

ERM described Debris Pile D as being an "unvegetated, relatively dry pile with minor sand, silt and clay, metal oxides, oxidized metal, rubber, plastic, and fabric" [29, pp. 9-10]. A total of 100 test pits were excavated in Debris Pile D [29, pp. 4, 39-60, 70, 74]. Screening results of soil samples indicated the presence of total VOCs at a maximum concentration of 17.4 ppm and total PCBs at concentrations greater than 25 ppm [29, pp. 39-60, 70, 74]. In addition, metals screening analysis indicated the presence of 10 total metals, including arsenic and lead [29, pp. 39-60, 70, 74]. A total of 20 test pit soil samples collected from Debris Pile D were submitted to Alpha Analytical Laboratories for the laboratory analyses described above [29, pp.

67-68, 70, 74, Appendix D (pp. 155-159)]. Laboratory analytical results indicated the presence of 13 VOCs, three SVOCs, two PCBs, and six total metals above laboratory reporting detection limits, including PCE, Aroclor-1254, Aroclor-1260, arsenic, cadmium, chromium, and lead [29, pp. 67-68, 70, 74, Appendix D (pp. 1-154)].

As part of the Debris Pile Evaluation completed in March 2006, ERM also investigated an area designated as Area E (referred to in tables as Debris Pile E) [29, pp. 4, 61-64]. According to ME DEP representative Kathy Howatt, Debris Pile E was designated as an area located along the southeastern property boundary, and is equivalent to the area referred to as the Former Operations Area during sampling conducted as part of the EPA Site Assessment Site Inspection [11, pp. 24-25; 17, p. 12]. Two test pits were excavated in the area of Debris Pile E [29, pp. 61-64]. Screening results of soil samples indicated the presence of total VOCs at a maximum concentration of 0.1 ppm and total PCBs at concentrations ranging from 4.1 to 15 ppm [29, pp. 61-64]. In addition, total metals screening analysis indicated the presence of six total metals, including lead [29, pp. 61-64]. In addition, two soil samples were submitted to Alpha Analytical Laboratories for the laboratory analyses described above [29, pp. 68, Appendix D (pp. 155-159)]. Analytical results indicated the presence of three SVOCs, two PCBs, and six total metals above laboratory reporting detection limits, including Aroclor-1254, Aroclor-1260, arsenic, cadmium, chromium, and lead [29, pp. 68, Appendix D (pp. 1-154)].

As part of the Debris Pile Evaluation, ERM utilized survey data of the four debris piles, collected by Maine Central Railroad personnel in late Fall 2003, to further refine volume estimates [29, pp. 4-5]. ERM's original volume estimates of the debris piles were 16,700 cubic yards (yd^3), 55,600 yd^3, 10,400 yd^3, and 55,500 yd^3, for Debris Piles A, B, C, and D, respectively [29, p. 4]. Following the Maine Central Railroad survey of the Debris Piles, and area calculations of cross sections, ERM's volume estimates of the piles were refined to 6,413 yd^3, 20,566 yd^3, 1,727 yd^3, and 11,280 yd^3, for Debris Piles A, B, C, and D, respectively [29, Appendix A].

On 17 June 2004, Roux Associates, Inc. (Roux Associates), on behalf of Guilford Rail System, completed a Targeted Environmental Investigation of the northwest portion of the Leeds Metal property [21, pp. 1-4]. The purpose of the investigation was to determine if hazardous substances were present on the northwestern portion of the property due to filling activities allegedly conducted by an adjacent business, Rinker Industries (located at 173 State Route 106 in Leeds, ME) [21, pp. 1-2, Figure 2]. On 10 May 2004, as part of the investigation, Roux Associates completed three soil borings (RX-1S, RX-2S, and RX-3S) as ground water monitoring wells, at locations along the northwest property boundary and adjacent to concrete waste [21, p. 7, Figure 2]. On 11 May 2004, Roux Associates gauged the existing permanent ground water monitoring wells, in addition to the wells installed on 10 May 2004 [21, p. 8]. According to Roux Associates, gauging of the ground water wells indicated that ground water flow in the shallow overburden was in a north to northwesterly direction [21, p. 16, Figure 3]. Also on 11 May 2004, Roux Associates personnel collected ground water samples from the newly installed ground water monitoring wells RX-1S, RX-2S, and RX-3S [21, p. 8]. The ground water samples were collected using low-flow techniques and were submitted to Resource Laboratories for the following analyses: VOCs by EPA Method 8260B, SVOCs by EPA Method 8270B, PCBs by EPA Method 8082B, dissolved RCRA 8 metals by EPA Methods 6010B and 7470A, DRO by EPA Method 8015B, and gasoline range organics (GRO) by EPA Method 8015B [21, pp. 8-9, Table 2, Appendix I]. Analytical results of the ground water samples indicated the presence of DRO in ground water monitoring wells RX-1S and RX-3S [21, p. 14, Table 2, Appendix I].

On 10 May 2004, as part of the Targeted Environmental Investigation of the northwest portion of the Leeds Metal property, Roux Associates collected three composite soil samples (CS-1, CS-2, and CS-3) from locations adjacent to the three newly installed monitoring wells, and two composite soil samples (CS-4 and CS-5) from locations between the three monitoring wells [21, p. 7, Figure 2, Table 1]. The five soil samples were collected from a depth of approximately 1 foot bgs and submitted to Resource Laboratories for the

following analyses: VOCs by EPA Method 8260B, SVOCs by EPA Method 8270B, PCBs by EPA Method 8082B, RCRA metals by EPA Methods 6010B and 7470A, DRO by EPA Method 8015B, and GRO by EPA Method 8015B [21, p. 8, Table 1, Appendix H]. Analytical results of the surface soil samples indicated the presence of 10 SVOCs, seven RCRA 8 metals (including arsenic, cadmium, chromium, and lead), and DRO at concentrations above laboratory RLs [21, pp. 10-14, Table 1, Appendix H].

On 8 August 2004, the Leeds Metal property was listed in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database [CERCLIS No. MEN000103584] [5, pp. 1-2].

On 23 January 2008, ME DEP wrote to EPA and requested assistance in investigating the Leeds Metal property due to lack of cooperation from the property owner [30, pp. 1-2].

On 1 June 2009, as part of an EPA Removal Program Preliminary Assessment/Site Investigation, ME DEP personnel collected ten ground water samples, including one field duplicate, from the nine ground water monitoring wells installed on the Leeds Metal property by ERM in November 1999 [31, pp. 1-15]. The ground water samples were relinquished to Weston Solutions, Inc. Superfund Technical Assessment and Response Team III (START) personnel and submitted to the EPA Office of Environmental Measurement and Evaluation (OEME) laboratory located in North Chelmsford, Massachusetts (MA) for VOC, RCRA metals, and cyanide analyses [31, p. 2; 32, p. 24]. Analytical results of the ground water samples collected by ME DEP indicated the presence of one VOC (PCE), at a maximum concentration of 15 µg/L in samples ERM-4S and field duplicate ERM-6S [32, pp. 61, 158-200]. In addition, four total recoverable metals were detected at concentrations above laboratory RLs [32, pp. 62-63, 391-410].

On 15 through 18 June 2009, as part of the EPA Removal Program Preliminary Assessment/Site Investigation, START collected a total of 196 surface and subsurface soil samples from locations throughout the Leeds Metal property [32, pp. 24-26, 39, 44-49]. Of the 196 surface and subsurface soil samples collected, 177 samples were screened in the field for VOCs, and 152 samples were screened in the field for metals [32, pp. 27, 50-55, 118-136]. In addition, for confirmatory results, 24 of the soil samples were submitted to the EPA OEME laboratory for VOCs in soil (high level method) analysis, and 20 of the soil samples were submitted to the EPA OEME laboratory for metals in soil (medium level) analysis by inductively coupled plasma (ICP) [32, pp. 27-28, 40-41, 57-60, 233-284, 333-378, 411-453]. VOC screening results indicated the presence of PCE in 30 surface and subsurface soil samples at a maximum concentration of 4,140 micrograms per Kilogram (µg/Kg) [32, pp. 40, 50-52, 77, 118-136]. Metals screening analysis indicated the presence of four total metals above the sample reporting limit, including arsenic, cadmium, and lead [32, pp. 41, 53-55, 77, 118-136]. Laboratory confirmation analysis indicated the presence of 14 VOCs and 17 total metals above laboratory reporting limits, including PCE, arsenic, cadmium, chromium, and lead [32, pp. 27-28, 40-41, 57-60, 233-284, 333-378, 411-453].

On 17 and 18 June 2009, as part of the EPA Removal Program Preliminary Assessment/Site Investigation, eight temporary well points were installed at locations throughout the Leeds Metal property [32, pp. 26, 39]. Six of the temporary well points (WP-01 through WP-06) were installed in areas west and north of Debris Pile D, while two temporary well points (WP-07 and WP-08) were installed along the southeastern property boundary [32, pp. 26, 39]. A total of 19 ground water samples were collected, using a peristaltic pump, from various depth intervals within the temporary monitoring well points, and submitted to the EPA Mobile Laboratory for VOC field screening [32, pp. 26-28, 39, 56, 118-136]. In addition, two ground water samples were collected, using a peristaltic pump, from two ground water monitoring wells previously installed on the property (ERM-4S and ERM-4D), and submitted to the EPA Mobile Laboratory for VOC field screening [32, pp. 26-28, 39, 56, 118-136]. Analytical results of the ground water samples indicated the presence of PCE in all of the samples, at a maximum concentration of 86 µg/L, and the presence of 1,1,1-trichloroethane in one

sample at a concentration of 1.0 µg/L [32, pp. 26-28, 39, 56, 118-136].

On 18 June 2009, as part of the EPA Removal Program Preliminary Assessment/Site Investigation, ME DEP personnel collected nine drinking water samples, including one field duplicate, from eight residences located south and southwest of the Leeds Metal property [32, p. 26; 33, pp. 1-3]. ME DEP relinquished the drinking water samples to EPA OEME Mobile Laboratory personnel for VOC field screening, and to START personnel for submittal to the EPA OEME Laboratory for volatile organic analytes (VOAs) in drinking water, total metals, cyanide, and sulfate analyses [32, pp. 26-29, 56, 61-63, 106-116, 118-136, 201-232, 285-332, 379-390, 454-480; 33, pp. 1-3, Chain of Custody (COC) attachment]. Screening results of drinking water samples indicated the presence of PCE in four samples, at a maximum concentration of 0.67 µg/L, and TCE in five samples, at a maximum concentration of 1.5 µg/L [32, pp. 27, 56, 118-136; 33, pp. 1-3, COC attachment]. Laboratory analysis indicated the presence of five VOCs, six metals, and sulfate at concentrations above analytical RLs, including cis-1,2-DCE, PCE, and TCE [32, pp. 26-29, 61, 64-66, 201-232, 285-332, 379-390, 454-480; 33, pp. 1-3, COC attachment].

On 16 March 2010, as part of the EPA Site Assessment Preliminary Assessment/Site Inspection, EPA and START personnel performed a reconnaissance of the Leeds Metal property [14, pp. 2-14]. As part of the reconnaissance, START personnel observed conditions on the Leeds Metal property, and identified potential source areas both on and adjacent to the property [14, pp. 2-14]. Observations and sampling conducted as part of the EPA Site Assessment Site Inspection, as well as sample results from previous investigations, have identified the following nine source areas on and adjacent to the Leeds Metal property: Debris Pile A, located on the eastern-central portion of the property, west of the concrete pad; Debris Pile B, located on the southeastern portion of the property, directly south of Debris Pile A; Debris Pile C, located on the south-central portion of the property, directly west of Debris Pile B; Debris Pile D, located on the southern portion of the property, southwest of Debris Pile B; the Abandoned Drum Area, located along the southern property boundary and extending south onto Lot No. 40, depicted on the Town of Leeds, ME Tax Assessor's Map No. 4; the Battery Drop Area, located on the northern portion of the property, adjacent to the access road and railroad; the Former Operations Area, encompassing approximately the western half of the property; the Concrete Storage Area, located along the northwestern property boundary, adjacent to the property depicted on the Town of Leeds, ME Tax Assessor's Map No. 4, as Lot No. 37; and the Container Disposal Area, located along the western property boundary, adjacent to Maine Route 106 [9; 11, pp. 21-110, Attachments A and C].

On 8 through 11, 15 through 18, and 30 November 2010, START conducted sampling activities on the Leeds Metal property and at nearby properties as part of the EPA Site Assessment Site Inspection [14, pp. 21-48; 15, pp. 2-26, 29-48; 16, pp. 2-40, 46-48; 17, pp. 2-6; 34]. A total of 47 surface soil/source, 29 subsurface soil/source, 12 ground water, 31 drinking water, and 34 sediment samples were collected to identify source areas on the property, and determine potential impacts to local ground water and sediments [6; 11, pp. 25, 79, 123, 133, 173; 14, pp. 21-48; 15, pp. 2-26, 29-48; 16, pp. 2-40, 46-48; 17, pp. 2-6; 34, pp. 50-97]. Source samples were not collected from the Battery Drop Area and the Concrete Disposal Area as part of the EPA Site Assessment Site Inspection, as these two source areas were characterized during the EPA Removal Program Preliminary Assessment/Site Investigation and Roux Associates Targeted Environmental Investigations [11, pp. 26-40, 80-89; 14, pp. 21-48; 15, pp. 2-26, 29-48; 16, pp. 2-40, 46-48; 17, pp. 2-6].

Analytical results of one surface soil/source sample (SS-07) collected from Debris Pile A during the EPA Site Assessment Site Inspection indicated a source containing the following two VOCs, three PCBs, and 13 total metals at concentrations above background: 2-butanone [also known as methyl ethyl ketone (MEK)], 1,2,3-trichlorobenzene, Aroclor-1242, Aroclor-1254, Aroclor-1260, antimony, arsenic, barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, mercury, nickel, and zinc [11, pp. 42-43, Attachment A [Table 1 (p. 1 of

7), Table 2 (p. 1 of 7), Table 3 (p. 1 of 7)]; 17, pp. 3-4; 34, p. 30, Table 1; 37, Table 2 (p. 1 of 3); 42, Table 1 (p. of 3)].

Analytical results of seven surface and subsurface soil/source samples (SS-34, SS-35, SS-36, SB-34, SB-35, SB-36, and SB-43) collected from Debris Pile B during the EPA Site Assessment Site Inspection indicated a source containing the following 15 VOCs, four PCBs, and 20 total metals at concentrations above background: acetone, 2-butanone, carbon disulfide, chloroform, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, ethylbenzene, isopropylbenzene, methyl acetate, 4-methyl-2-pentanone, toluene, TCE, m,p-xylene, o-xylene, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1268, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, silver, sodium, thallium, vanadium, and zinc [11, pp. 67-70, 101-107, Attachment A [Table 1 (p. 5 of 7), Table 2 (p. 5 of 7), Table 3 (pp. 5-6 of 7)], Attachment C [Table 1 (pp. 3-4 of 4), Table 2 (pp. 3-4 of 4), Table 3 (pp. 3-4 of 5)]; 16, pp. 33-35; 34, pp. 27-28; 38, Table 2 (pp. 1-2 of 2); 43, Table 1 (pp. 1-2 of 2)].

Analytical results of four surface and subsurface soil/source samples (SS-32, SS-33, SB-32, and SB-33) collected from Debris Pile C during the EPA Site Assessment Site Inspection indicated a source containing the following four VOCs, two PCBs, and five total metals at concentrations above background: acetone, bromomethane, 2-butanone, chloromethane, Aroclor-1254, Aroclor-1260, cadmium, copper, lead, mercury, and zinc [11, pp. 66, 100-101, Attachment A [Table 1 (p. 5 of 7), Table 2 (p. 5 of 7), Table 3 (p. 5 of 7)], Attachment C [Table 1 (p. 3 of 4), Table 2 (p. 3 of 4), Table 3 (p. 3 of 5)]; 15, p. 48; 16, p. 2; 34, p. 21; 35, Table 2 (pp. 1-2 of 3); 40, Table 1 (p. 3 of 3)].

Analytical results of eight surface and subsurface soil/source samples (SS-28, SS-29, SS-30, SS-31, SB-28, SB-29, SB-30, SB-31) collected from Debris Pile D during the EPA Site Assessment Site Inspection indicated a source containing the following nine VOCs, four PCBs, and 16 total metals at concentrations above background: acetone, 2-butanone, bromomethane, ethylbenzene, methyl acetate, styrene, PCE, m,p-xylene, o-xylene, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1268, antimony, arsenic, barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, silver, and zinc [11, pp. 61-66, 95-99, Attachment A [Table 1 (pp. 4-5 of 7), Table 2 (pp. 4-5 of 7), Table 3 (pp. 4-5 of 7)], Attachment C [Table 1 (pp. 2-3 of 4), Table 2 (pp. 2-3 of 4), Table 3 (p. 3 of 5)]; 14, pp. 46-48; 15, pp. 2-3; 34, pp. 12-13; 39, Table 1 (pp. 1-2 of 3), Table 2 (pp. 1-2 of 2); 44, Table 1 (pp. 1-2 of 2)].

Analytical results of five surface and subsurface soil/source samples (SS-37, SS-38, SS-39, SB-37, SB-38) collected from the Abandoned Drum Source Area during the EPA Site Assessment Site Inspection indicated a source containing the following two VOCs, two PCBs, and 13 total metals at concentrations above background: acetone, 2-butanone, Aroclor-1254, Aroclor-1260, aluminum, barium, cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, and zinc [11, pp. 38, 71-72, 88, Attachment A [Table 1 (p. 6 of 7), Table 2 (p. 6 of 7), Table 3 (p. 6 of 7)], Attachment C [Table 1 (p. 4 of 4), Table 2 (p. 4 of 4), Table 3 (p. 4 of 4)]; 16, pp. 14-16; 17, p. 12; 34, pp. 23-24; 35, Table 1 (pp. 2-3 of 3), Table 2 (pp. 2-3 of 3); 40, Table 1 (pp. 2-3 of 3)].

Analytical results of six surface soil samples collected from the Battery Drop Area as part of the EPA Removal Program Preliminary Assessment/Site Investigation indicated a source containing the following three metals above screening detection limits: antimony, arsenic, and lead [Figure 2; 11, p. 4 (Figure 2); 32, pp. 27-28, 40-41, 55, 122].

Analytical results of surface and subsurface soil/source samples (SS-09, SS-13, SS-17, SS-20 through SS-27, SS-44, SB-09, SB-17, SB-22, SB-27 and SB-44) collected from the Former Operations Area during the EPA Site Assessment Site Inspection indicated a source containing the following 10 VOCs, four PCBs, and 23 total metals at concentrations above background: bromomethane, 2-butanone, chloromethane, ethylbenzene,

methyl acetate, methyl tert-butyl ether (MTBE), styrene, PCE, m,p-xylene, o-xylene, Aroclor-1248, Aroclor-1254, Aroclor-1260, Aroclor-1268, aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc [11, pp. 44-61, 73-78, 91-95, 108, Attachment A [Table 1 (pp. 2-4, 7 of 7), Table 2 (pp. 2-4, 7 of 7), Table 3 (pp. 2-4, 7 of 7)], Attachment C [Table 1 (pp. 1-2 of 4), Table 2 (pp. 1-2 of 4), Table 3 (pp. 1-2 of 5)]; 15, pp. 18-19; 16, pp. 28-31, 38-39; 17, p. 6; 34, pp. 13, 16, 26-28, 31].

Analytical results of four surface soil/source samples (SS-03, SS-04, SS-05, and SS-43) collected from the Container Disposal Source Area during the EPA Site Assessment Site Inspection indicated a source containing the following VOC and six total metals at concentrations above background: methyl acetate, barium, cadmium, copper, lead, potassium, and zinc [11, pp. 26-27, 39, 42, 73, Attachment A [Table 1 (pp. 1, 6 of 7), Table 2 (pp. 1, 6 of 7), Table 3 (pp. 1, 7 of 7)]; 16, pp. 2-4; 34, p. 21; 35, Table 1 (pp. 1-2 of 3), Table 2 (pp. 1-2 of 3); 40, Table 1 (pp. 1-2 of 2)].

Surface soil samples collected from the Concrete Disposal Area as part of the Roux Associates Targeted Environmental Investigation indicated a source containing DRO and the following ten SVOCs and seven RCRA 8 metals at concentrations above laboratory detection limits: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, arsenic, barium, cadmium, chromium, lead, selenium, and silver [21, pp. 10-14, Table 1, Appendix H].

For the purposes of this HRS documentation record, the following will be evaluated: six hazardous substances (PCE, Aroclor-1254, Aroclor-1260, arsenic, chromium, and lead) detected in source samples collected from five source areas located on the Leeds Metal property; and two hazardous substances (PCE and TCE) detected in ground water and/or drinking water samples.

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of Source: Debris Pile A

Number of Source: Source No. 1

Source Type: Pile

Description and Location of Source:

Debris Pile A (Pile - Source No. 1) is located on the undeveloped property identified as the Leeds Metal property, depicted on the Town of Leeds, ME Tax Assessor's Map No. 4, as Lot No. 38 [5; 9; 12, pp. 1-2; 19, p. 1, Fig. 1]. Source No. 1 is located adjacent to (southwest, north, and south of) the concrete building and pad on the east-central portion of the Leeds Metal property (see Figure 2) [14, pp. 10-11; 29, p. 70]. The geographic coordinates of Debris Pile A, as measured from its approximate center, are 44° 14′ 15.2″ north latitude and 70° 04′ 46.8″ west longitude (see Figures 1 and 2) [7].

Between 1969 and 1984, scrap metal recovery processes were conducted on the Leeds Metal property by various entities [18, pp. 1- 2]. The former assistant fire chief of the Town of Leeds, ME stated that cars were transported to the property via trucks for "shredding" [26]. He also stated that within a cement building on the property, lead batteries and other auto parts were cleaned for resale [26]. The former assistant fire chief noted that metal from the shredded cars was salvaged (sent off the property via railroad), while the upholstery was piled in former gravel excavation pits [26]. He further stated that such materials as "gasoline, diesel, transformer oil, brake fluid, oils, battery acid, and antifreeze" were dumped on the ground and that approximately 100 'barrels' were staged along the southern property boundary [26]. The former assistant fire chief recalled that the Leeds and Monmouth Fire Departments responded to fires at the property, and that gasoline tanks would ignite causing oil-saturated soil to burn [26]. The eastern and southern portions of the Leeds Metal property contained car shredding waste both on the ground surface and in piles, including Source No. 1 (Debris Pile A) [14, pp. 9-11]. Debris Pile A is not elevated, but rather appears to be a filled-in portion of a depression that extends west toward the property access road (see Figure 2) [14, pp. 10-11; 29, Figure 2]. The material which comprises Debris Pile A was observed to be consistent with that of several other debris piles on the property, and included rubber, plastic, and metal debris [14, pp. 10-11].

In November 2003, ERM personnel, working on behalf of the property owner, completed an evaluation of four on-site debris piles (Debris Piles A through D) [29, pp. 1-4]. As part of this evaluation, ERM representatives conducted extensive test pitting, sampling, and a volume estimation of each pile [29, pp. 1-10, 12-60, 70-74, Appendices A, B, and D]. ERM described Debris Pile A as being "vegetated with invasive vegetation up to 1.5″ in diameter in a relatively dry matrix of sand with minor silt, metal pieces (up to 3' long), rubber, plastic, plant matter, fabric, and metal oxides" [29, pp. 9-10]. Screening and laboratory analyses of test pit samples collected from Debris Pile A, on behalf of the property owner, indicated the presence of three PCBs (Aroclor-1248, Aroclor-1254, and Aroclor-1260) and six total metals (antimony, arsenic, cadmium, copper, lead, and nickel) at concentrations exceeding state standards [29, pp. 12-15, 65, 70-71; 138, Appendix 1]. ERM estimated the approximate volume of Debris Pile A to be 16,700 yd^3 [29, p. 4].

In late fall of 2003, Maine Central Railroad personnel conducted a survey of the four on-site debris piles (Debris Piles A through D) to further refine volume estimates presented earlier by ERM [29, pp. 4-5]. Following the Maine Central Railroad survey of Debris Pile A, the volume estimate of Debris Pile A was adjusted by ERM to 6,413 yd^3 [29, Appendix A (pp. 1-2, 6-7)].

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Background Concentrations:

Debris Pile A (Source No. 1) is a pile source type; therefore, no background samples are required. However, since the debris pile materials were mixed with local soil material, background surface and subsurface soil samples were collected as part of the EPA Site Assessment Site Inspection [15, pp. 44-46; 17, pp. 3-4; 34, pp. 20, 30; 75, p. 1; 76, p. 1]. On 16 November 2010, as part of the EPA Site Assessment Site Inspection, background soil sampling activities were conducted [15, pp. 44-46; 34, p. 20]. The background surface and subsurface soil samples were collected in accordance with the EPA-approved Site-Specific Quality Assurance Project Plan (QAPP), dated 26 October 2010 [6; 34, pp. 19-20]. Two background surface soil samples (SS-01 and SS-02) and two background subsurface soil samples (SB-01 and SB-02) were collected from a residential property located northwest of the Leeds Metal property [9; 12; 15, pp. 44-46; 34, p. 20; 106, pp. 1-2]. The residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 4 as Lot No. 55 (see Figure 3b) [9; 106, pp. 1-2]. The background samples were collected from the same 0- to 2-foot depth interval and during the same time period as the source samples presented as part of the Source No. 1 Characterization, and the background and source samples contained similar native materials [15, pp. 44-46; 75, pp. 1, 6, 9, 11, 13-15, 42; 76, pp. 1, 4, 6, 8, 9]. Background soil samples SS-01 and SB-01 were submitted to Contract Laboratory Program (CLP) Laboratories for VOC and PCB analyses following SOM01.2 and total metals analysis following ISM01.2, while background soil samples SS-02 and SB-02 were submitted to a CLP Laboratory for total metals analysis following ISM01.2 [15, pp. 44-46; 34, p. 20; 35, p. 1; 40, p. 1; 79, pp. 1-2; 84, pp. 1-2; 89, pp. 1-2]. As part of this HRS documentation record and the evaluation of background concentrations, the following hazardous substances in background samples are presented: two PCB aroclors (Aroclor-1254 and Aroclor-1260), and three total metals (arsenic, chromium, and lead).

Table 1 - Hazardous Substances Associated with Background Samples

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-01	Soil	16 Nov. 2010	Aroclor-1254	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SS-01	Soil	16 Nov. 2010	Aroclor-1260	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SS-02	Soil	16 Nov. 2010	Chromium[1]	23.1 (17.9 J) mg/Kg	1.1 mg/Kg	15, pp. 44-45; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
SS-02	Soil	16 Nov. 2010	Lead[1]	5.1 (5.1 JEB) mg/Kg	1.1 mg/Kg	15, pp. 44-45; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)

Table 1 - Hazardous Substances Associated with Background Samples (Continued)						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SB-01	Soil	16 Nov. 2010	Aroclor-1254	36 U µg/Kg	36 µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)
SB-01	Soil	16 Nov. 2010	Aroclor-1260	36 U µg/Kg	36 µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)
SB-02	Soil	16 Nov. 2010	Arsenic	8.4 mg/Kg	1.4 mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)
SB-02	Soil	16 Nov. 2010	Chromium[1]	35.9 (27.8 J) mg/Kg	1.4 mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)
SB-02	Soil	16 Nov. 2010	Lead[1]	5.2 (5.2 JEB) mg/Kg	1.4 mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)

Nov. = November.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
mg/Kg = Milligrams per kilogram.
U = The compound or element was analyzed for, but not detected. The associated numerical value is the sample-adjusted CRQL [103, p. B-47].
J = The associated numerical value is an estimated quantity [40, Table 1 (pp. 1-2 of 3); 103, p. B-47].
EB = The compound was also detected in an associated equipment rinsate blank [40, Table 1 (pp. 1-2 of 3)].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment.

[1] Chromium and lead results were qualified as estimated following data review. Chromium had a low bias (serial dilution results exceeded percent difference criteria) and was adjusted by multiplying by the adjustment factor of 1.29 [40, p. 5; 58, pp. 2, 3 (Exhibit 3), 10 (Table 3)]. Lead had a high bias [equipment (rinsate) blank contamination] and was not numerically adjusted [40, p. 4; 58, pp. 2, 3 (Exhibit 3), 10 (Table 3)].

- Source Samples:

On 30 November 2010, as part of the EPA Site Assessment Site Inspection, soil/source sampling activities of Debris Pile A were conducted [17, pp. 3-4; 34, p. 30]. The surface and subsurface source samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6]. As part of the Debris Pile A characterization, eight surface soil/source samples (SS-07, SS-10, SS-12, SS-14 through SS-

16, SS-50, and SS-53) and four subsurface soil/source samples (SB-10, SB-12, SB-14, and SB-15) were collected from various locations throughout the pile (see Figure 3a) [16, pp. 31, 38-39, 46-48; 17, pp. 2-5; 34, pp. 51-53, 61-64; Figure 3]. All surface soil samples collected from Debris Pile A as part of the EPA Site Assessment Site Inspection were collected from depths of up to 2 feet bgs [Figure 3a; 75, pp. 6, 9, 11, 13-15, 42]. Surface soil/source sample SS-07 was described as dark brown, sandy silt, abundant debris (foam, wire coating, plastic, rubber, and tile), trace fine gravel, and trace clay [75, p. 6]. Surface soil/source sample SS-10 was described as medium-to-dark brown, fine-to-coarse sand, some silt, little fine-to-medium gravel, trace clay, trace debris (metal shavings), and trace organics [75, p. 9]. Surface soil/source sample SS-12 was described as medium-to-dark brown, silty sand, some debris (rubber, metal, metal slag), little fine-to-medium gravel, trace clay and trace organics [75, p. 11]. Surface soil/source sample SS-14 was described as medium brown-to-red brown, fine-to-coarse sand, some silt, trace fine-to-medium gravel, trace organics, and trace debris (rubber, plastic) [75, p. 13]. Surface soil/source sample SS-15 and field duplicate SS-53 were described as olive green-to-medium grey, silt, little clay, trace fine sand and trace organics [75, p. 14]. Surface soil/source sample SS-16 was described as dark brown, fine sandy silt, major debris (wire, slag, plastic, metal), little medium-to-coarse sand, little fine-to-medium gravel, trace organics [75, p. 15]. Surface soil/source sample SS-50 was described as black, silty fine sand, some debris (metal, wire, plastic), little medium-to-coarse sand, little fine gravel, and trace clay [75, p. 42]. Subsurface soil/source sample SB-10 was described as medium brown, silty sand, trace fine-to-medium gravel, trace debris (plastic), and trace organics [76, p. 4]. Subsurface soil/source sample SB-12 was described as dark brown, sandy silt, some debris (rubber, metal, metal slag, glass), trace fine gravel, and trace clay [76, p. 6]. Subsurface soil/source sample SB-14 was described as medium brown, fine-to-coarse sand, little silt, trace fine-to-medium gravel, trace clay, and trace organics [76, p. 8]. Subsurface soil/source sample SB-15 was described as medium brown-to-light brown, sand, little silt, little fine-to-medium gravel, trace clay, trace debris (wire coating), and trace organics [76, p. 9].

The eight surface soil/source samples (SS-07, SS-10, SS-12, SS-14 through SS-16, SS-50, and SS-53) and four subsurface soil/source samples (SB-10, SB-12, SB-14, and SB-15) were submitted to CLP Laboratories for VOC and PCB analyses following SOM01.2, and total metals analysis following ISM01.2 [37, p. 1; 34, pp. 51-53, 61-64; 38, p. 1; 42, p. 1; 43, p. 1; 81, pp. 1-3; 82, pp. 1-2; 86, p. 1; 87, p. 1; 91, p. 1; 92, p. 1]. The analytical data were validated according to EPA New England Regional Functional Guidelines Tier II requirements (for VOCs, PCBs, and total metals analyses) [37, p. 1; 38, p. 1; 42, p. 1; 43, p. 1]. For the purposes of the Source No. 1 evaluation and the HRS documentation record, analytical results of 12 soil/source samples (SS-07, SS-10, SS-12, SS-14 through SS-16, SS-50, SS-53, SB-10, SB-12, SB-14, and SB-15) confirm the presence of the following hazardous substances: two PCB Aroclors (Aroclor-1254 and Aroclor-1260) and three total metals (arsenic, chromium, and lead) as presented in the following table.

Among the 12 selected soil/source samples, Aroclor-1254 was detected at a maximum concentration of 11,000 µg/Kg in surface soil/source sample SS-07, located on the western portion of Source No. 1; Aroclor-1260 was detected at a maximum concentration of 12,000 µg/Kg in surface soil/source sample SS-07; arsenic was detected at a maximum concentration of 46.2J mg/Kg in subsurface soil/source sample SB-12, located on the northeastern portion of Source No. 1; chromium was detected at a maximum concentration of 819 mg/Kg in surface soil/source sample SS-50, located on the southeastern portion of Source No. 1; and lead was detected at a maximum concentration of 20,900J mg/Kg in surface soil/source sample SS-50, located on the southeastern portion of Source No. 1 [Figure 3a; 16, pp. 38-39; 17, pp. 3-4; 34, pp. 28, 30; 37, Table 2 (p. 1 of 3); 42, Table 1 (p. 2 of 3); 43, Table 1 (p. 2 of 2); 55, pp. 7 (Table 2), 10 (Table 3); 60, p. 8 (Table 2), 12 (Table 3); 61, pp. 7 (Table 2), 10 (Table 3)].

Table 2 - Hazardous Substances Associated with Source No. 1

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-07	Soil/ Source	30 Nov. 2010	Aroclor-1254	11,000 µg/Kg	2,200 µg/Kg	17, pp. 3-4; 34, p. 30; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
			Aroclor-1260	12,000 µg/Kg	2,200 µg/Kg	17, pp. 3-4; 34, p. 30; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
			Chromium	325 mg/Kg	61.9 mg/Kg	17, pp. 3-4; 34, p. 30; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 1)
			Lead	3,630 mg/Kg	61.9 mg/Kg	17, pp. 3-4; 34, p. 30; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 1)
SS-10	Soil/ Source	30 Nov. 2010	Aroclor-1254	340 µg/Kg	35 µg/Kg	16, pp. 46-47; 34, p. 29; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (pp. 7-8)
			Aroclor-1260	440 µg/Kg	35 µg/Kg	16, pp. 46-47; 34, p. 29; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (pp. 7-8)
			Lead	304 mg/Kg	1.1 mg/Kg	16, pp. 46-47; 34, p. 29; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)

Table 2 - Hazardous Substances Associated with Source No. 1 (Continued)

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-12	Soil/ Source	30 Nov. 2010	Aroclor-1254	1,700 µg/Kg	180 µg/Kg	16, pp. 47-48; 34, p. 30; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (pp. 15-16)
			Aroclor-1260	1,000 µg/Kg	180 µg/Kg	16, pp. 47-48; 34, p. 30; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (pp. 15-16)
			Chromium	96.5 mg/Kg	1.1 mg/Kg	16, pp. 47-48; 34, p. 30; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 4)
			Lead	656 mg/Kg	1.1 mg/Kg	16, pp. 47-48; 34, p. 30; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 4)
SS-14	Soil/ Source	30 Nov. 2010	Aroclor-1254	390 µg/Kg	36 µg/Kg	17, pp. 2-3; 34, p. 30; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 19)
			Aroclor-1260	510 µg/Kg	36 µg/Kg	17, pp. 2-3; 34, p. 30; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 19)
			Lead	250 mg/Kg	1.1 mg/Kg	17, pp. 2-3; 34, p. 30; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 6)

Table 2 - Hazardous Substances Associated with Source No. 1 (Continued)

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-15	Soil/ Source	30 Nov. 2010	Aroclor-1254	89 µg/Kg	39 µg/Kg	17, pp. 4-5; 34, p. 30; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 77)
			Aroclor-1260	84 µg/Kg	39 µg/Kg	17, pp. 4-5; 34, p. 30; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 77)
			Chromium	81.1 mg/Kg	1.2 mg/Kg	17, pp. 4-5; 34, p. 30; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 7)
			Lead	155 mg/Kg	1.2 mg/Kg	17, pp. 4-5; 34, p. 30; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 7)
SS-16	Soil/ Source	18 Nov. 2010	Aroclor-1254	900 µg/Kg	190 µg/Kg	16, p. 31; 34, p. 27; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 3-4)
			Aroclor-1260[1]	1,600 (1,600 J) µg/Kg	190 µg/Kg	16, p. 31; 34, p. 27; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 3-4)
			Chromium	245 mg/Kg	238 mg/Kg	16, p. 31; 34, p. 27; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 3)
			Lead[2]	1,264 (1,820 J) mg/Kg	238 mg/Kg	16, p. 31; 34, p. 27; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 3)

Table 2 - Hazardous Substances Associated with Source No. 1 (Continued)						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SS-50	Soil/ Source	18 Nov. 2010	Aroclor-1254	240 µg/Kg	46 µg/Kg	16, pp. 38-39; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 9 (Table 3), Attachment B (p. 13)
			Chromium	819 mg/Kg	273 mg/Kg	16, pp. 38-39; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 9)
			Lead[2]	14,514 (20,900 J) mg/Kg	273 mg/Kg	16, pp. 38-39; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 9)
SS-53	Soil/ Source	30 Nov. 2010	Aroclor-1254	71 µg/Kg	39 µg/Kg	17, pp. 4-5; 34, p. 30; 37, Table 2 (p. 3 of 3); 55, pp. 9 (Table 2), 11 (Table 3), Attachment B (p. 86)
			Chromium	79.5 mg/Kg	1.2 mg/Kg	17, pp. 4-5; 34, p. 30; 42, Table 1 (p. 3 of 3); 60, pp. 9 (Table 2), 13 (Table 3), Attachment B (p. 15)
			Lead	119 mg/Kg	1.2 mg/Kg	17, pp. 4-5; 34, p. 30; 42, Table 1 (p. 3 of 3); 60, pp. 9 (Table 2), 13 (Table 3), Attachment B (p. 15)

Table 2 - Hazardous Substances Associated with Source No. 1 (Continued)

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SB-10	Soil/ Source	30 Nov. 2010	Aroclor-1254	200 µg/Kg	35 µg/Kg	16, p. 47; 34, p. 29; 37, Table 2 (p. 2 of 3); 55, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 78)
			Aroclor-1260	130 µg/Kg	35 µg/Kg	16, p. 47; 34, p. 29; 37, Table 2 (p. 2 of 3); 55, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 78)
			Lead	121 mg/Kg	1.1 mg/Kg	16, p. 47; 34, p. 29; 42, Table 1 (p. 2 of 3); 60, pp. 8 (Table 2), 11 (Table 3), Attachment B (p. 8)
SB-12	Soil/ Source	30 Nov. 2010	Aroclor-1254	430 µg/Kg	37 µg/Kg	17, p. 3; 34, p. 30; 37, Table 2 (p. 2 of 3); 55, pp. 8 (Table 2), 11 (Table 3), Attachment B (pp. 80-81)
			Aroclor-1260	710 µg/Kg	110 µg/Kg	17, p. 3; 34, p. 30; 37, Table 2 (p. 2 of 3); 55, pp. 8 (Table 2), 11 (Table 3), Attachment B (pp. 80-81)
			Arsenic[3]	26.6 (46.2 J) mg/Kg	1.1 mg/Kg	17, p. 3; 34, p. 30; 42, Table 1 (p. 2 of 3); 60, pp. 8 (Table 2), 12 (Table 3), Attachment B (p. 10)
			Chromium	80.8 mg/Kg	1.1 mg/Kg	17, p. 3; 34, p. 30; 42, Table 1 (p. 2 of 3); 60, pp. 8 (Table 2), 12 (Table 3), Attachment B (p. 10)
			Lead	662 mg/Kg	1.1 mg/Kg	17, p. 3; 34, p. 30; 42, Table 1 (p. 2 of 3); 60, pp. 8 (Table 2), 12 (Table 3), Attachment B (p. 10)

Table 2 - Hazardous Substances Associated with Source No. 1 (Concluded)						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SB-14	Soil/ Source	30 Nov. 2010	Aroclor-1254	210 µg/Kg	34 µg/Kg	17, p. 4; 34, p. 30; 37, Table 2 (p. 2 of 3); 55, pp. 8 (Table 2), 11 (Table 3), Attachment B (p. 83)
			Aroclor-1260	150 µg/Kg	34 µg/Kg	17, p. 4; 34, p. 30; 37, Table 2 (p. 2 of 3); 55, pp. 8 (Table 2), 11 (Table 3), Attachment B (p. 83)
			Lead	51.8 mg/Kg	1.0 mg/Kg	17, p. 4; 34, p. 30; 42, Table 1 (p. 2 of 3); 60, pp. 8 (Table 2), 12 (Table 3), Attachment B (p. 12)
SB-15	Soil/ Source	30 Nov. 2010	Lead	26.4 mg/Kg	1.1 mg/Kg	17, p. 5; 34, p. 30; 42, Table 1 (p. 2 of 3); 60, pp. 8 (Table 2), 13 (Table 3), Attachment B (p. 13)

Nov. = November.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
mg/Kg = Milligrams per kilogram.
J = The associated numerical value is an estimated quantity [42, Table 1 (p. 2 of 3); 43, Table 1 (pp. 1-2 of 2); 103, p. B-47].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment. Based on the EPA Fact Sheet, *Using Qualified Data to Document an Observed Release and Observed Contamination*, for HRS purposes it is not required to adjust qualified source data. Although the fact sheet was not intended for application to source data, it has been applied as a conservative measure in this situation to demonstrate the relative increase in contamination in the source samples over background levels [113].

[1] Aroclor-1260 had a low bias (compound did not meet percent difference criteria in the instrument continuing calibration) in surface soil/source sample SS-16 and was not numerically adjusted [38, pp. 3-4; 56, pp. 2, 3 (Exhibit 3), 8-9 (Table 3)].

[2] Lead had a high bias (serial dilution results exceeded percent difference criteria) in surface soil/source samples SS-16 and SS-50, and was adjusted by dividing by the adjustment factor of 1.44 [43, p. 5; 61, pp. 2, 3 (Exhibit 3), 8 (Table 3), 11].

[3] Arsenic had a high bias (matrix spike analytes did not meet percent recovery criteria) in subsurface soil/source sample SB-12 and was adjusted by dividing by the adjustment factor of 1.74 [42, p. 5; 60, pp. 2, 3 (Exhibit 3), 12 (Table 3), 13].

List of Hazardous Substances Associated with Source

Based on samples collected as part of the EPA Site Assessment Site Inspection, Source No. 1 has been documented to contain two PCB Aroclors (Aroclor-1254 and Aroclor-1260) and three total metals (arsenic, chromium, and lead) [16, pp. 31, 38-39, 46-48; 17, pp. 2-5; 34, pp. 27-30; 37, Table 2 (pp. 1-3 of 3); 38, Table 2 (pp. 1-2 of 2); 42, Table 1 (p. 1-3 of 3); 43, Table 1 (pp. 1-2 of 2); 55, pp. 7-9 (Table 2), 10-11 (Table 3); 56, pp. 6-7 (Table 2), 8-9 (Table 3); 60, pp. 7-9 (Table 2); 10-13 (Table 3); 61, pp. 6-7 (Table 2), 8 (Table 3), 10 (Table 3)]. Therefore, the substances Aroclor-1254, Aroclor-1260, arsenic, chromium, and lead are considered to be associated with the Debris Pile A source [1, p. 51588, Section 2.2.2]. These hazardous substances are consistent among the on-site sources (see Source Characterization for Sources 2 through 5). Based on a survey completed by the property owner, the volume of Debris Pile A (Source No. 1) was determined to be approximately 6,413 yd^3 [29, Appendix A (pp. 1 and 2)].

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

On-site observations indicate that no portion of Source No. 1 has a maintained engineered cover or complete runoff control management systems [17, p. 11]. No report of a natural or man-made liner was documented during source sampling activities [17, p. 11]. Therefore, Source No. 1 does not have full containment, and the source yields a containment value of 10 [1, p. 51596 (Table 3-2)].

Table 3 - Hazardous Substances Available to Pathways

Containment Description	Containment Factor	References
Gas release to air: NS		
Particulate release to air: NS		
Release to ground water: Based on the lack of liner, a maintained engineered cover, and any complete run-on control and runoff management systems, a Containment Factor Value of 10 has been assigned for release to ground water for Source No. 1.	10	1, p. 51596, Table 3-2; 17, p. 11
Release via overland migration and/or flood: NS		

NS = Not Scored.

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1 Hazardous Waste Quantity

The Hazardous Waste Quantity for Source No. 1 was assigned based on the Volume Factor Value of a "pile" source type [1, p. 51591, Table 2-5, Section 2.4.2.1.3]. The Hazardous Constituent Quantity and Hazardous Wastestream Quantity Values were not evaluated for Source No. 1 because insufficient information was available [1, pp. 51590-51591 (Sections 2.4.2.1.1 and 2.4.2.1.2, Table 2-5)].

2.4.2.1.1 Hazardous Constituent Quantity

Description

There is insufficient information to evaluate Source No. 1 for Hazardous Constituent Quantity.

Table 4 – Hazardous Constituent Quantity

Hazardous Substance	Constituent Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Hazardous Constituent Quantity Assigned Value: NS

2.4.2.1.2 Hazardous Wastestream Quantity

Description

There is insufficient information to evaluate Source No. 1 for Hazardous Wastestream Quantity.

Table 5 – Hazardous Wastestream Quantity

Hazardous Wastestream	Wastestream Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Sum of Wastestream Quantity/5,000 (1, p. 51591, Table 2-5):

Hazardous Wastestream Quantity Assigned Value: NS

2.4.2.1.3 Volume

Description

Based on sampling results and observations of the material contained within Source No. 1 (Debris Pile A), the areal extent of the source defined as part of this source characterization fully encompasses and is larger than

the source extent presented in the ERM Debris Pile Evaluation [Figure 2; 29, 70-71, Appendix A (pp. 1-2)]. There, for the purposes of this HRS documentation record, the volume estimate presented for Source No. 1 (Debris Pile A) by ERM in their Debris Pile Evaluation Report is utilized [29, pp. 4-5, Appendix A (pp. 1-2)]. Based on a survey completed by the property owner, the volume of Debris Pile A (Source No. 1) was determined to be approximately 6,413 yd^3 [29, Appendix A (pp. 1-2)].

Table 6 – Volume

Source Type	Description (# drums or dimensions)	Units (yd^3)	References
Pile	Debris Pile	6,413	29, 70, Appendix A (pp. 1-2)

The volume of a "pile" source, in yd^3, is divided by 2.5 to assign a Hazardous Waste Quantity to the source [1, p. 51591, Table 2-5].

Sum (yd^3): 6,413

Equation for Assigning Value (1, p. 51591, Table 2-5): 6,413 yd^3 ÷ 2.5 = 2,565.2

Volume Assigned Value: 2,565.2

2.4.2.1.4 Area

Description

The area of Source No. 1 was not scored.

Table 7 – Area

Source Type	Units (ft^2)	References
NS		

The area of a "pile" source, in ft^2, is divided by 13 to assign a Hazardous Waste Quantity to the source [1, p. 51591, Table 2-5].

Area Assigned Value: 0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The Hazardous Waste Quantity Value for Source No. 1 was assigned based on the Volume Factor Value (2,565.2) [1, p. 51591, Table 2-5]. The Hazardous Constituent Quantity and Hazardous Wastestream Quantity Factor Values were not evaluated for Source No. 1 because insufficient information was available [1, pp. 51590-51591, Sections 2.4.2.1.1, 2.4.2.1.2].

Highest HWQ value assigned from Ref. 1, Table 2-5: 2,565.2

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of Source: Debris Pile B

Number of Source: Source No. 2

Source Type: Pile

Description and Location of Source:

Debris Pile B (Pile - Source No. 2) is located on the undeveloped property identified as the Leeds Metal property, depicted on the Town of Leeds, ME Tax Assessor's Map No. 4, as Lot No. 38 [5; 9; 12, pp. 1-2; 19, p. 1, Fig. 1]. Source No. 2 is located adjacent to the southeastern property boundary (see Figure 2) [14, pp. 5-6; 29, p. 70]. The geographic coordinates of Debris Pile B, as measured from its approximate center, are 44° 14′ 12.6″ north latitude and 70° 04′ 46.6″ west longitude (see Figures 1 and 2) [7].

Between 1969 and 1984, scrap metal recovery processes were conducted on the Leeds Metal property by various entities [18, pp. 1- 2]. The former assistant fire chief of the Town of Leeds, ME stated that cars were transported to the property via trucks for "shredding" [26]. He also stated that within a cement building on the property, lead batteries and other auto parts were cleaned for resale [26]. The former assistant fire chief noted that metal from the shredded cars was salvaged (sent off the property via railroad), while the upholstery was piled in former gravel excavation pits [26]. He further stated that such materials as "gasoline, diesel, transformer oil, brake fluid, oils, battery acid, and antifreeze" were dumped on the ground and that approximately 100 'barrels' were staged along the southern property boundary [26]. The former assistant fire chief recalled that the Leeds and Monmouth Fire Departments responded to fires at the property, and that gasoline tanks would ignite causing oil-saturated soil to burn [26]. The eastern and southern portions of the Leeds Metal property contained car shredding waste both on the ground surface and in piles, including Source No. 2 (Debris Pile B) [14, pp. 2-15]. Debris Pile B is sloped gently east to west from the elevated land surface located west of the railroad tracks (see Figure 2) [14, pp. 5-6]. Debris Pile B is approximately 28 feet high with a flat top portion [14, pp. 5-6]. The top of Debris Pile B contains trees and small bushes [14, pp. 5-6]. The material which comprises Debris Pile B was observed to be consistent with that of several other debris piles on the property, and included rubber, plastic, and metal debris [14, p. 6].

In November 2003, ERM personnel, working on behalf of the property owner, completed an evaluation of four on-site debris piles (Debris Piles A through D) [29, pp. 1-4]. As part of this evaluation, ERM representatives conducted extensive test pitting, sampling, and a volume estimation of each pile [29, pp. 1-10, 12-60, 70-74, Appendices A, B, and D]. ERM described Debris Pile B as being "heavily vegetated with trees up to 3″ in diameter in a moist matrix of silt with minor sand and clay, plant matter, metal, rubber, plastic, fabric, and metal oxides" [29, pp. 9-10]. Screening and laboratory analyses of test pit samples collected from Debris Pile B, on behalf of the property owner, indicated the presence of four PCBs (Aroclor-1016/Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260) and nine total metals (antimony, arsenic, cadmium, cobalt, copper, iron, lead, manganese, and nickel) at concentrations exceeding state standards [29, pp. 16-35, 65-66, 70, 72; 138, Appendix 1]. ERM estimated the approximate volume of Debris Pile B to be 55,600 yd^3 [29, p. 4].

In late fall of 2003, Maine Central Railroad personnel conducted a survey of the four on-site debris piles (Debris Piles A through D) to further refine volume estimates presented earlier by ERM [29, pp. 4-5, 70,

Appendix A (p. 3)]. Following the Maine Central Railroad survey of Debris Pile B, the volume estimate of Debris Pile B was adjusted by ERM to 20,566 yd^3 [29, Appendix A (p. 3)].

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Background Concentrations:

Debris Pile B (Source No. 2) is a pile source type; therefore, no background samples are required. However, since the debris pile materials were mixed with local soil material, background surface and subsurface soil samples were collected as part of the EPA Site Assessment Site Inspection [15, pp. 44-46; 17, pp. 3-4; 34, pp. 20, 30; 75, p.1; 76, p. 1]. On 16 November 2010, as part of the EPA Site Assessment Site Inspection, background soil sampling activities were conducted [15, pp. 44-46; 34, p. 20]. The background surface and subsurface soil samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6; 34, pp. 19-20]. Two background surface soil samples (SS-01 and SS-02) and two background subsurface soil samples (SB-01 and SB-02) were collected from a residential property located northwest of the Leeds Metal property [9; 12; 15, pp. 44-46; 34, p. 20; 106, pp. 1-2]. The residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 4 as Lot No. 55 (see Figure 3b) [9; 106, pp. 1-2]. The background samples were collected from the same 0- to 2-foot depth interval and during the same time period as the source samples presented as part of the Source No. 2 Characterization, and the background and source samples contained similar native materials [15, pp. 44-46; 75, pp. 1, 33-35; 76, pp. 1, 20-22]. Background soil samples SS-01 and SB-01 were submitted to CLP Laboratories for VOC and PCB analyses following SOM01.2 and total metals analysis following ISM01.2, while background soil samples SS-02 and SB-02 were submitted to a CLP Laboratory for total metals analysis following ISM01.2 [15, pp. 44-46; 34, p. 20; 35, p. 1; 40, p. 1; 79, pp. 1-2; 84, pp. 1-2; 89, pp. 1-2]. As part of this HRS documentation record and the evaluation of background concentrations, the following hazardous substances in background samples are presented: two PCB aroclors (Aroclor-1254 and Aroclor-1260), and two total metals (chromium and lead).

Table 8 - Hazardous Substances Associated with Background Samples

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-01	Soil	16 Nov. 2010	Aroclor-1254	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SS-01	Soil	16 Nov. 2010	Aroclor-1260	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SS-02	Soil	16 Nov. 2010	Chromium[1]	23.1 (17.9 J) mg/Kg	1.1 mg/Kg	15, pp. 44-45; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
SS-02	Soil	16 Nov. 2010	Lead[1]	5.1 (5.1 JEB) mg/Kg	1.1 mg/Kg	15, pp. 44-45; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)

Table 8 - Hazardous Substances Associated with Background Samples (Continued)						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SB-01	Soil	16 Nov. 2010	Aroclor-1254	36 U µg/Kg	36 µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)
SB-01	Soil	16 Nov. 2010	Aroclor-1260	36 U µg/Kg	36 µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)
SB-02	Soil	16 Nov. 2010	Chromium[1]	35.9 (27.8 J) mg/Kg	1.4 mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)
SB-02	Soil	16 Nov. 2010	Lead[1]	5.2 (5.2 JEB) mg/Kg	1.4 mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)

Nov. = November.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
mg/Kg = Milligrams per kilogram.
U = The compound or element was analyzed for, but not detected. The associated numerical value is the sample-adjusted CRQL [103, p. B-47].
J = The associated numerical value is an estimated quantity [40, Table 1 (pp. 1-2 of 3); 103, p. B-47].
EB = The compound was also detected in an associated equipment rinsate blank [40, Table 1 (pp. 1-2 of 3)].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment.

[1] Chromium and lead results were qualified as estimated following data review. Chromium had a low bias (serial dilution results exceeded percent difference criteria) and was adjusted by multiplying by the adjustment factor of 1.29 [40, p. 5; 58, pp. 2, 3 (Exhibit 3), 10 (Table 3)]. Lead had a high bias [equipment (rinsate) blank contamination] and was not numerically adjusted [40, p. 4; 58, pp. 2, 3 (Exhibit 3), 10 (Table 3)].

- Source Samples:

On 18 November 2010, as part of the EPA Site Assessment Site Inspection, soil/source sampling activities of Debris Pile B were conducted [16, pp. 33-35; 34, pp. 27-28]. The surface and subsurface source samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6]. As part of the Debris Pile B characterization, three surface soil/source samples (SS-34, SS-35, and SS-36) and four subsurface soil/source samples (SB-34, SB-35, SB-36, and field duplicate SB-43) were collected from various places throughout the pile (see Figure 3a) [16, pp. 33-35; 34, pp. 27-28, 58-59, 66-68]. All surface soil samples collected from Debris Pile B as part of the EPA Site Assessment Site Inspection were collected from depths of up to 2 feet bgs [16, pp. 33-35; 34, pp. 27-28; 75, pp. 33-35]. Surface soil/source sample SS-34 was

described as dark brown, silty sand, some debris (foam, rubber, metal, fibrous material, and woven material), trace clay, trace organics, and containing a "septic" odor [75, p. 33]. Surface soil/source sample SS-35 was described as dark brown-to-black, silt, major debris (rubber, fabric/cloth), little fine-to-coarse sand, little clay, trace gravel, trace organics, and containing a "petroleum" odor [75, p. 34]. Surface soil/source sample SS-36 was described as dark brown, silt, little debris (woven fabric, metal, and wire), little fine sand, trace medium-to-coarse sand, trace clay, and trace organics [75, p. 35]. Subsurface soil/source sample SB-34 was described as black, silt, little fine sand, little clay, and little debris (rubber, foam, and plastic) [76, p. 20]. Subsurface soil/source sample SB-35 was described as black silt, trace clay, and containing abundant [30 to 40 percent (%)] debris (plastic and foam) [76, p. 21]. Subsurface soil/source sample SB-36 and field duplicate SB-43 were described as dark brown-to-black, silt, some debris (metal, foam, cloth, plastic, wire), little clay, trace fine-to-coarse sand, trace organics, and containing a "petroleum" odor [76, p. 22].

Soil/source samples (SS-34, SS-35, SS-36, SB-34, SB-35, SB-36, and SB-43) were submitted to CLP Laboratories for VOC and PCB analyses following SOM01.2, and total metals analysis following ISM01.2 [16, pp. 33-35; 34, pp. 27-28, 58-59, 66-68; 38, p. 1; 43, p. 1; 82, pp. 1-3; 87, p. 1; 92, p. 1]. The analytical data were validated according to EPA New England Regional Functional Guidelines Tier II requirements (for VOCs, PCBs, and total metals analyses) [38, p. 1; 43, p. 1]. For the purposes of Source No. 2 evaluation and the HRS documentation record, analytical results of three surface soil/source samples (SS-34 through SS-36) and four subsurface soil/source samples (SB-34 through SB-36, and SB-43) confirm the presence of the following hazardous substances: two PCB Aroclors (Aroclor-1254 and Aroclor-1260) and two total metals (chromium and lead).

Among the seven selected soil/source samples: Aroclor-1254 was detected at a maximum concentration of 9,300 µg/Kg in surface soil/source sample SS-35, located on the northwestern portion of Source No. 2; Aroclor-1260 was detected at a maximum concentration of 38,000 µg/Kg in subsurface soil/source sample SB-36, located on the southern portion of Source No. 2; chromium was detected at a maximum concentration of 882 mg/Kg in subsurface soil/source sample SB-43, located on the southern portion of Source No. 2; and lead was detected at a maximum concentration of 4,104 mg/Kg in subsurface soil/source sample SB-43 [16, p. 33-34; 34, pp. 27-28; 38, Table 2 (pp. 1-2 of 2); 43, Table 1 (pp. 1-2 of 2); 56, pp. 6-7 (Table 2), 8-9 (Table 3); 61, pp. 7 (Table 2), 11 (Table 3); Figure 3a].

Table 9 - Hazardous Substances Associated with Source No. 2

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-34	Soil/ Source	18 Nov. 2010	Aroclor-1254	1,800 µg/Kg	260 µg/Kg	16, pp. 33-34; 34, p. 27; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 5-6)
			Aroclor-1260[2]	2,700 (2,700 J) µg/Kg	260 µg/Kg	16, pp. 33-34; 34, p. 27; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 5-6)
			Chromium	620 mg/Kg	311 mg/Kg	16, pp. 33-34; 34, p. 27; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 4)
			Lead[1]	2,514 (3,620 J) mg/Kg	311 mg/Kg	16, pp. 33-34; 34, p. 27; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 4)
SS-35	Soil/ Source	18 Nov. 2010	Aroclor-1254	9,300 µg/Kg	930 µg/Kg	16, p. 33; 34, p. 27; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 7-8)
			Aroclor-1260[2]	7,300 (7,300 J) µg/Kg	930 µg/Kg	16, p. 33; 34, p. 27; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 7-8)
			Chromium	643 mg/Kg	308 mg/Kg	16, p. 33; 34, p. 27; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 5)
			Lead[1]	3,458 (4,980 J) mg/Kg	308 mg/Kg	16, p. 33; 34, p. 27; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 5)

Table 9 - Hazardous Substances Associated with Source No. 2 (Continued)

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-36	Soil/ Source	18 Nov. 2010	Aroclor-1254	4,400 µg/Kg	460 µg/Kg	16, p. 33; 34, p. 27; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 9-10)
			Aroclor-1260[2]	3,900 (3,900 J) µg/Kg	460 µg/Kg	16, p. 33; 34, p. 27; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 9-10)
			Chromium	521 mg/Kg	283 mg/Kg	16, p. 33; 34, p. 27; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 6)
			Lead[2]	3,778 (5,440 J) mg/Kg	283 mg/Kg	16, p. 33; 34, p. 27; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 6)
SB-34	Soil/ Source	18 Nov. 2010	Aroclor-1260[2]	3,200 (3,200 J) µg/Kg	490 µg/Kg	16, p. 35; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 14-15)
			Chromium	610 mg/Kg	302 mg/Kg	16, p. 35; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 10)
			Lead[1]	3,528 (5,080 J) mg/Kg	302 mg/Kg	16, p. 35; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 10)

Table 9 - Hazardous Substances Associated with Source No. 2 (Continued)

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration		Sample-Adjusted CRQL		Reference
SB-35	Soil/ Source	18 Nov. 2010	Aroclor-1254[2]	4,300 (4,300 J)	µg/Kg	510	µg/Kg	16, pp. 34-35; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 16-17)
			Aroclor-1260[2]	370 (370 J)	µg/Kg	51	µg/Kg	16, pp. 34-35; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 16-17)
			Chromium	631	mg/Kg	311	mg/Kg	16, pp. 34-35; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 11)
			Lead[1]	2,694 (3,880 J)	mg/Kg	311	mg/Kg	16, pp. 34-35; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 11)
SB-36	Soil/ Source	18 Nov. 2010	Aroclor-1254	2,600	µg/Kg	510	µg/Kg	16, p. 34; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 18-19)
			Aroclor-1260[2]	38,000 (38,000 J)	µg/Kg	5,100	µg/Kg	16, p. 34; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 18-19)
			Chromium	762	mg/Kg	313	mg/Kg	16, p. 34; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 12)
			Lead[1]	3,299 (4,750 J)	mg/Kg	313	mg/Kg	16, p. 34; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 12)

Table 9 - Hazardous Substances Associated with Source No. 2 (Concluded)

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SB-43	Soil/ Source	18 Nov. 2010	Aroclor-1254	2,200 µg/Kg	510 µg/Kg	16, p. 34; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 20-21)
			Aroclor-1260[2]	32,000 (32,000 J) µg/Kg	5,100 µg/Kg	16, p. 34; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 20-21)
			Chromium	882 mg/Kg	303 mg/Kg	16, p. 34; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 13)
			Lead[1]	4,104 (5,910 J) mg/Kg	303 mg/Kg	16, p. 34; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 13)

Nov. = November.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
mg/Kg = Milligrams per kilogram.
J = The associated numerical value is an estimated quantity [43, Table 1 (pp. 1-2 of 2); 103, p. B-47].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment. Based on the EPA Fact Sheet, *Using Qualified Data to Document an Observed Release and Observed Contamination*, for HRS purposes it is not required to adjust qualified source data. Although the fact sheet was not intended for application to source data, it has been applied as a conservative measure in this situation to demonstrate the relative increase in contamination in the source samples over background levels [113].

[1] Lead results were qualified as estimated following data review. Lead had a high bias (serial dilution results exceeded percent difference criteria) and was adjusted by dividing by the adjustment factor of 1.44 [43, pp. 4-5; 61, pp. 2-3 (Exhibit 3), 9-11 (Table 3)].

[2] Aroclor-1260 was biased low (compound did not meet percent difference criteria in the instrument continuing calibration), and was not adjusted [38, pp. 3-4; 56, pp. 2, 3 (Exhibit 3), 8-9 (Table 3)]. Aroclor-1254 was biased low (surrogate spike compounds did not meet recovery criteria) in subsurface soil/source sample SB-35, and was not adjusted [38, pp. 7-8; 56, pp. 2, 3 (Exhibit 3), 10 (Table 3)].

Note: Trichloroethene was detected in one subsurface soil/source sample (SB-35) at concentrations above CLP reporting limits but below the CRQL [38, Table 1 (p. 1 of 2); 103, Exhibit C (p. C-5), Exhibit D Trace VOA (Section 11.1.4); 104, pp. 1-10; 143, pp. 7 (Table 2), 9 (Table 3)]. Trichloroethene is a common breakdown product of tetrachloroethene [49, pp. 189-190; 50, pp. 197, 202-203; 51, Section 1 (pp. 8-12, Table 1.1, Figure 1.4), Section 2 (pp. 1-16, Figure 2.2, Figure 2.3, Figure 2.4)].

List of Hazardous Substances Associated with Source

Based on samples collected as part of the EPA Site Assessment Site Inspection, Source No. 2 has been documented to contain two PCB Aroclors (Aroclor-1254 and Aroclor-1260) and two total metals (chromium and lead) [16, pp. 33-35; 34, pp. 27-28; 38, Table 2 (pp. 1-2 of 2); 43, Table 1 (pp. 1-2 of 2); 56, pp. 6-7 (Table 2), 8-9 (Table 3); 61, pp. 6-7 (Table 2), 8-11 (Table 3)]. Therefore the substances Aroclor-1254, Aroclor-1260, chromium, and lead are considered to be associated with the Debris Pile B source [1, p. 51588, Section 2.2.2]. These hazardous substances are consistent among all the on-site sources (see Source Characterization for Sources 1, and 3 through 5). Based on a survey completed by the property owner, the volume of Debris Pile B (Source No. 2) was determined to be approximately 20,566 yd^3 [29, Appendix A (p. 3)]. As part of the EPA Site Assessment Site Inspection, seven surface and subsurface soil/source samples were collected from Debris Pile B [16, pp. 33-35; 34, pp. 27-28].

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

On-site observations indicate that no portion of Source No. 2 has a maintained engineered cover or complete runoff control management systems [17, p. 11]. No report of a natural or man-made liner was documented during source sampling activities [17, p. 11]. Therefore, Source No. 2 does not have full containment, and the source yields a containment value of 10 [1, p. 51596 (Table 3-2)].

Table 10 - Hazardous Substances Available to Pathways

Containment Description	Containment Factor	References
Gas release to air: NS		
Particulate release to air: NS		
Release to ground water: Based on the lack of a liner, a maintained engineered cover, and any complete run-on control and runoff management systems, a Containment Factor Value of 10 has been assigned for release to ground water for Source No. 2.	10	1, p. 51596, Table 3-2; 17, p. 11
Release via overland migration and/or flood: NS		

NS = Not Scored.

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1 Hazardous Waste Quantity

The Hazardous Waste Quantity for Source No. 2 was assigned based on the Volume Factor Value of a "pile" source type [1, p. 51591 (Table 2-5, Section 2.4.2.1.3)]. The Hazardous Constituent Quantity and Hazardous Wastestream Quantity Values were not evaluated for Source No. 2 because insufficient information was available [1, pp. 51590-51591 (Sections 2.4.2.1.1 and 2.4.2.1.2, Table 2-5)].

2.4.2.1.1 Hazardous Constituent Quantity

Description

There is insufficient information to evaluate Source No. 2 for Hazardous Constituent Quantity.

Table 11 – Hazardous Constituent Quantity

Hazardous Substance	Constituent Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Hazardous Constituent Quantity Assigned Value: NS

2.4.2.1.2 Hazardous Wastestream Quantity

Description

There is insufficient information to evaluate Source No. 2 for Hazardous Wastestream Quantity.

Table 12 – Hazardous Wastestream Quantity

Hazardous Wastestream	Wastestream Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Sum of Wastestream Quantity/5,000 (1, p. 51591, Table 2-5):

Hazardous Wastestream Quantity Assigned Value: NS

2.4.2.1.3 Volume

Description

For the purposes of this HRS documentation record, the volume estimate presented for Source No. 2 (Debris Pile B) by ERM in their Debris Pile Evaluation Report is utilized [29, pp. 4-5, Appendix A (p. 3)]. Based on a survey completed by the property owner, the volume of Debris Pile B (Source No. 2) was determined to be approximately 20,566 yd^3 [29, Appendix A (p. 3)].

Table 13 – Volume

Source Type	Description (# drums or dimensions)	Units (yd^3)	References
Pile	Debris Pile	20,566	29, Appendix A (p. 3)

The volume of a "pile" source, in yd^3, is divided by 2.5 to assign a Hazardous Waste Quantity to the source [1, p. 51591, Table 2-5].

Sum (yd^3): 20,566

Equation for Assigning Value (1, p. 51591, Table 2-5): 20,566 yd^3 ÷ 2.5 = 8,226.4

Volume Assigned Value: 8,226.4

2.4.2.1.4 Area

Description

The area of Source No. 2 was not scored.

Table 14 – Area

Source Type	Units (ft^2)	References
NS		

The area of a "pile" source, in ft^2, is divided by 13 to assign a Hazardous Waste Quantity to the source [1, pp. 51590-51591, Table 2-5].

Area Assigned Value: 0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The Hazardous Waste Quantity Value for Source No. 2 was assigned based on the Volume Factor Value (8,226.4) [1, p. 51591, Table 2-5]. The Hazardous Constituent Quantity and Hazardous Wastestream Quantity Factor Values were not evaluated for Source No. 2 because insufficient information was available [1, p. 51591, Sections 2.4.2.1.1, 2.4.2.1.2].

Highest HWQ value assigned from Ref. 1, Table 2-5: 8,226.4

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of Source: Debris Pile C

Number of Source: Source No. 3

Source Type: Pile

Description and Location of Source (with reference to a map of the site):

Debris Pile C (Pile - Source No. 3) is located on the undeveloped property identified as the Leeds Metal property, depicted on the Town of Leeds, ME Tax Assessor's Map No. 4, as Lot No. 38 [5; 9; 12, pp. 1-2; 19, p. 1, Fig. 1]. Source No. 3 is located south of the pond, west of Debris Pile B (see Figure 2) [14, p. 6; 29, p. 70]. The geographic coordinates of Debris Pile C, as measured from its approximate center, are 44° 14′ 12.5″ north latitude and 70° 04′ 50.4″ west longitude (see Figures 1 and 2) [7].

Between 1969 and 1984, scrap metal recovery processes were conducted on the Leeds Metal property by various entities [18, pp. 1- 2]. The former assistant fire chief of the Town of Leeds, ME stated that cars were transported to the property via trucks for "shredding" [26]. He also stated that within a cement building on the property, lead batteries and other auto parts were cleaned for resale [26]. The former assistant fire chief noted that metal from the shredded cars was salvaged (sent off the property via railroad), while the upholstery was piled in former gravel excavation pits [26]. He further stated that such materials as "gasoline, diesel, transformer oils, brake fluid, oils, battery acid, and antifreeze" were dumped on the ground and that approximately 100 'barrels' were staged along the southern property boundary [26]. The former assistant fire chief recalled that the Leeds and Monmouth Fire Departments responded to fires at the property, and that gasoline tanks would ignite causing oil-saturated soil to burn [26]. The eastern and southern portions of the Leeds Metal property contained car shredding waste both on the ground surface and in piles, including Source No. 3 (Debris Pile C) (see Figure 2) [14, pp. 2-15]. Debris Pile C is smaller than Debris Pile B and is topped by small trees [14, p. 6]. The top of Debris Pile C is sloped more steeply, and is approximately 20 feet high at its highest point (western side) [14, p. 6]. The material which comprises Debris Pile C was observed to be consistent with that of several other debris piles on the property, and included rubber, plastic, and metal debris [14, p. 6].

In November 2003, ERM personnel, working on behalf of the property owner, completed an evaluation of four on-site debris piles (Debris Piles A through D) [29, pp. 1-4]. As part of this evaluation, ERM representatives conducted extensive test pitting, sampling, and a volume estimation of each pile [29, pp. 1-10, 12-60, 70-74, Appendices A, B, and D]. ERM described Debris Pile C as being "heavily vegetated with trees up to 3″ in diameter in a moist matrix of silt and minor sand, plant matter, oxidized metal, occasional metal pieces, metal oxides, rubber, and plastic" [29, pp. 9-10]. Screening and laboratory analyses of test pit samples collected from Debris Pile C, on behalf of the property owner, indicated the presence of two PCBs (Aroclor-1254 and Aroclor-1260) and seven metals (arsenic, cadmium, copper, iron, lead, manganese, and nickel) at concentrations exceeding state standards [29, pp. 36-38, 66-67, 70, 73; 138, Appendix 1]. ERM estimated the approximate volume of Debris Pile C to be 10,400 yd^3 [29, p. 4].

In late fall of 2003, Maine Central Railroad personnel conducted a survey of the four on-site debris piles (Debris Piles A through D) to further refine volume estimates presented earlier by ERM [29, pp. 4-5]. Following the Maine Central Railroad survey of Debris Pile C, the volume estimate of Debris Pile C was adjusted by ERM to 1,727 yd^3 [29, Appendix A (p. 4)].

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Background Concentrations:

Debris Pile C (Source No. 3) is a pile source type; therefore, no background samples are required. However, since the debris pile materials were mixed with local soil material, background surface and subsurface soil samples were collected as part of the EPA Site Assessment Site Inspection [15, pp. 44-46; 17, pp. 3-4; 34, pp. 20, 30; 75, p. 1; 76, p.1]. On 16 November 2010, as part of the EPA Site Assessment Site Inspection, background soil sampling activities were conducted [15, pp. 44-46; 34, p. 20]. The background surface and subsurface soil samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6; 34, pp. 19-20]. Two background surface soil samples (SS-01 and SS-02) and two background subsurface soil samples (SB-01 and SB-02) were collected from a residential property located northwest of the Leeds Metal property [9; 12; 15, pp. 44-46; 34, p. 20; 106, pp. 1-2]. The residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 4 as Lot No. 55 (see Figure 3b) [9; 106, pp. 1-2]. The background samples were collected from a similar depth and during the same time period as the source samples presented as part of the Source No. 3 Characterization, and the background and source samples contained similar native materials [15, pp. 44-46; 75, pp. 1, 31-32; 76, pp. 1, 18-19]. Background soil samples SS-01 and SB-01 were submitted to CLP Laboratories for VOC and PCB analyses following SOM01.2 and total metals analysis following ISM01.2, while background soil samples SS-02 and SB-02 were submitted to a CLP Laboratory for total metals analysis following ISM01.2 [15, pp. 44-46; 34, p. 20; 35, p. 1; 40, p. 1; 79, pp. 1-2; 84, pp. 1-2; 89, pp. 1-2]. As part of this HRS documentation record and the evaluation of background concentrations, the following hazardous substances in background samples are presented: two PCB aroclors (Aroclor-1254 and Aroclor-1260), and one total metal (lead).

Table 15 - Hazardous Substances Associated with Background Samples

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-01	Soil	16 Nov. 2010	Aroclor-1254	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SS-01	Soil	16 Nov. 2010	Aroclor-1260	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SB-01	Soil	16 Nov. 2010	Aroclor-1254	36 U µg/Kg	36 µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)
SB-01	Soil	16 Nov. 2010	Aroclor-1260	36 U µg/Kg	36 µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)

Table 15 - Hazardous Substances Associated with Background Samples (Continued)						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SB-02	Soil	16 Nov. 2010	Lead[1]	5.2 (5.2 JEB) mg/Kg	1.4 mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)

Nov. = November.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
mg/Kg = Milligrams per kilogram.
U = The compound or element was analyzed for, but not detected. The associated numerical value is the sample-adjusted CRQL [103, p. B-47].
J = The associated numerical value is an estimated quantity [40, Table 1 (pp. 1-2 of 3); 103, p. B-47].
EB = The compound was also detected in an associated equipment rinsate blank [40, Table 1 (p. 2 of 3)].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment.

[1] Lead results were qualified as estimated following data review. Lead had a high bias [equipment (rinsate) blank contamination] and was not numerically adjusted [40, p. 4; 58, pp. 2, 3 (Exhibit 3), 10 (Table 3)].

- Source Samples:

On 16 November 2010, as part of the EPA Site Assessment Site Inspection, soil/source sampling activities of Debris Pile C were conducted [15, p. 48; 16, p. 2; 34, p. 21]. The surface and subsurface source samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6]. As part of the Debris Pile C characterization, two surface soil/source (SS-32 and SS-33) and two subsurface soil/source (SB-32 and SB-33) samples were collected from two locations on Source No. 3 (see Figure 3a) [15, p. 48; 16, p. 2; 34, pp. 21, 58, 66]. Surface soil samples collected from Debris Pile C as part of the EPA SI were collected from depths of up to 2 feet bgs [75, pp. 31-32]. Surface soil/source sample SS-32 is described as dark brown-to-black, fine sand, some debris (metal, plastic, wire coating, rubber, and chrome), little silt, trace medium-to-coarse sand, trace clay, and trace organics [75, p. 31]. Surface soil/source sample SS-33 is described as dark brown-to-black, silty sand, some debris (plastic, rubber, metal), trace fine gravel, trace organics [75, p. 32]. Subsurface soil/source sample SB-32 was described as dark brown-to-black, fine-to-medium sand, some silt, some debris (wire coating, woven fabric, metal, rubber, wire, foam, plastic, and linoleum), trace coarse sand, trace fine gravel, trace clay [76, p. 18]. Subsurface soil/source sample SB-33 was described as dark brown-to-black, silty sand, some debris (wire, rubber, foam, metal, and plastic), and trace clay [76, p. 19].

Soil/source samples (SS-32, SS-33, SB-32, and SB-33) were submitted to CLP Laboratories for VOC and PCB analyses following SOM01.2, and total metals analysis following ISM01.2 [15, p. 48; 16, p. 2; 34, pp. 58, 66; 35, p. 1; 40, p.1; 79, pp. 1-4; 84, pp. 1-2; 89, pp. 1-2]. The analytical data were validated according to EPA New England Regional Functional Guidelines Tier II requirements (for VOCs, PCBs, and total metals analyses) [35, p. 1; 40, p.1]. For the purposes of Source No. 3 evaluation and the HRS documentation record, analytical results of two surface soil/source samples (SS-32 and SS-33) and two subsurface soil/source

samples (SB-32 and SB-33) confirm the presence of the following hazardous substances: two PCB Aroclors (Aroclor-1254 and Aroclor-1260) and one total metal (lead).

Among the four selected source samples: Aroclor-1254 was detected at a maximum concentration of 5,700 µg/Kg in surface source sample SS-32, located on the northern portion of Source No. 3; Aroclor-1260 was detected at a maximum concentration of 2,700 µg/Kg in subsurface source sample SB-33, located on the southern portion of Source No. 3; and lead was detected at a maximum concentration of 48.1 mg/Kg in surface source sample SS-33, located on the southern portion of Source No. 3 [15, p. 48; 16, p. 2; 34, p. 21; 35, Table 2 (pp. 1-2 of 3); 40, Table 1 (pp. 2-3 of 3); 53, pp. 7-8 (Table 2), 11 (Table 3); 58, pp. 8-9 (Table 2), 11 (Table 3)].

Table 16 - Hazardous Substances Associated with Source No. 3

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-32	Soil/ Source	16 Nov. 2010	Aroclor-1254	5,700 µg/Kg	420 µg/Kg	15, p. 48; 16, p. 2; 34, p. 21; 35, Table 2 (p. 1 of 3); 53, pp. 7 (Table 2), 11 (Table 3), Attachment B (pp. 3-4)
			Aroclor-1260[2]	450 (4,500 J) µg/Kg	420 µg/Kg	15, p. 48; 16, p. 2; 34, p. 21; 35, Table 2 (p. 1 of 3); 53, pp. 7 (Table 2), 11 (Table 3), Attachment B (pp. 3-4)
SS-33	Soil/ Source	16 Nov. 2010	Aroclor-1254	2,200 µg/Kg	410 µg/Kg	15, p. 48; 34, p. 21; 35, Table 2 (p. 1 of 3); 53, pp. 7 (Table 2), 11 (Table 3), Attachment B (pp. 5-6)
			Aroclor-1260	2,500 µg/Kg	410 µg/Kg	15, p. 48; 34, p. 21; 35, Table 2 (p. 1 of 3); 53, pp. 7 (Table 2), 11 (Table 3), Attachment B (pp. 5-6)
			Lead[1]	48.1 (69.2 JEB) mg/Kg	1.4 mg/Kg	15, p. 48; 34, p. 21; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 11 (Table 3), Attachment B (p. 7)
SB-32	Soil/ Source	16 Nov. 2010	Aroclor-1254	3,600 µg/Kg	860 µg/Kg	16, p. 2; 34, p. 21; 35, Table 2 (p. 2 of 3); 53, pp. 8 (Table 2), 11 (Table 3), Attachment B (pp. 8-9)
			Lead[1]	29.7 (42.8 JEB) mg/Kg	1.3 mg/Kg	16, p. 2; 34, p. 21; 40, Table 1 (p. 3 of 3); 58, pp. 9 (Table 2), 11 (Table 3), Attachment B (p. 8)

Table 16 - Hazardous Substances Associated with Source No. 3 (Concluded)						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SB-33	Soil/ Source	16 Nov. 2010	Aroclor-1254	2,700 µg/Kg	860 µg/Kg	16, p. 2; 34, p. 21; 35, Table 2 (p. 2 of 3); 53, pp. 8 (Table 2), 11 (Table 3), Attachment B (pp. 10-11)
			Aroclor-1260	2,700 µg/Kg	860 µg/Kg	16, p. 2; 34, p. 21; 35, Table 2 (p. 2 of 3); 53, pp. 8 (Table 2), 11 (Table 3), Attachment B (pp. 10-11)

Nov. = November.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
mg/Kg = Milligrams per kilogram.
J = The associated numerical value is an estimated quantity [40, Table 1 (pp. 2-3 of 3); 103, p. B-47].
EB = The compound was also detected in an associated equipment rinsate blank [40, Table 1 (pp. 2-3 of 3)].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment. Based on the EPA Fact Sheet, *Using Qualified Data to Document an Observed Release and Observed Contamination*, for HRS purposes it is not required to adjust qualified source data. Although the fact sheet was not intended for application to source data, it has been applied as a conservative measure in this situation to demonstrate the relative increase in contamination in the source samples over background levels [113].

[1] Lead had a high bias [equipment (rinsate) blank contamination] in soil/source samples SS-33 and SB-32, and was adjusted by dividing by the adjustment factor of 1.44 [40, p. 4; 58, pp. 2, 3 (Exhibit 3), 11-12 (Table 3)].

[2] Aroclor-1260 had an unknown bias (dual column correlation did not meet percent difference criteria) in surface soil/source sample SS-32 and was adjusted by dividing by the adjustment factor of 10 [35, p. 11; 53, pp. 2, 3 (Exhibit 3), p. 11 (Table 3)].

List of Hazardous Substances Associated with Source

Based on samples collected as part of the EPA Site Assessment Site Inspection, Source No. 3 has been documented to contain two PCB Aroclors (Aroclor-1254 and Aroclor-1260) and one total metal (lead) [15, p. 48; 16, p. 2; 34, p. 21; 35, Table 2 (pp. 1-2 of 3); 40, Table 1 (pp. 2-3 of 3); 53, pp. 7-8 (Table 2), 11 (Table 3); 58, pp. 8-9 (Table 2), 11 (Table 3)]. Therefore the substances Aroclor-1254, Aroclor-1260, and lead are considered to be associated with the Debris Pile C source [1, p. 51588, Section 2.2.2]. These hazardous substances are consistent among all the on-site sources (see Source Characterization for Sources 1, 2, 4, and 5). Based on a survey completed by the property owner, the volume of Debris Pile C (Source No. 3) was determined to be approximately 1,727 yd^3 [29, Appendix A (p. 4)]. As part of the EPA Site Assessment Site Inspection, four surface and subsurface soil/source samples were collected from Debris Pile C [15, p. 48; 16, p. 2; 34, p. 21].

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

On-site observations indicate that no portion of Source No. 3 has a maintained engineered cover or complete runoff control management systems [17, p. 11]. No report of a natural or man-made liner was documented during source sampling activities [17, p. 11]. Therefore, Source No. 3 does not have full containment, and the source yields a containment value of 10 [1, p. 51596 (Table 3-2)].

Table 17 - Hazardous Substances Available to Pathways

Containment Description	Containment Factor	References
Gas release to air: NS		
Particulate release to air: NS		
Release to ground water: Based on the lack of a liner, a maintained engineered cover, and any complete run-on control and runoff management systems, a Containment Factor Value of 10 has been assigned for release to ground water for Source No. 3.	10	1, p. 51596, Table 3-2; 17, p. 11
Release via overland migration and/or flood: NS		

NS = Not Scored.

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1 Hazardous Waste Quantity

The Hazardous Waste Quantity for Source No. 3 was assigned based on the Volume Factor Value of a "pile" source type [1, p. 51591, Table 2-5, Section 2.4.2.1.3]. The Hazardous Constituent Quantity and Hazardous Wastestream Quantity Values were not evaluated for Source No. 3 because insufficient information was available [1, pp.51590-51591 (Sections 2.4.2.1.1 and 2.4.2.1.2, Table 2-5)].

2.4.2.1.1 Hazardous Constituent Quantity

Description

There is insufficient information to evaluate Source No. 3 for Hazardous Constituent Quantity.

Table 18 – Hazardous Constituent Quantity

Hazardous Substance	Constituent Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Hazardous Constituent Quantity Assigned Value: NS

2.4.2.1.2 Hazardous Wastestream Quantity

Description

There is insufficient information to evaluate Source No. 3 for Hazardous Wastestream Quantity.

Table 19 – Hazardous Wastestream Quantity

Hazardous Wastestream	Wastestream Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Sum of Wastestream Quantity/5,000 (1, p. 51591, Table 2-5):

Hazardous Wastestream Quantity Assigned Value: NS

2.4.2.1.3 Volume

Description

For the purposes of this HRS documentation record, the volume estimate presented for Source No. 3 (Debris Pile C) by ERM in their Debris Pile Evaluation Report is utilized [29, pp. 4-5, Appendix A (p. 4)]. Based on a survey completed by the property owner, the volume of Debris Pile C (Source No. 3) was determined to be approximately 1,727 yd^3 [29, Appendix A (p. 4)].

Table 20 – Volume

Source Type	Description (# drums or dimensions)	Units (yd^3)	References
Pile	Debris Pile	1,727	29, Appendix A (p. 4)

The volume of a "pile" source, in yd^3, is divided by 2.5 to assign a Hazardous Waste Quantity to the source [1, p. 51591, Table 2-5].

Sum (yd^3): 1,727

Equation for Assigning Value (1, p. 51591, Table 2-5): 1,727 yd^3 ÷ 2.5 = 690.8

Volume Assigned Value: 690.8

2.4.2.1.4 Area

Description

The area of Source No. 3 was not scored.

Table 21 – Area

Source Type	Units (ft^2)	References
NS		

The area of a "pile" source, in ft^2, is divided by 13 to assign a Hazardous Waste Quantity to the source [1, p. 51591, Table 2-5].

Area Assigned Value: 0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The Hazardous Waste Quantity Value for Source No. 3 was assigned based on the Volume Factor Value (690.8) [1, p. 51591, Table 2-5]. The Hazardous Constituent Quantity and Hazardous Wastestream Quantity Factor Values were not evaluated for Source No. 3 because insufficient information was available [1, p. 51591, Sections 2.4.2.1.1, 2.4.2.1.2].

Highest HWQ value assigned from Ref. 1, Table 2-5: 690.8

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of Source: Debris Pile D

Number of Source: Source No. 4

Source Type: Pile

Description and Location of Source:

Debris Pile D (Pile - Source No. 4) is located on the undeveloped property identified as the Leeds Metal property, depicted on the Town of Leeds, ME Tax Assessor's Map No. 4, as Lot No. 38 [5; 9; 12, pp. 1-2; 19, p. 1, Fig. 1]. Source No. 4 is located south of Debris Pile C near the south-central property boundary (see Figure 2) [14, pp. 6-7; 29, p. 70]. The geographic coordinates of Debris Pile D, as measured from its approximate center, are 44° 14′ 09.9″ north latitude and 70° 04′ 50.3″ west longitude (see Figures 1 and 2) [7].

Between 1969 and 1984, scrap metal recovery processes were conducted on the Leeds Metal property by various entities [18, pp. 1- 2]. The former assistant fire chief of the Town of Leeds, ME stated that cars were transported to the property via trucks for "shredding" [26]. He also stated that within a cement building on the property, lead batteries and other auto parts were cleaned for resale [26]. The former assistant fire chief noted that metal from the shredded cars was salvaged (sent off the property via railroad), while the upholstery was piled in former gravel excavation pits [26]. He further stated that such materials as "gasoline, diesel, transformer oil, brake fluid, oils, battery acid, and antifreeze" were dumped on the ground and that approximately 100 'barrels' were staged along the southern property boundary [26]. The former assistant fire chief recalled that the Leeds and Monmouth Fire Departments responded to fires at the property, and that gasoline tanks would ignite causing oil-saturated soil to burn [26]. The eastern and southern portions of the Leeds Metal property contained car shredding waste both on the ground surface and in piles, including Source No. 4 (Debris Pile D) [14, pp. 2-15]. Debris Pile D is oriented east to west, with steeply sloped faces on the northern, southern, and western sides of the pile [14, pp. 6-7]. Debris Pile D is approximately 44 feet above the ground surface along the western edge of the pile, and approximately 29 feet above the ground surface along the eastern edge of the pile [14, pp. 6-7]. The material which comprised Debris Pile D was observed to be consistent with several other debris piles on the property, and included rubber, plastic, and metal debris [14, p. 7].

In November 2003, ERM personnel, working on behalf of the property owner, completed an evaluation of four on-site debris piles (Debris Piles A through D) [29, pp. 1-4]. As part of this evaluation, ERM representatives conducted extensive test pitting, sampling, and a volume estimation of each pile [29, pp. 1-10, 12-60, 70-74, Appendices A, B, and D]. ERM described D as being "unvegetated, relatively dry pile with minor sand, silt and clay, metal oxides, oxidized metal, rubber, plastic, and fabric" [29, pp. 9-10]. Screening and laboratory analyses of test pit samples collected from Debris Pile D, on behalf of the property owner, indicated the presence of two PCB aroclors (Aroclor-1254 and Aroclor-1260) and six metals (arsenic, cadmium, cobalt, copper, lead, and nickel) at concentrations exceeding state standards [29, pp. 39-60, 67-68, 70, 74; 138, Appendix 1]. ERM estimated the approximate volume of Debris Pile D to be 55,500 yd^3 [29, pp. 4].

In late fall of 2003, Maine Central Railroad personnel conducted a survey of the four on-site debris piles (Debris Piles A through D) to further refine volume estimates presented earlier by ERM [29, pp. 4-5, 70,

Appendix A (p. 5)]. Following the Maine Central Railroad survey of Debris Pile D, the volume estimate of Debris Pile D was adjusted by ERM to 11,280 yd^3 [29, Appendix A (p. 5)].

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Background Concentrations:

Debris Pile D (Source No. 4) is a pile source type; therefore, no background samples are required. However, since the debris pile materials were mixed with local soil material, background surface and subsurface soil samples were collected as part of the EPA Site Assessment Site Inspection [15, pp. 44-46; 17, pp. 3-4; 34, pp. 20, 30; 75, p. 1; 76, p.1]. On 16 November 2010, as part of the EPA Site Assessment Site Inspection, background soil sampling activities were conducted [15, pp. 44-46; 34, p. 20]. The background surface and subsurface soil samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6; 34, pp. 19-20]. Two background surface soil samples (SS-01 and SS-02) and two background subsurface soil samples (SB-01 and SB-02) were collected from a residential property located northwest of the Leeds Metal property [9; 12; 15, pp. 44-46; 34, p. 20; 106, pp. 1-2]. The residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 4 as Lot No. 55 (see Figure 3b) [9; 106, pp. 1-2]. The background samples were collected from a similar depth and during the same time period as the source samples presented as part of the Source No. 4 Characterization, and the background and source samples contained similar native materials [15, pp. 44-46; 75, pp. 1, 27-30; 76, pp. 1, 14-17]. Background soil samples SS-01 and SB-01 were submitted to CLP Laboratories for VOC and PCB analyses following SOM01.2 and total metals analysis following ISM01.2, while background soil samples SS-02 and SB-02 were submitted to a CLP Laboratory for total metals analysis following ISM01.2 [15, pp. 44-46; 34, p. 20; 35, p. 1; 40, p. 1; 79, pp. 1-2; 84, pp. 1-2; 89, pp. 1-2]. As part of this HRS documentation record and the evaluation of background concentrations, the following hazardous substances in background samples are presented: one VOC (PCE), two PCB aroclors (Aroclor-1254 and Aroclor-1260), and three total metals (arsenic, chromium, and lead).

Table 22 - Hazardous Substances Associated with Background Samples

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-01	Soil	16 Nov. 2010	PCE	4.9 U µg/Kg	4.9 µg/Kg	15, p. 44; 34, p. 20; 35, Table 1 (p. 1 of 3); 112, p. 3 (Table 1), Attachment A (p. 2)
SS-01	Soil	16 Nov. 2010	Aroclor-1254	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SS-01	Soil	16 Nov. 2010	Aroclor-1260	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SS-02	Soil	16 Nov. 2010	Arsenic	4.4 mg/Kg	1.1 mg/Kg	15, p. 44; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 1)

Table 22 - Hazardous Substances Associated with Background Samples (Continued)

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-02	Soil	16 Nov. 2010	Chromium[1]	23.1 (17.9 J) mg/Kg	1.1 mg/Kg	15, pp. 44-45; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
SS-02	Soil	16 Nov. 2010	Lead[1]	5.1 (5.1 JEB) mg/Kg	1.1 mg/Kg	15, pp. 44-45; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
SB-01	Soil	16 Nov. 2010	PCE	3.6 U µg/Kg	3.6 µg/Kg	15, p. 45; 34, p. 20; 35, Table 1 (p. 2 of 3); 112, p. 4 (Table 1), Attachment A (p. 18)
SB-01	Soil	16 Nov. 2010	Aroclor-1254	36 U µg/Kg	36 µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)
SB-01	Soil	16 Nov. 2010	Aroclor-1260	36 U µg/Kg	36 µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)
SB-02	Soil	16 Nov. 2010	Arsenic	8.4 mg/Kg	1.4 mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)
SB-02	Soil	16 Nov. 2010	Chromium[1]	35.9 (27.8 J) mg/Kg	1.4 mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)
SB-02	Soil	16 Nov. 2010	Lead[1]	5.2 (5.2 JEB) mg/Kg	1.4 mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)

PCE = Tetrachloroethene.
Nov. = November.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
mg/Kg = Milligrams per kilogram.
U = The compound or element was analyzed for, but not detected. The associated numerical value is the sample-adjusted CRQL [103, p. B-47].
J = The associated numerical value is an estimated quantity [40, Table 1 (pp. 1-2 of 3); 103, p. B-47].
EB = The compound was also detected in an associated equipment rinsate blank [40, Table 1 (pp. 1-2 of 3)].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment.

[1] Chromium and lead results were qualified as estimated following data review. Chromium had a low bias (serial dilution results exceeded percent difference criteria) and was adjusted by multiplying by the adjustment factor of 1.29 [40, p. 5; 58, pp. 2, 3 (Exhibit 3), 10 (Table 3)]. Lead had a high bias [equipment (rinsate) blank contamination] and was not numerically adjusted [40, p. 4; 58, pp. 2, 3 (Exhibit 3), 10 (Table 3)].

- Source Samples:

On 9 November 2010, as part of the EPA Site Assessment Site Inspection, soil/source sampling activities of Debris Pile D were conducted [14, pp. 46-48; 15, pp. 2-3; 34, pp. 12-13]. The surface and subsurface soil/source samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6]. As part of the Debris Pile D characterization, four surface soil/source samples (SS-28, SS-29, SS-30, and SS-31) and four subsurface soil/source samples (SB-28, SB-29, SB-30, and SB-31) were collected from various places throughout Source No. 4 (see Figure 3a) [14, pp. 46-48; 15, pp. 2-3; 34, pp. 12-13, 57-58, 65-66]. Surface soil/source sample SS-28 was described as medium brown-to-yellow brown, silty sand, major debris (metal, rubber, foam, plastic, wires, wire coating, and slag), trace clay, and trace organics [75, p. 27]. Surface soil/source sample SS-29 was described as medium brown, silty sand, abundant/major debris (plastic, wire, metal, rubber, foam, wire coating, and slag), trace fine gravel, trace clay, and trace organics [75, p. 28]. Surface soil/source sample SS-30 was described as dark brown, silty sand, abundant debris (plastic, paper, foam, metal, rubber, wood, and wire coating), and trace clay [75, p. 29]. Surface soil/source samples SS-31 was described as dark-brown, silty-sand, containing abundant debris (plastic, rubber, metal, chrome, foam, wire, melted metal, and wire coating), trace fine gravel, trace clay, and trace organics [75, p. 30]. Subsurface soil/source sample SB-28 was described as dark brown, sandy silt, major debris (wire, metal, rubber, foam, and plastic), trace fine gravel, trace clay, and trace organics [76, p. 14]. Subsurface soil/source sample SB-29 was described as saturated medium-to-rusty brown, silt, abundant/major debris, trace sand, and trace clay [76, p. 15]. Subsurface soil/source sample SB-30 was described as dark brown, fine sandy silt, some debris (rubber, plastic, metal, and fibrous material), trace medium-to-coarse sand, and trace clay [76, p. 16]. Subsurface soil/source sample SB-31 was described as dark-brown, silt, abundant debris (plastic, metal, rubber, linoleum, foam, tile, and wire) little sand, trace clay [76, p. 17].

Soil/source samples (SS-28, SS-29, SS-30, SS-31, SB-28, SB-29, SB-30, and SB-31) were submitted to CLP Laboratories for VOC and PCB analyses following SOM01.2, and total metals analysis following ISM01.2 [14, pp. 46-48; 15, pp. 2-3; 34, pp. 12-13, 57-58, 65-66; 39, p. 1; 44; p. 1; 83, pp. 1-3; 88, p. 1; 93, p. 1]. The analytical data were validated according to EPA New England Regional Functional Guidelines Tier II requirements (for VOCs, PCBs, and total metals analyses) [39, p. 1; 44; p. 1]. For the purposes of the Source No. 4 evaluation and the HRS documentation record, four surface soil/source samples (SS-28 through SS-31) and four subsurface soil/source samples (SB-28 through SB-31) confirm the presence of the following hazardous substances: one VOC (PCE), two PCB Aroclors (Aroclor-1254 and Aroclor-1260) and three total metals (arsenic, chromium, and lead).

PCE was detected in surface and subsurface soil/source samples SS-31 and SB-31, collected from the northern portion of Source No. 4, at a maximum concentration of 3,900 µg/Kg in subsurface soil/source sample SB-31 [15, p. 3; 34, p. 13; 39, Table 1 (pp. 1-2 of 3)]. Among the eight selected source samples, Aroclor-1254 was detected at a maximum concentration of 27,000 µg/Kg in surface soil/source sample SS-28, located on the eastern portion of Source No. 4; Aroclor-1260 was detected at a maximum concentration of 11,000 µg/Kg in subsurface soil/source sample SB-28, located on the eastern portion of Source No. 4; arsenic was detected at a maximum concentration of 48.1 mg/Kg in subsurface soil/source sample SB-31; chromium was detected at a maximum concentration of 2,186 mg/Kg in subsurface soil/source sample SB-29, located on the southern portion of Source No. 4; and lead was detected at a maximum concentration of 17,361 mg/Kg in subsurface soil/source sample SB-31 (see Figure 3a) [14, pp. 46-48; 15, pp. 2-3; 34, pp. 12-13; 39, Table 1

(pp. 1-2 of 3), Table 2 (pp. 1-2 of 2); 44, Table 1 (p. 2 of 2); 57, pp. 6-7 (Table 2), pp. 8-9 (Table 3); 62, pp. 7 (Table 2), 10-11 (Table 3)].

Table 23 - Hazardous Substances Associated with Source No. 4

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-28	Soil/ Source	9 Nov. 2010	Aroclor-1254	27,000 µg/Kg	2,200 µg/Kg	14, pp. 46-47; 34, p. 12; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 7-8)
			Aroclor-1260	6,600 µg/Kg	2,200 µg/Kg	14, pp. 46-47; 34, p. 12; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 7-8)
			Arsenic[1]	16.3 (28.4 J) mg/Kg	1.2 mg/Kg	14, pp. 46-47; 34, p. 12; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 4)
			Chromium[1]	111 (143 J) mg/Kg	1.2 mg/Kg	14, pp. 46-47; 34, p. 12; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 4)
			Lead[1]	4,194 (6,040 JEB) mg/Kg	244 mg/Kg	14, pp. 46-47; 34, p. 12; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 4)
SS-29	Soil/ Source	9 Nov. 2010	Aroclor-1254	3,600 µg/Kg	870 µg/Kg	14, p. 48; 34, p. 13; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 9-10)
			Aroclor-1260	5,000 µg/Kg	870 µg/Kg	14, p. 48; 34, p. 13; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 9-10)

			Arsenic[1]	18.6 (32.4 J)	mg/Kg	1.3	mg/Kg	14, p. 48; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 5)
			Chromium[1]	512 (661 J)	mg/Kg	254	mg/Kg	14, p. 48; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 5)
			Lead[1]	3,896 (5,610 JEB)	mg/Kg	254	mg/Kg	14, p. 48; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 5)
SS-30	Soil/ Source	9 Nov. 2010	Aroclor-1254	6,400	µg/Kg	940	µg/Kg	14, p. 48; 15, p. 2; 34, p. 13; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 11-12)
			Aroclor-1260	6,000	µg/Kg	940	µg/Kg	14, p. 48; 15, p. 2; 34, p. 13; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 11-12)
			Arsenic[1]	16.6 (28.9 J)	mg/Kg	1.3	mg/Kg	14, p. 48; 15, p. 2; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 6)
			Chromium[1]	154 (199 J)	mg/Kg	1	mg/Kg	14, p. 48; 15, p. 2; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 6)
			Lead[1]	3,653 (5,260 JEB)	mg/Kg	256	mg/Kg	14, p. 48; 15, p. 2; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 6)
SS-31	Soil/ Source	9 Nov. 2010	PCE	1,600	µg/Kg	450	µg/Kg	14, p. 48; 34, p. 13; 39, Table 1 (p. 1 of 3); 112, p. 3 (Table 1), Attachment A (p. 14)

			Aroclor-1254	23,000	µg/Kg	2,100	µg/Kg	14, p. 48; 34, p. 13; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 13-14)
			Aroclor-1260	8,800	µg/Kg	2,100	µg/Kg	14, p. 48; 34, p. 13; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 13-14)
			Arsenic[1]	25.6 (44.5 J)	mg/Kg	1.3	mg/Kg	14, p. 48; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 7)
			Chromium[1]	106 (137 J)	mg/Kg	1	mg/Kg	14, p. 48; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 7)
			Lead[1]	3,174 (4,570 JEB)	mg/Kg	260	mg/Kg	14, p. 48; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 9 (Table 3), Attachment B (p. 7)
SB-28	Soil/ Source	9 Nov. 2010	Aroclor-1254	19,000	µg/Kg	1,900	µg/Kg	15, p. 2; 34, p. 13; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 17-18)
			Aroclor-1260	11,000	µg/Kg	1,900	µg/Kg	15, p. 2; 34, p. 13; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 17-18)
			Chromium[1]	145 (187 J)	mg/Kg	1.4	mg/Kg	15, p. 2; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 9)
			Lead[1]	4,569 (6,580 JEB)	mg/Kg	272	mg/Kg	15, p. 2; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 9)

SB-29	Soil/ Source	9 Nov. 2010	Aroclor-1254	520	µg/Kg	180	µg/Kg	15, p. 2; 34, p. 13; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 19-20)
			Aroclor-1260	560	µg/Kg	180	µg/Kg	15, p. 2; 34, p. 13; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 19-20)
			Chromium[1]	2,186 (2,820 J)	mg/Kg	223	mg/Kg	15, p. 2; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 10)
			Lead[1]	4,951 (7,130 JEB)	mg/Kg	223	mg/Kg	15, p. 2; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 10)
SB-30	Soil/ Source	9 Nov. 2010	Aroclor-1254	3,600	µg/Kg	450	µg/Kg	15, p. 3; 34, p. 13; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 21-22)
			Aroclor-1260	3,700	µg/Kg	450	µg/Kg	15, p. 3; 34, p. 13; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 21-22)
			Arsenic[1]	27.1 (47.1 J)	mg/Kg	1.4	mg/Kg	15, p. 3; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 11)
			Chromium[1]	157 (202 J)	mg/Kg	1.4	mg/Kg	15, p. 3; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 11)
			Lead[2]	6,944 (10,000 JEB)	mg/Kg	272	mg/Kg	15, p. 3; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 11)

SB-31	Soil/ Source	9 Nov. 2010	PCE	3,900	µg/Kg	510	µg/Kg	15, p. 3; 34, p. 13; 39, Table 1 (p. 2 of 3); 112, p. 4 (Table 1), Attachment A (p. 24)
			Aroclor-1254	24,000	µg/Kg	2,400	µg/Kg	15, p. 3; 34, p. 13; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 23-24)
			Aroclor-1260	6,000	µg/Kg	2,400	µg/Kg	15, p. 3; 34, p. 13; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 9 (Table 3), Attachment B (pp. 23-24)
			Arsenic[1]	48.1 (83.7 J)	mg/Kg	1.5	mg/Kg	15, p. 3; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 12)
			Chromium[1]	209 (269 J)	mg/Kg	1.5	mg/Kg	15, p. 3; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 12)
			Lead[1]	17,361 (25,000 JEB)	mg/Kg	298	mg/Kg	15, p. 3; 34, p. 13; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 12)

PCE = Tetrachloroethene.
Nov. = November.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
mg/Kg = Milligrams per kilogram.
J = The associated numerical value is an estimated quantity [44, Table 1 (pp. 1-2 of 2)].
EB = The compound was also detected in an associated equipment rinsate blank [44, Table 1 (pp. 1-2 of 2)].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment. Based on the EPA Fact Sheet, *Using Qualified Data to Document an Observed Release and Observed Contamination*, for HRS purposes it is not required to adjust qualified source data. Although the fact sheet was not intended for application to source data, it has been applied as a conservative measure in this situation to demonstrate the relative increase in contamination in the source samples over background levels [113].

[1] Arsenic, chromium, and lead results were qualified as estimated following data review. Arsenic had an unknown bias (poor laboratory duplicate precision) and was adjusted by dividing by the adjustment factor of 1.74 [44, p. 5; 62, pp. 2, 3 (Exhibit 3), 8-11 (Table 3)]. Chromium had a high bias (matrix spike analytes did not meet percent recovery criteria) and was adjusted by dividing by the adjustment factor of 1.29 [44, p. 5; 62, p. 2, 3 (Exhibit 3), 8-11 (Table 3)]. Lead had a high bias [equipment (rinsate) blank contamination] and was adjusted by dividing by the adjustment factor of 1.44 [44, p. 3; 62, p. 2, 3 (Exhibit 3), 8-11 (Table 3)].

List of Hazardous Substances Associated with Source

Based on samples collected as part of the EPA Site Assessment Site Inspection, Source No. 4 has been documented to contain PCE [14, p. 48; 15, p. 3; 34, p. 13; 39, Table 1 (pp. 1-2 of 3)]. In addition, Source No. 4 has been documented to contain two PCB aroclors (Aroclor-1254 and Aroclor-1260) and three total metals (arsenic, chromium, and lead) [14, pp. 46-48; 15, pp. 2-3; 34, pp. 12-13; 39, Table 2 (pp. 1-2 of 2); 44, Table 1 (pp. 1-2 of 2); 57, pp. 6-7 (Table 2), 8-9 (Table 3); 62, pp. 6-7 (Table 2), 8-11 (Table 3)]. Therefore the substances PCE, Aroclor-1254, Aroclor-1260, arsenic, chromium, and lead are considered to be associated with the Debris Pile D source [1, p. 51588, Section 2.2.2]. These hazardous substances are consistent among the on-site sources (see Source Characterization for Sources 1 through 3, and 5). Based on a survey completed by the property owner, the volume of Debris Pile D (Source No. 4) was determined to be approximately 11,280 yd^3 [29, Appendix A]. As part of the EPA Site Assessment Site Inspection, eight surface and subsurface soil/source samples were collected from Debris Pile D [14, pp. 46-48; 15, pp. 2-3; 34, pp. 12-13].

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

On-site observations indicate that no portion of Source No. 4 has a maintained engineered cover or complete runoff control management systems [17, p. 11]. No report of a natural or man-made liner was documented during source sampling activities [17, p. 11]. Therefore, Source No. 4 does not have full containment, and the source yields a containment value of 10 [1, p. 51596 (Table 3-2)].

Table 24 - Hazardous Substances Available to Pathways

Containment Description	Containment Factor	References
Gas release to air: NS		
Particulate release to air: NS		
Release to ground water: Based on the lack of a liner, a maintained engineered cover, and any complete run-on control and runoff management systems, a Containment Factor Value of 10 has been assigned for release to ground water for Source No. 4.	10	1, p. 51596, Table 3-2; 17, p. 11
Release via overland migration and/or flood: NS		

NS = Not Scored.

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1 Hazardous Waste Quantity

The Hazardous Waste Quantity for Source No. 4 was assigned based on the Volume Factor Value of a "pile" source type [1, p. 51591 (Table 2-5, Section 2.4.2.1.3)]. The Hazardous Constituent Quantity and Hazardous Wastestream Quantity Values were not evaluated for Source No. 4 because insufficient information was available [1, pp. 51590-51591 (Sections 2.4.2.1.1 and 2.4.2.1.2, Table 2-5)].

2.4.2.1.1 Hazardous Constituent Quantity

Description

There is insufficient information to evaluate Source No. 4 for Hazardous Constituent Quantity.

Table 25 – Hazardous Constituent Quantity

Hazardous Substance	Constituent Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Hazardous Constituent Quantity Assigned Value: NS

2.4.2.1.2 Hazardous Wastestream Quantity

Description

There is insufficient information to evaluate Source No. 4 for Hazardous Wastestream Quantity.

Table 26 – Hazardous Wastestream Quantity

Hazardous Wastestream	Wastestream Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Sum of Wastestream Quantity/5,000 (1, p. 51591, Table 2-5):

Hazardous Wastestream Quantity Assigned Value: NS

2.4.2.1.3 Volume

Description

For the purposes of this HRS documentation record, the volume estimate presented for Source No. 4 (Debris Pile D) by ERM in their Debris Pile Evaluation Report is utilized [29, pp. 4-5, Appendix A (p. 5)]. Based on

a survey completed by the property owner, the volume of Debris Pile D (Source No. 4) was determined to be approximately 11,280 yd^3 [29, Appendix A (p. 5)].

Table 27 – Volume			
Source Type	**Description (# drums or dimensions)**	**Units (yd^3)**	**References**
Pile	Debris Pile	11,280	29, Appendix A (p. 5)

The volume of a "pile" source, in yd^3, is divided by 2.5 to assign a Hazardous Waste Quantity to the source [1, p. 51591, Table 2-5].

Sum (yd^3): 11,280

Equation for Assigning Value (1, p. 51591, Table 2-5): 11,280 yd^3 ÷ 2.5 = 4,512.0

Volume Assigned Value: 4,512.0

2.4.2.1.4 Area

Description

The area of Source No. 4 was not scored.

Table 28 – Area		
Source Type	**Units (ft^2)**	**References**
NS		

The area of a "pile" source, in ft^2, is divided by 13 to assign a Hazardous Waste Quantity to the source [1, p. 51591, Table 2-5].

Area Assigned Value: 0

2.4.2.1.5 Source Hazardous Waste Quantity Value

The Hazardous Waste Quantity Value for Source No. 4 was assigned based on the Volume Factor Value (4,512.0) [1, p. 51591, Table 2-5]. The Hazardous Constituent Quantity and Hazardous Wastestream Quantity Factor Values were not evaluated for Source No. 4 because insufficient information was available [1, p. 51591, Sections 2.4.2.1.1, 2.4.2.1.2].

Highest HWQ value assigned from Ref. 1, Table 2-5: 4,512.0

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Name of Source: Former Operations Area

Number of Source: Source No. 5

Source Type: Contaminated Soil

Description and Location of Source:

The Former Operations Area (Contaminated Soil - Source No. 5) is located on the undeveloped property identified as the Leeds Metal property, depicted on the Town of Leeds, ME Tax Assessor's Map No. 4, as Lot No. 38 [5; 9; 12, pp. 1-2; 19, p. 1, Fig. 1]. Source No. 5 is located on the approximate eastern half of the Leeds Metal property (see Figure 2) [14, pp. 8-11; 17, pp. 10-11; 19, p. 1, Figure 2; 21, pp. 1, 3-4]. The geographic coordinates of the Former Operations Area, as measured from its approximate center, are 44° 14′ 14.1″ north latitude and 70° 04′ 48.3″ west longitude (see Figures 1 and 2) [7].

Between 1969 and 1984, scrap metal recovery processes were conducted on the Leeds Metal property by various entities [18, pp. 1- 2]. The former assistant fire chief of the Town of Leeds, ME stated that cars were transported to the property via trucks for "shredding" [26]. He also stated that within a cement building on the property, lead batteries and other auto parts were cleaned for resale [26]. The former assistant fire chief noted that metal from the shredded cars was salvaged (sent off the property via railroad), while the upholstery was piled in former gravel excavation pits [26]. He further stated that such materials as "gasoline, diesel, transformer oil, brake fluid, oils, battery acid, and antifreeze" were dumped on the ground and that approximately 100 "barrels" were staged along the southern property boundary [26]. The former assistant fire chief recalled that the Leeds and Monmouth Fire Departments responded to fires at the property, and that gasoline tanks would ignite causing oil-saturated soil to burn [26]. The eastern and southern portions of the Leeds Metal property contained car shredding waste both on the ground surface and in piles, including Source No. 5 (Former Operations Area) [14, pp. 2-15]. The western extent of operations on the property is generally defined as the tree-line that runs north-south on the property, while the eastern extent of operations is the railroad bed [14, pp. 8-11; 17, pp. 10-11; 19, p. 1, Figure 2; 21, p. 3]. The southern extent of operations on the property is generally defined by the tree-line that runs east-west just north of the southern property boundary [Figure 2; 9; 14, pp. 8-11; 17, pp. 10-11; 19, p. 1, Figure 2; 21, p. 3]. The extent of operations on the property is considered to be the area where automobile reclamation activities once occurred, and is illustrated in an aerial photograph included in the ME DEP Site Discovery Report [14, pp. 8-11; 17, pp. 10-11; 19, p. 1, Figure 2; 21, p. 3].

Analysis of aerial photographs, and GPS data collected by START as part of the EPA Site Assessment Site Inspection, indicate that the Former Operations Area encompasses an area of approximately 190,558 ft^2 [Figure 2; 133, p. 1].

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE SOURCE

- Background Concentrations:

The Former Operations Area (Source No. 5) is a contaminated soil source type; therefore, background soil samples have been utilized for comparison purposes. On 16 November 2010, as part of the EPA Site Assessment Site Inspection, background soil sampling activities were conducted [15, pp. 44-46; 34, p. 20].

The background surface and subsurface soil samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6; 34, pp. 19-20]. Two background surface soil samples (SS-01 and SS-02) and two background subsurface soil samples (SB-01 and SB-02) were collected from a residential property located northwest of the Leeds Metal property [9; 12; 15, pp. 44-46; 34, p. 20; 106, pp. 1-2]. The residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 4 as Lot No. 55 (see Figure 3b) [9; 106, pp. 1-2]. The background samples were collected from the same 0- to 2-foot depth interval and during the same time period as the source samples presented as part of the Source No. 5 Characterization, and the background and source samples contained similar native materials [15, pp. 44-46; 75, pp. 1, 8, 12, 16, 19-26, 40; 76, pp. 1, 3, 10, 12-13]. Background soil samples SS-01 and SB-01 were submitted to CLP Laboratories for VOC and PCB analyses following SOM01.2 and total metals analysis following ISM01.2, while background soil samples SS-02 and SB-02 were submitted to a CLP Laboratory for total metals analysis following ISM01.2 [15, pp. 44-46; 34, p. 20; 35, p. 1; 40, p. 1; 79, pp. 1-2; 84, pp. 1-2; 89, pp. 1-2]. As part of this HRS documentation record and the evaluation of background concentrations, the following hazardous substances in background samples are presented: one VOC (PCE), two PCB aroclors (Aroclor-1254 and Aroclor-1260), and three total metals (arsenic, chromium, and lead).

Table 29 - Hazardous Substances Associated with Background Samples

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-01	Soil	16 Nov. 2010	PCE	4.9 U µg/Kg	4.9 µg/Kg	15, p. 44; 34, p. 20; 35, Table 1 (p. 1 of 3); 112, p. 3 (Table 1), Attachment A (p. 2)
SS-01	Soil	16 Nov. 2010	Aroclor-1254	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SS-01	Soil	16 Nov. 2010	Aroclor-1260	42 U µg/Kg	42 µg/Kg	15, p. 44; 34, p. 20; 35, Table 2 (p. 1 of 3); 53, Attachment B (p. 1)
SS-02	Soil	16 Nov. 2010	Arsenic	4.4 mg/Kg	1.1 mg/Kg	15, pp. 44-45; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
SS-02	Soil	16 Nov. 2010	Chromium[1]	23.1 (17.9 J) mg/Kg	1.1 mg/Kg	15, pp. 44-45; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
SS-02	Soil	16 Nov. 2010	Lead[1]	5.1 (5.1 JEB) mg/Kg	1.1 mg/Kg	15, pp. 44-45; 34, p. 20; 40, Table 1 (p. 1 of 3); 58, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
SB-01	Soil	16 Nov. 2010	PCE	3.6 U µg/Kg	3.6 µg/Kg	15, p. 44; 34, p. 20; 35, Table 1 (p. 1 of 3); 112, p. 4 (Table 1), Attachment A (p. 18)

SB-01	Soil	16 Nov. 2010	Aroclor-1254	36 U	µg/Kg	36	µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)
SB-01	Soil	16 Nov. 2010	Aroclor-1260	36 U	µg/Kg	36	µg/Kg	15, p. 45; 34, p. 20; 35, Table 2 (p. 2 of 3); 53, Attachment B (p. 7)
SB-02	Soil	16 Nov. 2010	Chromium[1]	35.9 (27.8 J)	mg/Kg	1.4	mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)
SB-02	Soil	16 Nov. 2010	Lead[1]	5.2 (5.2 JEB)	mg/Kg	1.4	mg/Kg	15, pp. 45-46; 34, p. 20; 40, Table 1 (p. 2 of 3); 58, pp. 8 (Table 2), 10 (Table 3), Attachment B (p. 4)

PCE = Tetrachloroethene.
Nov. = November.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
mg/Kg = Milligrams per kilogram.
U = The compound or element was analyzed for, but not detected. The associated numerical value is the sample-adjusted CRQL [103, p. B-47].
J = The associated numerical value is an estimated quantity [40, Table 1 (pp. 1-2 of 3); 103, p. B-47].
EB = The compound was also detected in an associated equipment rinsate blank [40, Table 1 (pp. 1-2 of 3)].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment.

[1] Chromium and lead results were qualified as estimated following data review. Chromium had a low bias (serial dilution results exceeded percent difference criteria) and was adjusted by multiplying by the adjustment factor of 1.29 [40, p. 5; 58, pp. 2, 3 (Exhibit 3), 10 (Table 3)]. Lead had a high bias [equipment (rinsate) blank contamination] and was not numerically adjusted [40, p. 4; 58, pp. 2, 3 (Exhibit 3), 10 (Table 3)].

- Source Samples:

On 9, 11, 17, 18, and 30 November 2010, as part of the EPA Site Assessment Site Inspection, soil/source sampling activities of the Former Operations Area were conducted [14, pp. 46-48; 15, pp. 18-19; 16, pp. 21-22, 28-33, 38-39; 17, p. 6; 34, pp. 12-13, 16, 25-28, 31]. The surface and subsurface soil/source samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6]. As part of the Former Operations Area characterization, 13 surface soil/source samples (SS-09, SS-13, SS-17, SS-20 through SS-27, SS-41, and field duplicate SS-44) and four subsurface soil/source samples (SB-09, SB-17, SB-22, and SB-27) were collected from various places throughout Source No. 5 (see Figure 3a) [14, pp. 46-48; 15, pp. 18-19; 16, pp. 21-22, 28-33, 38-39; 17, p. 6; 34, pp. 12-13, 16, 25-28, 31]. Surface soil/source sample SS-09 was described as dark brown-to-rusty brown, silty fine sand, debris (metal, wire, and foam), trace medium-to-coarse sand, trace fine gravel, trace organics [75, p. 8]. Surface soil/source sample SS-13 was described as dark brown-to-black, silty sand, some debris (wire, tile, metal nodules, metal parts, rubber, and wood), trace clay, and trace organics [75, p. 12]. Surface soil/source sample SS-17 was described as medium brown, fine-to-coarse sand, some silt, some debris (melted metal, wire, foam, and rubber), little fine-to-medium gravel, trace clay [75, p. 16]. Surface soil/source sample SS-20 and field duplicate SS-44 were

described as dark brown, fine sandy silt, some medium-to-coarse sand, some debris (foam, wire coating, rubber, and metal fragments), trace organics, trace fine-to medium gravel, and trace clay [75, p. 19]. Surface soil/source sample SS-21 was described as dark brown, silty sand, major debris (wire, rubber, metal slag, plastic, paper), trace fine-to-medium gravel, and trace organics [75, p. 20]. Surface soil/source sample SS-22 was described as dark brown, silty sand, some debris (metal and rubber), trace fine-to-medium gravel, trace clay, and trace organics [75, p. 21]. Surface soil/source sample SS-23 was described as medium-to-dark brown, silty sand, major debris (metal, rubber, foam, plastic, comb, and paper), trace fine gravel, trace organics, and containing a burned odor [75, p. 22]. Surface soil/source sample SS-24 was described as medium-to-cinnamon brown, fine sand, some silt, little medium-to-coarse sand, trace fine-to-medium gravel, and trace clay [75, p. 23]. Surface soil/source sample SS-25 was described as dark brown, silty sand, some debris (wire, rubber, and metal), trace fine gravel, trace clay, and trace organics [75, p. 24]. Surface soil/source sample SS-26 was described as medium-to-dark brown, silty and, some debris (plastic, metal, rubber), little gravel, little clay, trace organics [75, p. 25]. Surface soil/source sample SS-27 was described as dark brown, silty sand, some debris (metal, plastic, rubber), trace fine gravel, trace clay, and trace organics [75, p. 26]. Surface soil/source sample SS-41 was described as medium-to-light brown, silty fine sand, trace clay, trace organics [75, p. 40]. Subsurface soil/source sample SB-09 was described as dark brown, sand and silt, major debris (metal, rubber, plastic, and wire), trace organics, and trace clay [76, p. 3]. Subsurface soil/source sample SB-17 was described as medium-to-light brown, sand, some silt, little fine-to-medium gravel, trace clay [76, p. 10]. Subsurface soil/source sample SB-22 was described as saturated, medium gray, fine-to-medium sand, little coarse sand, some silt, trace clay [76, p. 12]. Subsurface soil/source sample SB-27 was described as wet, medium gray, fine-to-coarse sand, little silt, trace clay [76, p. 13].

Source samples (SS-09, SS-13, SS-17, SS-20 through SS-27, SS-41, SS-44, SB-09, SB-17, SB-22, and SB-27) were submitted to CLP Laboratories for VOC, PCB, and total metals analysis [14, pp. 46-48; 15, pp. 18-19; 16, pp. 21-22, 28-33, 38-39; 17, p. 6; 34, pp. 12-13, 16, 25-28, 31, 52-58, 60-62, 64-65; 36, p. 1; 37, p. 1; 38, p. 1; 39, p. 1; 41, p.1; 42, p. 1; 43, p. 1; 44, p. 1; 80, pp. 1-4; 81, pp. 1, 3; 82, pp. 1-2; 83, p. 1; 85, pp. 1; 86, p. 1; 87, p. 1; 88, p. 1; 90, p. 1; 91, p. 1; 92, p. 1; 93, p. 1]. The analytical data were validated according to EPA New England Regional Functional Guidelines Tier II requirements (for VOCs, PCBs, and total metals analyses) [36, p. 1; 37, p. 1; 38, p. 1; 39, p. 1; 41, p.1; 42, p. 1; 43, p. 1; 44, p. 1]. For the purposes of Source No. 5 evaluation and the HRS documentation record, analytical results of 17 surface and subsurface soil/source samples (SS-09, SS-13, SS-17, SS-20 through SS-27, SS-41, SS-44, SB-09, SB-17, SB-22, and SB-27) confirm the presence of the following hazardous substances: one VOC (PCE), two PCB aroclors (Aroclor-1254 and Aroclor-1260) and three total metals (arsenic, chromium, and lead).

PCE was detected in surface source samples SS-20, SS-22, SS-23, SS-25, SS-27, and SS-44, and subsurface source samples SB-22 and SB-27 at a maximum concentration of 10,000 µg/Kg in SS-27 [14, pp. 47-48; 15, pp. 18-19; 16, pp. 28-31; 34, pp. 13, 16, 26-27; 36, Table 1 (pp. 1-3 of 3); 39, Table 1 (pp. 1-2 of 3)]. Among the selected source samples: Aroclor-1254 was detected in 13 source samples, at a maximum concentration of 2,100 µg/Kg in SS-44, located adjacent to Debris Pile D; Aroclor-1260 was detected in 13 source samples, at a maximum concentration of 2,600 µg/Kg in SS-13, located along the eastern property boundary, adjacent to the railroad tracks; arsenic was detected in one source sample, at a concentration of 28.9 mg/Kg in SS-13; chromium was detected in six source samples, at a maximum concentration of 1,190 mg/Kg in SB-09, located in a depression/gulley along the eastern property boundary; and lead was detected in 14 source samples, at a maximum concentration of 9,140 mg/Kg in SS-21, located adjacent to Debris Pile D (see Figure 3a) [15, pp. 18-19; 16, pp. 29, 39; 17, p. 6; 34, pp. 16, 27-28, 31; 37, Table 2 (p. 1 of 3); 39, Table 2 (p. 2 of 2); 41, Table 1 (p. 1 of 3); 42, Table 1 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3); 57, pp. 7 (Table 2), 8 (Table 3); 59, pp. 7 (Table 2), 10 (Table 3); 60, pp. 7 (Table 2), 11 (Table 3)].

Table 30 - Hazardous Substances Associated with Source No. 5						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SS-09	Soil/ Source	18 Nov. 2010	Aroclor-1254	1,000 µg/Kg	220 µg/Kg	16, p. 38; 34, p. 28; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 1-2)
			Aroclor-1260[1]	2,500 (2,500 J) µg/Kg	220 µg/Kg	16, p. 38; 34, p. 28; 38, Table 2 (p. 1 of 2); 56, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 1-2)
			Chromium	361 mg/Kg	264 mg/Kg	16, p. 38; 34, p. 28; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 2)
			Lead[2]	1,750 (2,520 J) mg/Kg	264 mg/Kg	16, p. 38; 34, p. 28; 43, Table 1 (p. 1 of 2); 61, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 2)
SS-13	Soil/ Source	30 Nov. 2010	Aroclor-1254	1,100 µg/Kg	400 µg/Kg	17, p. 6; 34, p. 31; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (pp. 17-18)
			Aroclor-1260	2,600 µg/Kg	400 µg/Kg	17, p. 6; 34, p. 31; 37, Table 2 (p. 1 of 3); 55, pp. 7 (Table 2), 10 (Table 3), Attachment B (pp. 17-18)
			Arsenic[2]	28.9 (50.2 J) mg/Kg	1.2 mg/Kg	17, p. 6; 34, p. 31; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 5)

Table 30 - Hazardous Substances Associated with Source No. 5						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SS-13 Cont.	Soil/ Source	30 Nov. 2010	Chromium	338 mg/Kg	23.7 mg/Kg	17, p. 6; 34, p. 31; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 5)
			Lead	5,190 mg/Kg	23.7 mg/Kg	17, p. 6; 34, p. 31; 42, Table 1 (p. 1 of 3); 60, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 5)
SS-17	Soil/ Source	18 Nov. 2010	Aroclor-1254	180 µg/Kg	35 µg/Kg	16, pp. 31-32; 34, p. 27; 36, Table 2 (p.1 of 3); 54, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
			Aroclor-1260	470 µg/Kg	35 µg/Kg	16, pp. 31-32; 34, p. 27; 36, Table 2 (p.1 of 3); 54, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
			Chromium	587 mg/Kg	441 mg/Kg	16, pp. 31-32; 34, p. 27; 41, Table 1 (p. 1 of 3); 59, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)
			Lead	2,480 mg/Kg	441 mg/Kg	16, pp. 31-32; 34, p. 27; 41, Table 1 (p. 1 of 3); 59, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 2)

Table 30 - Hazardous Substances Associated with Source No. 5

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-20	Soil/ Source	11 Nov. 2010	PCE	490 µg/Kg	270 µg/Kg	15, pp. 18-19; 34, p. 16; 39, Table 1 (p. 1 of 3); 112, p. 3 (Table 1), Attachment A (p. 3)
			Aroclor-1254	1,800 µg/Kg	370 µg/Kg	15, pp. 18-19; 34, p. 16; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 1-2)
			Aroclor-1260	690 µg/Kg	370 µg/Kg	15, pp. 18-19; 34, p. 16; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 1-2)
			Lead[2]	116 (167 JEB) mg/Kg	1.1 mg/Kg	15, pp. 18-19; 34, p. 16; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 1)
SS-21	Soil/ Source	18 Nov. 2010	Aroclor-1254	810 µg/Kg	200 µg/Kg	16, p. 29; 34, p. 27; 36, Table 2 (p. 1 of 3); 54, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 4)
			Aroclor-1260	2,500 µg/Kg	200 µg/Kg	16, p. 29; 34, p. 27; 36, Table 2 (p. 1 of 3); 54, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 4)
			Chromium	606 mg/Kg	590 mg/Kg	16, p. 29; 34, p. 27; 41, Table 1 (p. 1 of 3); 59, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 4)
			Lead[2]	9,140 (9,140 J) mg/Kg	590 mg/Kg	16, p. 29; 34, p. 27; 41, Table 1 (p. 1 of 3); 59, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 4)

Table 30 - Hazardous Substances Associated with Source No. 5						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SS-22	Soil/ Source	18 Nov. 2010	PCE	3,800 µg/Kg	210 µg/Kg	16, pp. 29-30; 34, p. 27; 36, Table 1 (p. 1 of 3); 112, p. 3 (Table 1), Attachment A (p. 5)
			Aroclor-1254	750 µg/Kg	74 µg/Kg	16, pp. 29-30; 34, p. 27; 36, Table 2 (p. 1 of 3); 54, pp. 7 (Table 2), 10 (Table 3), Attachment B (pp. 11-12)
			Lead	198 mg/Kg	1.2 mg/Kg	16, pp. 29-30; 34, p. 27; 41, Table 1 (p. 1 of 3); 59, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 5)
SS-23	Soil/ Source	18 Nov. 2010	PCE	1,300 µg/Kg	380 µg/Kg	16, p. 28; 34, p. 26; 36, Table 1 (p. 1 of 3); 112, p. 3 (Table 1), Attachment A (p. 8)
			Aroclor-1254	960 µg/Kg	120 µg/Kg	16, p. 28; 34, p. 26; 36, Table 2 (p. 1 of 3); 54, pp. 7 (Table 2), 10 (Table 3), Attachment B (pp. 13-14)
			Lead	3,000 mg/Kg	472 mg/Kg	16, p. 28; 34, p. 26; 41, Table 1 (p. 1 of 3); 59, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 6)

Table 30 - Hazardous Substances Associated with Source No. 5						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SS-24	Soil/ Source	18 Nov. 2011	Aroclor-1254	38 µg/Kg	35 µg/Kg	16, pp. 28-29; 34, p. 26; 36, Table 2 (p. 1 of 3); 54, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 15)
			Aroclor-1260	94 µg/Kg	35 µg/Kg	16, pp. 28-29; 34, p. 26; 36, Table 2 (p. 1 of 3); 54, pp. 7 (Table 2), 10 (Table 3), Attachment B (p. 15)
			Lead	36.4 mg/Kg	1.1 mg/Kg	16, pp. 28-29; 34, p. 26; 41, Table 1 (p. 1 of 3); 59, pp. 7 (Table 2), 11 (Table 3), Attachment B (p. 7)
SS-25	Soil/ Source	9 Nov. 2010	PCE	1,900 µg/Kg	240 µg/Kg	14, pp. 47-48; 34, p. 13; 39, Table 1 (p. 1 of 3); 112, p. 3 (Table 1), Attachment A (p. 10)
			Aroclor-1254	850 µg/Kg	190 µg/Kg	14, pp. 47-48; 34, p. 13; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 3-4)
			Aroclor-1260	1,400 µg/Kg	190 µg/Kg	14, pp. 47-48; 34, p. 13; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 3-4)
			Lead[2]	645 (929 JEB) mg/Kg	1.1 mg/Kg	14, pp. 47-48; 34, p. 13; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 2)

Table 30 - Hazardous Substances Associated with Source No. 5

Sample ID	Sample Type	Date	Hazardous Substance	Hazardous Substance Concentration	Sample-Adjusted CRQL	Reference
SS-26	Soil/ Source	9 Nov. 2010	Aroclor-1254	1,200 µg/Kg	190 µg/Kg	14, p. 46; 34, p. 12; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 5-6)
			Aroclor-1260	2,400 µg/Kg	190 µg/Kg	14, p. 46; 34, p. 12; 39, Table 2 (p. 1 of 2); 57, pp. 6 (Table 2), 8 (Table 3), Attachment B (pp. 5-6)
			Chromium[2]	77.5 (100 J) mg/Kg	1.2 mg/Kg	14, p. 46; 34, p. 12; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 3)
			Lead[2]	2,701 (3,890 JEB) mg/Kg	232 mg/Kg	14, p. 46; 34, p. 12; 44, Table 1 (p. 1 of 2); 62, pp. 6 (Table 2), 8 (Table 3), Attachment B (p. 3)
SS-27	Soil/ Source	18 Nov. 2010	PCE	10,000 µg/Kg	210 µg/Kg	16, p. 29; 34, p. 26; 36, Table 1 (p. 2 of 3); 112, p. 3 (Table 1), Attachment A (p. 12)
			Aroclor-1254[1]	49 (490 J) µg/Kg	37 µg/Kg	16, p. 29; 34, p. 26; 36, Table 2 (p. 2 of 3); 54, pp. 8 (Table 2), 10 (Table 3), Attachment B (pp. 16-17)
			Aroclor-1260	1,200 µg/Kg	150 µg/Kg	16, p. 29; 34, p. 26; 36, Table 2 (p. 2 of 3); 54, pp. 8 (Table 2), 10 (Table 3), Attachment B (pp. 16-17)
			Lead	1,710 mg/Kg	459 mg/Kg	16, p. 29; 34, p. 26; 41, Table 1 (p. 2 of 3); 59, pp. 8 (Table 2), 11 (Table 3), Attachment B (p. 8)

Table 30 - Hazardous Substances Associated with Source No. 5						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SS-41	Soil/ Source	17 Nov. 2011	Aroclor-1260	44 µg/Kg	42 µg/Kg	16, pp. 21-22; 34, p. 25; 36, Table 2 (p. 2 of 3); 54, pp. 8 (Table 2), 11 (Table 3), Attachment B (p. 18)
			Lead	36.0 mg/Kg	1.3 mg/Kg	16, pp. 21-22; 34, p. 25; 41, Table 1 (p. 2 of 3); 59, pp. 8 (Table 2), 12 (Table 3), Attachment B (p. 9)
SS-44	Soil/ Source	11 Nov. 2010	PCE	350 µg/Kg	230 µg/Kg	15, pp. 18-19; 34, p. 16; 39, Table 1 (p. 2 of 3); 112, p. 3 (Table 1), Attachment A (p. 16)
			Aroclor-1254	2,100 µg/Kg	190 µg/Kg	15, pp. 18-19; 34, p. 16; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 8 (Table 3), Attachment B (pp. 15-16)
			Aroclor-1260	590 µg/Kg	38 µg/Kg	15, pp. 18-19; 34, p. 16; 39, Table 2 (p. 2 of 2); 57, pp. 7 (Table 2), 8 (Table 3), Attachment B (pp. 15-16)
			Lead[2]	599 (863 JEB) mg/Kg	1.1 mg/Kg	15, pp. 18-19; 34, p. 16; 44, Table 1 (p. 2 of 2); 62, pp. 7 (Table 2), 9 (Table 3), Attachment B (p. 8)

Table 30 - Hazardous Substances Associated with Source No. 5						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SB-09	Soil/ Source	18 Nov. 2010	Aroclor-1254	1,700 µg/Kg	160 µg/Kg	16, p. 39; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 8 (Table 3), Attachment B (pp. 11-12)
			Aroclor-1260	1,700 (1,700 J) µg/Kg	160 µg/Kg	16, p. 39; 34, p. 28; 38, Table 2 (p. 2 of 2); 56, pp. 7 (Table 2), 8 (Table 3), Attachment B (pp. 11-12)
			Chromium	1,190 mg/Kg	251 mg/Kg	16, p. 39; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 9 (Table 3), Attachment B (p. 8)
			Lead[2]	2,833 (4,080 J) mg/Kg	251 mg/Kg	16, p. 39; 34, p. 28; 43, Table 1 (p. 2 of 2); 61, pp. 7 (Table 2), 9 (Table 3), Attachment B (p. 8)
SB-17	Soil/ Source	18 Nov. 2010	Aroclor-1260	45 µg/Kg	34 µg/Kg	16, pp. 32-33; 34, p. 27; 36, Table 2 (p. 2 of 3); 54, pp. 8 (Table 2), 11 (Table 3), Attachment B (p. 19)
SB-22	Soil/ Source	18 Nov. 2010	PCE	32 µg/Kg	5.3 µg/Kg	16, pp. 30-31; 34, p. 27; 36, Table 1 (p. 2 of 3); 112, p. 4 (Table 1), Attachment A (p. 20)

Table 30 - Hazardous Substances Associated with Source No. 5						
Sample ID	**Sample Type**	**Date**	**Hazardous Substance**	**Hazardous Substance Concentration**	**Sample-Adjusted CRQL**	**Reference**
SB-27	Soil/ Source	18 Nov. 2010	PCE	410 µg/Kg	180 µg/Kg	16, p. 30; 34, p. 27; 36, Table 1 (p. 3 of 3); 112, p. 4 (Table 1), Attachment A (p. 22)

Nov. = November.
PCE = Tetrachloroethene.
mg/Kg = Milligrams per kilogram.
CRQL = Contract Required Quantitation Limit.
µg/Kg = Micrograms per kilogram.
J = The associated numerical value is an estimated quantity [41, Table 1 (p. 1 of 3); 42, Table 1 (p. 1 of 3); 43, Table 1 (pp. 1-2 of 2); 44, Table 1 (pp. 1-2 of 2); 103, p. B-47].
EB = The compound was detected in an associated equipment rinsate blank [44, Table 1 (pp. 1-2 of 2)].
( ) = For hazardous substance concentrations, denotes concentration of the compound or element prior to adjustment. Based on the EPA Fact Sheet, *Using Qualified Data to Document an Observed Release and Observed Contamination*, for HRS purposes it is not required to adjusted qualified source data. Although the fact sheet was not intended for application to source data, it has been applied as a conservative measure in this situation to demonstrate the relative increase in contamination in the source samples over background levels [113].

[1] Aroclor-1254 and Aroclor-1260 results were qualified as estimated following data review. Aroclor-1254 had an unknown bias (surrogate recoveries did not meet criteria) in surface soil/source sample SS-27, and was adjusted by dividing by the adjustment factor of 10 [36, p. 7; 54, pp. 2, 3 (Exhibit 3), 10 (Table 3)]. Aroclor-1260 had low bias (compound did not meet percent difference criteria in the instrument continuing calibration) in surface soil/source sample SS-09, and was not numerically adjusted [38, p. 4; 56, pp. 6 (Table 2), 8 (Table 3)].

[2] Arsenic, chromium, and lead results were qualified as estimated following data review. Arsenic had a high bias (matrix spike analytes did not meet percent recovery criteria) in surface soil/source sample SS-13, and was adjusted by dividing by the adjustment factor of 1.74 [42, p. 5; 60, pp. 2, 3 (Exhibit 3), 11 (Table 3)]. Chromium had a high bias (matrix spike analytes did not meet percent recovery criteria) in surface soil/source sample SS-26, and was adjusted by dividing by the adjustment factor of 1.29 [44, p. 5; 62, pp. 6 (Table 2), 8 (Table 3)]. Lead had a high bias [equipment (rinsate) blank contamination] in surface soil/source samples SS-20, SS-25, SS-26, and SS-44, and was adjusted by dividing by the adjustment factor of 1.44 [44, p. 3; 62, pp. 2, 3 (Exhibit 3), 8-9 (Table 3)]. Lead had a low bias (interference check standard did not meet criteria) in surface soil/source sample SS-21, and was not numerically adjusted [41, p. 7; 59, pp. 7 (Table 2), 10 (Table 3)]. Lead had a high bias (serial dilution results exceeded percent difference criteria) in surface and subsurface soil/source samples SS-09 and SB-09, and was adjusted by dividing by the adjustment factor of 1.44 [43, p. 5; 61, pp. 2, 3 (Exhibit 3), 8-10 (Table 3)].

<u>List of Hazardous Substances Associated with Source</u>

Based on samples collected as part of the EPA Site Assessment Site Inspection, Source No. 5 has been documented to contain PCE [14, pp. 47-48; 15, pp. 18-19; 16, pp. 28-31; 34, pp. 13, 16, 26-27, 31; 36, Table

1 (pp. 1-3 of 3); 39, Table 1 (pp. 1-2 of 3)]. In addition, Source No. 5 has been documented to contain two PCB Aroclors (Aroclor-1254 and Aroclor-1260) and three total metals (arsenic, chromium, and lead) [14, p. 46; 15, pp. 18-19; 16, pp. 21-22, 28-33, 38-39; 17, p. 6; 34, pp. 12, 16, 25-28, 31; 36, Table 2 (pp.1-2 of 3); 37, Table 2 (p. 1 of 3); 38, Table 2 (p. 1 of 2); 39, Table 1 (p. 2 of 2), Table 2 (p. 1 of 2); 41, Table 1 (pp. 1-2 of 3); 42, Table 1 (p. 1 of 3); 43, Table 1 (pp. 1-2 of 2); 44, Table 1 (p. 1 of 2); 54, pp. 7-8 (Table 2), 10-11 (Table 3); 55, pp. 7 (Table 2), 10 (Table 3); 56, pp. 6 (Table 2), 8 (Table 3); 57, pp. 6 (Table 2), 8 (Table 3); 59, pp. 7-8 (Table 2), 10-12 (Table 3); 60, pp. 7 (Table 2), 11 (Table 3); 61, pp. 6-7 (Table 2), 8-10 (Table 3); 62, pp. 6 (Table 2), 8 (Table 3)]. Therefore the substances PCE, Aroclor-1254, Aroclor-1260, arsenic, chromium, and lead are considered to be associated with the Former Operations Area source [1, p. 51588, Section 2.2.2]. These hazardous substances are consistent among the on-site sources (see Source Characterization for Sources 1 through 4). Based on analysis of aerial photographs, and GPS data collected by START as part of the EPA Site Assessment Site Inspection, the Former Operations Area encompasses an area of approximately 190,558 ft^2 (see Figure 2) [133, p. 1].

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

On-site observations indicate that no portion of Source No. 5 has a maintained engineered cover or complete runoff control management systems [17, p. 11]. No report of a natural or man-made liner was documented during source sampling activities [17, p. 11]. Therefore, Source No. 5 does not have full containment, and the source yields a containment value of 10 [1, p. 51596 (Table 3-2)].

Table 31 - Hazardous Substances Available to Pathways

Containment Description	Containment Factor	References
Gas release to air: NS		
Particulate release to air: NS		
Release to ground water: Based on the lack of a liner, a maintained engineered cover, and any complete run-on control and runoff management systems, a Containment Factor Value of 10 has been assigned for release to ground water for Source No. 5.	10	1, p. 51596, Table 3-2; 17, p. 11
Release via overland migration and/or flood: NS		

NS = Not Scored.

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1 Hazardous Waste Quantity

The Hazardous Waste Quantity for Source No. 5 was assigned based on the Area Factor Value of a "contaminated soil" source type [1, p. 51591 (Table 2-5, Section 2.4.2.1.3)]. The Hazardous Constituent Quantity, Hazardous Wastestream Quantity, and Volume Factor Values were not evaluated for Source No. 5 because insufficient information was available [1, p. 51591 (Table 2-5, Sections 2.4.2.1.1 and 2.4.2.1.2)].

2.4.2.1.1 Hazardous Constituent Quantity

Description

There is insufficient information to evaluate Source No. 5 for Hazardous Constituent Quantity.

Table 32 – Hazardous Constituent Quantity

Hazardous Substance	Constituent Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Hazardous Constituent Quantity Assigned Value: NS

2.4.2.1.2 Hazardous Wastestream Quantity

Description

There is insufficient information to evaluate Source No. 5 for Hazardous Wastestream Quantity.

Table 33 – Hazardous Wastestream Quantity

Hazardous Wastestream	Wastestream Quantity (pounds)	References
NS (insufficient information)		

Sum (pounds):

Sum of Wastestream Quantity/5,000 (1, p. 51591, Table 2-5):

Hazardous Wastestream Quantity Assigned Value: NS

2.4.2.1.3 Volume

Description

There is insufficient information to evaluate Source No. 5 for Volume.

Table 34 – Volume			
Source Type	**Description (# drums or dimensions)**	**Units (yd^3)**	**References**
NS (insufficient information)			

Sum (yd^3):

Equation for Assigning Value (1, p. 51591, Table 2-5):

Volume Assigned Value: NS

2.4.2.1.4 Area

Description

GPS data collected at the Leeds Metal property were utilized to determine the area which Source No. 5 encompasses (see Figure 2) [133, p. 1]. According to the GPS data collected, Source No. 5 encompasses an area of approximately 190,558 ft^2 (4.37 acres) [133, p. 1]. Based on observations of the extent of operations on the Leeds Metal property, this source could be documented as encompassing a larger area with further sampling (see Figure 2) [14, pp. 8-11; 17, pp. 10-11; 19, p. 1, Figure 2; 21, p. 3].

Table 35 – Area		
Source Type	**Units (ft^2)**	**References**
Contaminated Soil	190,558	Figure 2; 133, p. 1

The area of a "contaminated soil" source, in ft^2, is divided by 34,000 to assign a Hazardous Waste Quantity to the source [1, p. 51591, Table 2-5].

Sum (ft^2): 190,558

Equation for Assigning Value (1, p. 51591, Table 2-5): 190,558 ft^2 ÷ 34,000 = 5.6

Area Assigned Value: 5.6

2.4.2.1.5 Source Hazardous Waste Quantity Value

The Hazardous Waste Quantity Value for Source No. 5 was assigned based on the Area Factor Value (5.6) [1, p. 51591, Table 2-5]. The Hazardous Constituent Quantity, Hazardous Wastestream Quantity, and Volume Factor Values were not evaluated for Source No. 5 because insufficient information was available [1, p. 51591, Sections 2.4.2.1.1, 2.4.2.1.2, 2.4.2.1.3].

Highest HWQ value assigned from Ref. 1, Table 2-5: 5.6

SUMMARY OF SOURCE DESCRIPTIONS

Table 36 – Summary of Source Descriptions

Source No.	Source HWQ Value	Source Hazardous Constituent Quantity Complete? (Y/N)	Containment Factor Value by Pathway				
			Ground Water (GW) (Ref. 1, Table 3-2)	Surface Water (SW)*		Air	
				Overland/ flood (Ref. 1, Table 4-2)	GW to SW (Ref. 1, Table 3-2)	Gas (Ref. 1, Table 6-3)	Particulate (Ref. 1, Table 6-9)
1	2,565.2	N	10	NS	NS	NS	NS
2	8,226.4	N	10	NS	NS	NS	NS
3	690.8	N	10	NS	NS	NS	NS
4	4,512.0	N	10	NS	NS	NS	NS
5	5.6	N	10	NS	NS	NS	NS

HWQ = Hazardous Waste Quantity.
NS = Not Scored.
No. = Number.

Total Source Hazardous Waste Quantity Value: 16,000.0

Other possible sources not scored:

As part of the reconnaissance of the Leeds Metal property, conducted as part of the EPA Site Assessment SI, multiple rusted 55-gallon drums located along the southern property boundary were observed and designated as the Abandoned Drum Area [14, pp. 11-12]. Analytical results of five surface and subsurface soil/source samples (SS-37, SS-38, SS-39, SB-37, SB-38) collected from the Abandoned Drum Source Area, as part of the EPA Site Assessment SI, indicated a source containing the following two VOCs, two PCBs, and 13 total metals at concentrations above background: acetone, 2-butanone, Aroclor-1254, Aroclor-1260, aluminum, barium, cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, and zinc [11, pp. 38, 71-72, 88, Attachment A [Table 1 (p. 6 of 7), Table 2 (p. 6 of 7), Table 3 (p. 6 of 7)], Attachment C [Table 1 (p. 4 of 4), Table 2 (p. 4 of 4), Table 3 (p. 4 of 4)]; 16, pp. 14-16; 17, p. 12; 34, pp. 23-24; 35, Table 1 (pp. 2-3 of 3), Table 2 (pp. 2-3 of 3); 40, Table 1 (pp. 2-3 of 3)]. This source does not affect the Total Source Hazardous Waste Quantity Value and was therefore not scored.

On 2 March 2000, as part of the investigation of past industrial practices at the Leeds Metal property, ME DEP personnel interviewed the former assistant fire chief of the Town of Leeds, ME, who stated that transformers and batteries were drained from cars adjacent to the entrance trailer, between the trailer and railroad trestle [26]. On 16 March 2010, as part of the EPA Site Assessment SI Leeds Metal property reconnaissance, the Battery Drop Area was observed on the northern portion of the property, adjacent to the parking area [14, p. 15]. Analytical results of seven surface soil samples collected from the Battery Drop Area as part of the EPA Removal Program Preliminary Assessment/Site Investigation indicated a source containing the following three metals above screening detection limits: antimony, arsenic, and lead [11, p. 4 (Figure 2); 32, pp. 27-28, 40-41 (Figure 4a and Figure 4b), 57-60, 126]. This source does not affect the Total Source Hazardous Waste Quantity Value and was therefore not scored.

During the 16 March 2010 EPA Site Assessment SI Leeds Metal property reconnaissance, the Container Disposal Area was observed, located along the western property boundary, adjacent to the two lagoons [14, pp. 12-13]. The Container Disposal Area contained numerous metal containers (with labels depicting contents of motor oil, brake fluid, antifreeze, *etc.*) and bottles [14, pp. 12-13]. Analytical results of four surface soil/source samples (SS-03, SS-04, SS-05, and SS-43) collected from the Container Disposal Area, as part of the EPA Site Assessment SI, indicated a source containing the following VOC and six total metals at concentrations above background: methyl acetate, barium, cadmium, copper, lead, potassium, and zinc [11, pp. 26-27, 39, 42, 73, Attachment A [Table 1 (p. 1, 6 of 7), Table 2 (p. 1, 6 of 7), Table 3 (p. 1, 7 of 7)]; 16, pp. 2-4; 34, p. 21; 35, Table 1 (pp. 1-2 of 3), Table 2 (pp. 1-2 of 3); 40, Table 1 (pp. 1-2 of 2)]. This source does not affect the Total Source Hazardous Waste Quantity Value and was therefore not scored.

On 17 June 2004, Roux Associates, Inc. (Roux Associates), on behalf of Guilford Rail System, completed a Targeted Environmental Investigation of the northwest portion of the Leeds Metal property [21, pp. 1-4]. The purpose of the investigation was to determine if hazardous substances were present on the northwestern portion of the property due to filling activities allegedly conducted by an adjacent business, Rinker Industries (located at 173 State Route 106 in Leeds, ME) [21, pp. 1-2, Figure 2]. During the 16 March 2010 EPA Site Assessment SI Leeds Metal property reconnaissance, numerous pieces of concrete pipe and other concrete debris were observed on the northwestern portion of the property [14, p. 15]. This Concrete Disposal Area extended along the northwestern property boundary, and extended approximately 100 to 125 feet onto the Leeds Metal property [14, p. 15]. Surface soil samples collected from the Concrete Disposal Area as part of the Roux Associates Targeted Environmental Investigation indicated a source containing DRO and the following ten SVOCs and seven RCRA 8 metals at concentrations above laboratory detection limits: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, arsenic, barium, cadmium, chromium, lead, selenium, and silver [21, pp. 10-14, Table 1, Appendix H]. This source does not affect the Total Source Hazardous Waste Quantity Value and was therefore not scored.

3.0 GROUND WATER MIGRATION PATHWAY

3.0.1 GENERAL CONSIDERATIONS

Ground Water Migration Pathway Description

Regional Geology/Aquifer Description:

The Leeds Metal property is located within an area generally underlain by the meta-sedimentary bedrock geologic Sangerville Formation, which is Silurian in age and is highlighted by thick-bedded, weakly calcareous, poorly-graded greywacke, sandstone, and siltstone [Figure 1; 7; 8; 63, pp. 1-2; 63a; 64, pp. 1-4; 65, p. 3; 66; 66a; 67, p. 10 (Map 16)]. The Sangerville Formation is further divided into subdivisions, of which the Patch Mountain Member is one [63, pp. 1-2; 63a; 64, p. 2; 66; 66a]. The Leeds Metal property lies within an area underlain by the early Silurian Patch Mountain Member of the Sangerville Formation [7; 63, pp. 1-2; 63a; 64, p. 2; 66; 66a]. The Patch Mountain Member is characterized by 'thin well-bedded alternations of light-to-medium greenish-gray calc-silicate granofels, quartzo-feldspathic biotite granofels, and fine-grained impure granoblastic marble' [64, p. 2].

The regional surficial geology around the Leeds Metal property is highlighted by Pleistocene glaciomarine deposits [7; 8; 67, pp. 11-12; 68; 68a; 69; 69a; 70; 70a]. Surficial deposits beneath the Leeds Metal property are classified as Island Pond Marine Delta, which were formed under glacial-marine deltaic conditions and are composed of sorted and stratified sand and gravel [69; 69a; 70; 70a]. Depositional characteristics of the Island Pond Marine Delta materials indicate that the deposit was graded to the surface of a late-glacial sea and contains flat top, forset, and topset beds [69; 69a; 70; 70a]. The area of the Island Pond Marine Delta is classified as a significant sand and gravel aquifer with surficial deposits considered to contain moderate-to-good potential ground water yield of up to 50 gallons per minute [69; 69a; 70; 70a; 71; 71a].

Surficial deposits south and southeast of the Leeds Metal property are classified as Marine Nearshore deposits and Presumpscot Formation [7; 69; 69a; 70; 70a]. Marine Nearshore deposits are characterized as containing sand, gravel, and silt deposited by wave and current action in shoreline and shallow nearshore environments [69; 69a; 70; 70a]. The Presumpscot Formation is characterized as containing materials such as silt, clay, and sand deposited on the late-glacial to early postglacial sea floor [69; 69a; 70; 70a].

Thickness of the overburden material northwest of the Leeds Metal property, along Plains Road, is approximately 97 feet; and the thickness of the overburden material to the south and southwest of the property is 148 to 188 feet [72; 72a; 73, pp.1-2].

Site Geology/Aquifer Description:

Limited information is available regarding the Leeds Metal property geology from the four investigations completed on behalf of the property owner between 1999 and 2004 as will be described below. The property is approximately 36 acres, and the majority of the property was used during the past operations at the property [19, p. 1; 24, p. 1]. Subsurface investigations and ground water monitoring well installation on the Leeds Metal property have been conducted to a maximum depth of 47 feet bgs within the overburden aquifer [25, p. 3].

The ground water flow direction in the shallow overburden, deep overburden, and bedrock aquifers is not fully characterized. As discussed below, the ground water in the "shallow overburden" was originally interpreted to flow in a southerly direction and later in a north to northwest direction (as indicated by wells with a maximum depth of 22 ft bgs) by the property owner's consultants [24, p. 3; 25, p. 5]. Interpretation of

the shallow overburden data, by ME DEP personnel, concluded that the ground water flow direction was in a more westward direction than noted in the property owner's report [9; 141, p. 2, Figure 3]. In addition, as noted by the ME DEP, the investigation reports prepared on behalf of the property owner do not discuss the ground water flow direction in the "deeper overburden" (maximum depth of 47 feet bgs) [141, p. 2]. ME DEP further noted that, based on the property owner's data, the monitoring well couplets on the property exhibit a downward vertical gradient [141, p. 2]. In addition, Roux, working on behalf of the property owner, noted that a ground water recharge condition exists on property based on the comparison of ground water elevations in the shallow and deep overburden monitoring wells [21, p. 16]. Furthermore, no monitoring well data exists to indicate flow direction at depths greater than 47 ft bgs [141, p. 2]. According to ME DEP and the ME Geological Survey, the overburden material in the area is estimated to exceed 100 ft in thickness, based on boring logs from a private well in the immediate vicinity of the property boundary [72; 72a; 73, pp. 1-2]. Moreover, as discussed below, the slope of the bedrock surface will influence contaminant flow direction due to tendency of the observed release contaminants to sink through the ground water column and travel downward along impermeable surfaces due to their densities being greater than that of water. MEDEP notes that deeper ground water flow will likely follow the regional surface water drainage pattern towards the Dead River, located to the southwest of the site [163, pp. 4-5; 164; 165, p.3].

On 16 and 17 September 1998, ERM, on behalf of Maine Central Railroad, installed 11 temporary ground water monitoring wells at various locations throughout the Leeds Metal property [24, pp. 1-2, 7, 11]. The intent of the temporary ground water monitoring well points was to provide a preliminary evaluation of on-site ground water quality [24, p. 2]. ERM advanced the temporary monitoring wells to a maximum total depth of 28 feet bgs and gauged the depth to water within each well point [24, p. 2]. Depth to water ranged from 5.5 to 22 feet bgs [24, p. 3]. ERM determined that in general, ground water elevations were highest in the north and northeast areas of the site [24, p. 3]. ERM further stated that ground water flow directions are generally from north to south across the site [24, pp. 3, 12].

On 1 through 3 November 1999, ERM, on behalf of Maine Central Railroad, installed nine overburden ground water monitoring wells at soil boring locations on the Leeds Metal property [25, pp. 2-3, 12]. Four sets of monitoring well clusters were installed whose design involved installing one shallow water table well and one deep overburden well [25, pp. 3, 13]. In addition, ERM installed one shallow water table well on the central portion of the site to provide data for ground water flow determination [25, pp. 3, 13]. Shallow water table wells were installed to a maximum depth of 22 feet bgs [25, p. 3]. Deep overburden wells were installed to a maximum depth of 47 feet bgs [25, p. 3]. Split spoon soil samples were collected at approximate five-foot intervals in each boring of the deep overburden wells [25, pp. 3, 5]. An ERM geologist characterized each soil sample [25, p. 3]. The soil at the site consists primarily of brown-to-gray, medium-to-fine sand with some medium-to-coarse gravel [25, p. 5, Appendix A]. Bedrock was not encountered at any of the four deep overburden wells [25, p. 5]. ERM conducted ground water gauging at the monitoring well locations [25, p. 5]. Ground water elevation ranged from 90.00 feet to 92.44 feet as measured with respect to an arbitrary survey datum [25, p. 5]. In general, ERM found that ground water elevations for shallow overburden wells are highest in the south and southeast areas of the site [25, p. 5]. ERM stated that ground water flow directions are generally from southeast to the northwest [25, p. 5]. In response comments to the ERM Investigation Report, ME DEP personnel, utilizing the ERM data, noted that ground water flow appears to be directed west, towards lot 43 and 44 [9; 141, p. 2, Figure 3]. ME DEP also pointed out that the ERM report did not discuss the ground water flow in the deeper overburden or the vertical gradient measured between the shallow and the deep wells [141, p. 2]. ME DEP noted that all of the wells have downward vertical gradients [141, p. 2]. In addition, ME DEP noted that the flow direction in the deeper aquifer appears to be much different from the shallow ground water flow direction [141, p. 2]. The water levels measured in ground water monitoring wells ERM-3D and ERM-4D have the same elevation of 90.00 (90.01 is within the accuracy of the measurement) [141, p. 2]. ME DEP suggested that the flow in the deep overburden has a more westerly component than the shallow ground water flow direction [141, p. 2]. ME DEP declared that looking at the

hydrogeology setting, the stratigraphy will influence ground water flow and contaminant distribution [141, p. 3]. ME DEP stated that it was not clear if the stratigraphy will dominate both ground water flow and contaminant distribution, but it is likely to play a major role in one or both [141, p. 3]. ME DEP concluded that further off-site investigation and site characterization was needed [141, p. 3].

On 27 through 29 November 2000, ERM and their subcontractor, Pine & Swallow, on behalf of Maine Central Railroad, conducted a shallow ground water investigation at the site to evaluate the extent of VOCs in ground water [28, pp. 1-3]. One temporary monitoring well (SB-1) and 11 semi-permanent wells (SB-2 through SB-12) were installed on the Leeds Metal property [28, p. 2, 10]. Wells were installed based on previous detections of PCE in monitoring wells installed on the site [28, p. 2]. The total depths of the wells ranged from 8 to 24 feet bgs [28, p. 3]. Ground water samples were collected from each of the newly installed wells [28, p. 3]. In addition, ground water samples were collected from existing monitoring wells ERM-2S, ERM-3S/D, and ERM-4S/D [28, pp. 1-3].

In June 2004, on behalf of Guilford Rail, Roux completed a Targeted Environmental Investigation for a portion of the Guilford Rail property [21, p. 1]. Roux noted that the Guilford Rail property is approximately 39 acres and is listed on the ME DEP List of Sites Reported to the Uncontrolled Sites Program as the Leeds Metal site [12; 21, p. 1]. The Targeted Environmental Investigation focused on an approximately one-acre area located along the north-western property boundary of the Leeds Metal property, defined as the portion of land located between the filled area and the tree line [21, p. 1, Figure 2]. On 10 May 2004 Roux advanced three soil borings, RX-1S through RX-3S, along the toe of the concrete waste fill that had been deposited on the property by Rinker Industries and/or previous owners/operators of the property located at 173 State Route 106 [21, p. 7, Figure 2]. Ground water was encountered at less than one to approximately four feet below grade [21, p. 7]. Soil samples were continuously collected for visual characterization [21, p. 7]. Roux Soil Boring and Monitoring Well Construction Logs indicate that soils characterized for borings RX-1S through RX-3S primarily consisted of brown-to-gray, fine-to-coarse sand with some fine gravel [21, Appendix G].

On 11 May 2004, ground water elevation data for the accessible existing wells (shallow and deep well pairs ERM-1 through ERM-4, and ERM-5) located on the Leeds Metal Area and the newly installed ground water monitoring wells RX-1S through RX-3S located on the Site was completed [21, p. 16]. The Leeds Metal Area was defined by Roux as the area of historical automobile storage and metal recycling operations [21, p. 3]. Based on the gauging data combined with the survey results produced by Guilford Rail, it was concluded that the direction of ground water flow beneath the site in the shallow overburden aquifer is in a north to northwesterly direction [21, p. 16]. Roux also noted that a comparison of ground water elevations in the shallow and deep overburden monitoring wells located in the Leeds Metal Area indicates that ground water recharge conditions (i.e., downward vertical flow) exist in this portion of the Guilford Rail property [21, p. 16].

Leeds Aquifer:

Surficial deposits beneath the Leeds Metal property are classified as Island Pond Marine Delta, which were formed under glacial-marine deltaic conditions and are composed of sorted and stratified sand and gravel [69; 69a; 70; 70a]. On-site investigations conducted to date indicate the subsurface geology consists of fine-to-coarse sand, with some fine-to-coarse gravel and inconsistent inclusions of silt and clay on the property [21, Appendix G; 25, pp. 3, 14-26; 32, Narrative Chronology (pp. 4-6), Table 1]. Overburden material thickness in the area around the Leeds Metal property is approximately 97 feet northwest, along Plains Road, and between 148 and 188 feet to the south and southwest of the property [72; 72a; 73, pp. 1-2]. The hydraulic conductivity of fine-to-coarse sand deposits such as this is approximately 10^{-4} centimeters per second (cm/s) [1, p. 51601 (Table 3-6)].

The Leeds Metal property is underlain by meta-sedimentary bedrock of the Sangerville Formation, Patch Mountain Member [7; 8; 63, pp. 1-2; 63a; 64, pp. 1-4; 65, p. 3, 66; 66a; 67, p. 10]. The Patch Mountain Member is characterized by 'thin well-bedded alternations of light to medium greenish-gray calc-silicate granofels, quartzo-feldspathic biotite granofels, and fine-grained impure granoblastic marble' [64, p. 2]. In places, the Patch Mountain Member is composed of massive marble only [64, p. 2]. Bedding is frequently accentuated on weathered surfaces by the differential solution of marble beds [64, p. 2]. Evidence of faulting in the area is almost entirely lacking and the metamorphic rocks, as a rule, are poorly jointed [64, p. 9]. The hydraulic conductivity of low to moderate permeable fracture metamorphic bedrock such as this is from approximately 10^{-4} to 10^{-6} cm/s [1, p. 51601 (Table 3-6)].

Depth to bedrock northwest of the Leeds Metal property, along Plains Road, is 97 feet bgs (Well location DW-02), while the depth to bedrock immediately south of the Leeds Metal property on the adjacent property (Town of Leeds, ME Tax Assessors Office Map No. 4, Lot No. 39) is 148 feet bgs (Well location DW-09) [72; 72a; 73, pp.1-2; 144 p. 1].

Based on GPS data collected by START in November and December 2010, local residential well information regarding the depth to bedrock, and overburden thickness in the area of the Leeds Metal property, the bedrock surface elevation (topography) in the vicinity of the Leeds Metal property, generally slopes from north to south along ME Route 106 [144, p. 1,]. The bedrock surface topography slopes from 267.4 ft above mean sea level (amsl) northwest of the site along Plains Road (Background drinking water well location DW-02, 0.51 miles northwest of Debris Pile D), to 180.9 ft amsl adjacent the southwestern corner of the site along ME Route 106 (Sample DW-09 location, 0.1 miles southwest of Debris Pile D), to 160.9 ft amsl south of the southwestern corner of the site along ME Route 106 (Sample DW-23 location, 0.3 miles southwest of Debris Pile D) [144].

According to ME DEP, the hydrogeologic environment is very complex and the limited sampling completed to date had been inadequate to understand the temporal and spatial complexities and variations [142, p. 1; 165, p. 3]. There is insufficient data to determine the location, size or relative strength of the source areas or vertical and horizontal distribution of VOCs in the subsurface [142, p. 1]. However, no physical barriers to ground water flow, such as mountains or large rivers, have been identified within a 4-mile radius of the Leeds Metal property (See Figure 6) [7; 8; 150; 151; 152]. Subsurface investigations to date have not identified any continuous aquitards in the vicinity of the Leeds Metal property [21; 24; 25; 28]. Furthermore, as noted above, the fine-to-coarse sand overburden deposits and moderately permeable fracture metamorphic bedrock do not demonstrate any significantly lower hydraulic conductivity layers that separate aquifers throughout a 2-mile radius of the site sources [1, Table 3-6]. Therefore the hydrogeology beneath the site is characterized by a single aquifer consisting of the on-site shallow and deep glacial overburden aquifer and the hydraulically connected underlying meta-sedimentary bedrock aquifer. The aquifer interconnection is also demonstrated by a downward migration of hazardous substances (PCE) from the Leeds Metal sources into the on-site shallow and deep overburden aquifers, and then to the bedrock aquifer, which supplies nearby residential wells within 1 mile of the site sources (See Observed Release Data Tables – Tables 41 and 45). Therefore, an aquifer interconnection occurs within 2 miles of the sources at the site and the combined aquifer constitutes the aquifer being evaluated that is used for scoring the site [1, p. 51595 (Section 3.0.1.2.1)]. For the purposes of this evaluation, since the Shallow Overburden, Deep Glacial and underlying Meta-sedimentary Bedrock Aquifers are interconnected the combined aquifer (Leeds Aquifer) constitutes the aquifer being evaluated.

Table 37 - Summary of Aquifers Being Evaluated				
Aquifer No.	**Aquifer Name**	**Is Aquifer Interconnected with Upper Aquifer within 2 miles? (Y/N/NA)**	**Is Aquifer Continuous within 4-mile TDL? (Y/N)**	**Is Aquifer Karst? (Y/N)**
1	Leeds Aquifer	N/A	Y	N

NA = Not Applicable. Y = Yes.
TDL = Target Distance Limit. N = No.

3.1 LIKELIHOOD OF RELEASE

3.1.1 OBSERVED RELEASE

Chemical Analysis – Ground Water

Aquifer Being Evaluated: Leeds Aquifer

As described above the hydrogeology beneath the site is characterized by the on-site shallow and deep glacial overburden aquifer which is hydraulically connected to the underlying meta-sedimentary bedrock aquifer and the aquifer interconnection is demonstrated by a downward migration of hazardous substances. Therefore, an aquifer interconnection occurs within 2 miles of the sources at the site, and the combined aquifer constitutes the aquifer being evaluated that is used for scoring the site [1, p. 51595 (Section 3.0.1.2.1)]. For the purpose of this evaluation, since the Shallow Overburden, Deep Glacial, and underlying Meta-sedimentary Bedrock Aquifers are interconnected the combined aquifer (Leeds Aquifer) constitutes the aquifer being evaluated.

Background Concentrations (Overburden Monitoring Wells):

On 10, 11, and 16 November 2010, as part of the EPA Site Assessment Site Inspection, 12 ground water samples (GW-01 through GW-12), including one field duplicate, were collected from eleven permanent on-site monitoring wells installed throughout the Leeds Metal property (see Figure 4) [11, pp. 123, Attachment D; 15, pp. 8-11, 20-24, 40-41, 43-44, 46; 34, pp. 14-17, 19-20; 77, pp. 1-13]. The 12 ground water samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010, using low-flow sampling techniques [6, pp. 79-80; 15, pp. 8-11, 20-24, 40-41, 43-44, 46; 34, pp. 14-17, 19-20; 77, pp. 1-13]. The ground water samples were collected from nine overburden ground water monitoring wells (ERM-1S, ERM-1D, ERM-2S, ERM-2D, ERM-3S, ERM-3D, ERM-4S, ERM-4D, and ERM-5] installed by ERM on 1 through 3 November 1999, and from two overburden ground water monitoring wells (RX-2S and RX-3S) installed by Roux Associates on 10 May 2004 [11, pp. 116, 122, 124-127; 15, pp. 8-11, 20-24, 40-41, 43-44, 46; 21, p. 7, Figure 2, Appendix G; 25, pp. 3, 12, 14-26; 34, pp. 14-17, 19-23; 77, pp. 1-13]. The 12 ground water samples were collected from the wells as follows: GW-01 from well ERM-5; GW-02 from well ERM-2S; GW-03 from well ERM-2D; GW-04 from well ERM-1S, GW-05 from well ERM-1D; GW-06 from well ERM-4S; GW-07 and field duplicate GW-10 from well ERM-4D; GW-08 from well ERM-3S; GW-09 from well ERM-4D; GW-11 from well RX-3S; and GW-12 from well RX-2S (see Figure 4) [11, pp. 124-127; 15, pp. 8-11, 20-24, 40-41, 43-44, 46; 34, pp. 14-17, 19-23; 77, pp. 1-13]. One ground water sample, GW-12, was collected to determine background concentrations for comparison [11, pp.123; 15, pp. 43, 46; 34, p. 20; 77, p. 13].

The ground water samples were submitted to CLP Laboratories for VOC analyses following SOM01.2 [11, pp. 123; 15, pp. 8-11, 20-24, 40-41, 43-44, 46; 34, pp. 14-17, 19-23, 69-72 (Table 1); 46, p. 1; 47, p. 1; 95; 96]. The analytical data were validated according to EPA New England Regional Functional Guidelines Tier II requirements (for VOC analysis) [46, p. 1; 47, p. 1]. Sample, GW-12, was used to establish background chemical composition/conditions of the matrix materials within the local vicinity and to establish a concentration value that demonstrates that a significant concentration of a hazardous substance is present above background concentrations. For the purposes of this HRS documentation record and as part of the Ground Water Sample section, one hazardous substance, PCE, is used to document a release to the on-site overburden ground water aquifer; however, background concentrations for both PCE and TCE are presented.

Table 38 - Background Ground Water Sample Location Description

Sample ID	Screened Interval (feet amsl)	Date Sampled	Backgrounds
GW-12	318.4 to 308.4	16 Nov. 2010	15, pp. 43, 46; 21, p. 7, Table 3, Appendix G; 34, p. 20; 153, pp. 1-2; 155, p. 1

amsl = above mean sea level. Nov. = November.

Background ground water sample GW-12 was collected from ground water overburden monitoring well RX-2S, which is located on the northwestern portion of the Leeds Metal property, adjacent to the northern property boundary (see Figure 4) [15, pp. 43, 46; 21, p. 7, Figure 2, ; 34, p. 20; 77, p. 13]. The background sample, GW-12, was collected from within the same aquifer, similar geologic zone (overburden vs. bedrock), and during the same time period as the other on-site ground water samples collected for this evaluation [11, pp.123-127; 15, pp. 8-11, 20-24, 40-41, 43-44, 46; 21, Table 3; 34, pp. 14-17, 19-23; 63, pp. 1-2; 63a; 68; 68a]. On 16 November 2010, the total depth of ground water monitoring well RX-2S was 14.7 feet as measured from the top of the poly vinyl chloride (PVC) casing, and the low-flow bladder pump used to purge and collect the sample from the well was placed at 12 feet below the top of the PVC casing [15, pp. 43, 46; 34, p. 20; 77, p. 13]. The sample was collected, utilizing low-flow sampling procedures, after a total of 16.3 liters of ground water were purged from monitoring well RX-2S and water quality parameters stabilized [15, pp. 43, 46; 34, pp. 19-20; 77, p. 13].

Laboratory analytical results of the VOC fraction for background ground water sample GW-12 indicated that a positive spectral match for PCE and TCE were not detected, therefore the concentrations were reported to the sample-adjusted CRQL and qualified as non-detect (0.5 U µg/L) [46, Table 1 (p. 3 of 3); 103, Exhibit C (pp. 1-6); Exhibit D Trace VOA (pp. 31-32); 104, pp. 1-10]. Background concentrations for PCE and TCE are set to equal the sample-adjusted CRQL if the hazardous substances were not detected in the background samples [1, p. 51589 (Table 2-3)]. Therefore, for the purposes of this HRS documentation record, PCE and TCE in ground water samples at concentrations greater than or equal to 0.5 µg/L can be used to document an observed release to the aquifer [1, pp. 51588 (Section 2.2.3), 51589 (Table 2-3)].

Table 39 - Hazardous Substances Associated with Background Ground Water Samples				
Sample ID	**Hazardous Substance**	**Concentration (µg/L)**	**Sample-Adjusted CRQL (µg/L)**	**References**
GW-12	PCE	0.5 U	0.5	15, pp. 43, 46; 34, p. 20; 46, Table 1 (p. 3 of 3); 153 (pp. 1-2)
GW-12	TCE	0.5 U	0.5	15, pp. 43, 46; 34, p. 20; 46, Table 1 (p. 3 of 3); 153 (pp. 1-2)

PCE = Tetrachloroethene. TCE = Trichloroethene.
µg/L = Micrograms per liter. CRQL = Contract Required Quantitation Limit.
U = The compound or element was analyzed for, but not detected. The associated numerical value is the sample-adjusted CRQL [103, p. B-47].

Contaminated Samples (Overburden Monitoring Wells):

On 10, 11, and 16 November 2010, as part of the EPA Site Assessment Site Inspection, 12 ground water samples (GW-01 through GW-12), including one field duplicate, were collected from 11 permanent on-site monitoring wells installed throughout the Leeds Metal property (see Figure 4) [11, pp. 123; 15, pp. 8-11, 20-24, 40-41, 43-44, 46; 34, pp. 40, 69-72 (Table 1); 77, pp. 1-13]. The 12 ground water samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010, using low-flow sampling techniques [6, pp. 79-80; 11, pp. 110-165, Attachment D; 15, pp. 8-26, 39-46; 34, pp. 14-17, 19-23, 69-72 (Table 1); 77, pp. 1-13]. The ground water samples were collected from nine overburden ground water monitoring wells (ERM-1S, ERM-1D, ERM-2S, ERM-2D, ERM-3S, ERM-3D, ERM-4S, ERM-4D, and ERM-5] installed by ERM on 1 through 3 November 1999, and from two overburden ground water monitoring wells (RX-2S and RX-3S) installed by Roux Associates on 10 May 2004 [11, pp. 116, 122, 124-127, Attachment D; 15, pp. 8-26, 39-46; 21, p. 7, Figure 2, Appendix G; 25, p. 3, 12, 14-26; 34, pp. 14-17, 19-23; 77, pp. 1-13]. The 12 ground water samples were collected from the wells as follows: GW-01 from well ERM-5; GW-02 from well ERM-2S; GW-03 from well ERM-2D; GW-04 from well ERM-1S, GW-05 from well ERM-1D; GW-06 from well ERM-4S; GW-07 and field duplicate GW-10 from well ERM-4D; GW-08 from well ERM-3S; GW-09 from well ERM-4D; GW-11 from well RX-3S; and GW-12 from well RX-2S (see Figure 4) [11, pp. 124-127, Attachment D; 15, pp. 8-26, 39-46; 34, pp. 14-17, 19-23, 69-72 (Table 1); 77, pp. 1-13]. Ground water sample GW-12 was collected to determine background concentrations for comparison, while ground water samples GW-01 through GW-11 were collected to determine if a release of hazardous substances to the overburden aquifer had occurred [11, pp. 123; 15, pp. 8-26, 39-46; 34, pp. 14-17, 19-23, 69-72 (Table 1); 77, pp. 1-13].]. As noted above, the background sample was collected from within the same aquifer, similar geologic zone (overburden vs. bedrock), and during the same time period as the other on-site ground water samples collected for this evaluation.

The ground water samples were submitted to CLP Laboratories for VOC analyses following SOM01.2 [11, pp. 123, Attachment D; 15, pp. 8-11, 20-24, 40-41, 43-44, 46; 34, pp. 40, 69-72; 46, p. 1; 47, p. 1; 95; 96]. The analytical data were validated according to EPA New England Regional Functional Guidelines Tier II requirements (for VOC analysis) [46, p. 1; 47, p. 1]. For the purposes of this HRS documentation record, PCE analytical results from four ground water samples (GW-02, GW-06, GW-07, and GW-11) are used to document an observed release to the overburden ground water aquifer.

Table 40 – Ground Water Sample Location Description			
Sample ID	**Screened Interval (feet amsl)**	**Date Sampled**	**References**
GW-02	319.1 to 309.1	10 Nov. 2010	15, p. 11; 25, pp. 12, 19; 34, pp. 15, 41, 69; 155 p. 1
GW-06	312.5 to 302.5	10 Nov. 2010	15, pp. 9-10; 25, pp. 12, 23; 34, pp. 14, 41, 70; 155 p. 1
GW-07	297.5 to 292.5	11 Nov. 2010	15, pp. 21-22; 25, pp. 12, 24-25; 34, pp. 17,41,71; 155 p. 1
GW-11	315.6 to 305.6	16 Nov. 2010	15, pp. 41, 44; 21, p. 7, Figure 3, Table 3, Appendix G; 34, pp. 20, 41, 72; 155 p. 1

amsl = above mean sea level. Nov. = November.

Ground water sample GW-02 was collected from ground water monitoring well ERM-2S, located on the southern portion of the Leeds Metal property, directly south of Debris Pile B (see Figures 2 and 4) [15, p. 11; 25, p. 3, 12, 19; 34, pp. 15, 41, 69 (Table 1); 77, p. 3]. The total depth of ground water monitoring well ERM-2S was 20.8 feet as measured from the top of the casing, and the low-flow bladder pump used to purge and collect the sample from the well was placed at 19.3 feet below the top of the casing [15, p. 11; 34, pp. 15, 69 (Table 1); 77, p. 3]. The sample was collected, utilizing low-flow sampling procedures, after a total of 11.0 liters of water were purged from ground water monitoring well ERM-2S and water quality parameters stabilized [15, p. 11; 34, pp. 15, 69 (Table 1); 77, p. 3].

Ground water sample GW-06 was collected from ground water monitoring well ERM-4S, located on the southern-central portion of the Leeds Metal property, northwest of Debris Pile D (see Figures 2 and 4) [15, pp. 9-10; 25, pp. 12, 23; 34, pp. 14, 70 (Table 1); 77, p. 7]. The total depth of ground water monitoring well ERM-4S was 16.95 feet as measured from the top of the casing, and the low-flow bladder pump used to purge and collect the sample from the well was placed at 13.9 feet below the top of the casing [15, pp. 9-10; 34, pp. 14, 70 (Table 1); 77, p. 7]. The sample was collected, utilizing low-flow sampling procedures, after a total of 10.0 liters of water were purged from ground water monitoring well ERM-4S and water quality parameters stabilized [15, pp. 9-10; 34, pp. 14, 70 (Table 1); 77, p. 7].

Ground water sample GW-07 was collected from ground water monitoring well ERM-4D, located on the southern-central portion of the Leeds Metal property, northwest of Debris Pile D (see Figures 2 and 4) [15, pp. 21-22; 25, pp. 12, 24-25; 34, pp. 17, 41, 71 (Table 1); 77, p. 8]. The total depth of ground water monitoring well ERM-4D was 26.3 feet as measured from the top of the casing, and the low-flow bladder pump used to purge and collect the sample from the well was placed at 24.5 feet below the top of the casing [15, pp. 21-22; 34, pp. 17, 71 (Table 1); 77, p. 8]. The sample was collected, utilizing low-flow sampling protocols, after a total of 30.0 liters of water were purged from ground water monitoring well ERM-4D and water quality parameters stabilized [15, pp. 21-22; 34, pp. 17, 71 (Table 1); 77, p. 8].

Ground water sample GW-11 was collected from ground water monitoring well RX-3S, located on the northern-central portion of the Leeds Metal property, adjacent to the northern property boundary (see Figures 2 and 4) [15, pp. 41, 44; 21, p. 7, Figure 3, Table 3, Appendix G; 34, pp. 20, 41, 72 (Table 1); 77, p. 12]. The total depth of ground water monitoring well RX-3S was 14.7 feet as measured from the top of the casing, and the low-flow bladder pump used to purge and collect the sample from the well was placed at 12 feet below the

top of the casing [15, pp. 41, 44; 34, pp. 20, 72 (Table 1); 77, p. 12]. The sample was collected, utilizing low-flow sampling protocols, after a total of 9.1 liters of water were purged from ground water monitoring well RX-3S and water quality parameters stabilized [15, pp. 41, 44; 34, pp. 20, 72 (Table 1); 77, p. 12].

Of the four ground water samples presented, PCE was detected at a maximum concentration of 19 µg/L in ground water sample GW-06 [15, pp. 9-10; 34, p. 14; 46, Table 1 (p. 2 of 3); 47, Table 1 (pp. 1-2 of 3)]. PCE was detected in each of the four ground water samples as concentrations greater than or equal to the relevant background sample concentrations (GW-12, concentration 0.5 U µg/L) [11, pp. 110-165, Attachment D; 15, pp. 9-11, 21-22, 41, 43-44, 46; 34, pp. 14-15, 17, 20; 46, Table 1 (pp. 2of 3); 47, Table 1 (pp. 1-2 of 3)].

Table 41 - Hazardous Substances Associated with Ground Water Samples

Sample ID	Hazardous Substance	Concentration (µg/L)	Sample-Adjusted CRQL (µg/L)	References
GW-02	PCE	1.2	0.5	15, p. 11; 34, p. 15; 47, Table 1 (p. 1 of 3); 153, pp. 3-4
GW-06	PCE	19	0.5	15, pp. 9-10; 34, p. 14; 47, Table 1 (p. 2 of 3); 153, pp. 5-6
GW-07	PCE	5.7	0.5	15, pp. 21-22; 34, p. 17; 47, Table 1 (p. 2 of 3); 153, pp. 7-8
GW-11	PCE	0.59	0.5	15, pp. 41, 44; 34, p. 20; 46, Table 1 (p. 2 of 3); 153, pp. 9-10

PCE = Tetrachloroethene. CRQL = Contract Required Quantitation Limit.
µg/L = Micrograms per liter.

Note: TCE was detected in two ground water samples (GW-06 and GW-07) at concentrations above CLP laboratory reporting limits but below the sample-adjusted CRQL, and was therefore not evaluated for scoring in this HRS documentation record [47, Table 1 (p. 2 of 3); 103, Exhibit C (pp. 1-6), Exhibit D Trace VOA (pp. 31-32); 104, pp. 1-10]. TCE is a common breakdown product of PCE [49, pp. 189-190; 50, pp. 197, 202-203; 51, Section 1 (pp. 8-12), Table 1.1, Figure 1.4, Section 2 (pp. 1-16), Figure 2.2, Figure 2.3, Figure 2.4]. TCE is a colorless liquid used mainly as a solvent to remove grease from metal parts [147, pp. 1-2]. TCE is not thought to occur naturally in the environment [147, pp. 1-2].

Chemical Analysis – Drinking Water Samples

- Background Concentrations:

On 8 through 11, 16, and 17 November 2010, as part of the Leeds Metal EPA Site Assessment Site Inspection, 31 drinking water samples, including two field duplicates (DW-01 through DW-06, DW-08 through DW-16, DW-18 through DW-31, DW-33, and DW-34) were collected from 29 drinking water supply wells located northwest, west, southwest, south, southeast, and east of the Leeds Metal property (see Figure 5) [11, pp. 133-149; 14, pp. 23-28, 31-39, 44-45; 15, pp. 4-7, 12, 15-17, 19-20; 16, pp. 4-5, 7-10, 14-19, 22-23, 25-26; 34, pp. 8-16, 22-25, 41, 42-45, 73-87 (Table 1); 78, pp. 1-29]. The drinking water samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6, pp. 79-80; 14, pp. 23-28, 31-39, 44-45; 15, pp. 4-7, 12, 15-17, 19-20; 16, pp. 4-5, 7-10, 14-19, 22-23, 25-26; 34, pp. 7-17, 19-26, 73-87 (Table 1); 78, pp. 1-29]. Drinking water samples DW-01, DW-02, and DW-03 were collected

from overburden and bedrock drinking water supply wells located northwest of the Leeds Metal property to establish background concentrations for comparison (see Figure 5) [11, pp. 133-135; 14, p. 26; 16, pp. 7-9; 34, pp. 8, 22, 73-74 (Table 1)]. The background samples were collected from within the same aquifer, at similar well screen elevations, similar geologic formation (overburden or bedrock), and during the same time period as the other drinking water samples collected for this evaluation [14, pp. 23-28, 31-39, 44-45; 15, pp. 4-7, 12, 15-17, 19-20; 16, pp. 4-5, 7-10, 14-19, 22-23, 25-26; 34, pp. 8-16, 22-25, 41, 42-45, 73-87 (Table 1); 154, p. 1]

The drinking water samples were submitted to CLP Laboratories for VOC analysis according to SOM01.2 (trace level for VOC compounds) [14, pp. 23-28, 31-39, 44-45; 15, pp. 4-7, 12, 15-17, 19-20; 16, pp. 4-5, 7-10, 14-19, 22-23, 25-26; 34, pp. 8-16, 22-25, 41, 42-45, 73-87 (Table 1); 45, p. 1; 46, p. 1; 47, p. 1; 94; 95, 96;. The analytical data were validated according to EPA New England Regional Functional Guidelines Tier II requirements for VOC analysis [45, p. 1; 46, p. 1; 47, p. 1]. For the purposes of this HRS documentation record and as part of the Ground water Sample section, two hazardous substances, PCE and TCE, are used to document a release to the Leeds Aquifer. The three background samples were used to establish background chemical composition/conditions of the matrix materials within the local vicinity, and to establish a concentration value that demonstrates that a significant concentration of a hazardous substance is present above naturally occurring concentrations [6, p. 79; 14, p. 26; 16, pp. 7-9; 34, pp. 8, 22, 73-74 (Table 1)].

Table 42 - Background Drinking Water Sample Location Description

Sample ID	Well Depth (feet amsl)	Date Sampled	References
DW-01	271.1	8 Nov. 2010	9; 11, pp. 133-134; 14, p. 26; 34, pp. 8, 73 (Table 1); 78, p. 1; 105, pp. 1-2, Figure 1; 106, pp. 1-2; 107, pp. 1-2; 108; 154 p. 1
DW-02	164.4	16 Nov. 2010	9; 11, pp. 133, 135; 16, pp. 7-8; 34, pp. 22, 73 (Table 1); 73, p. 1, Figure; 78, p. 2; 105, pp. 1-2, Figure 1; 109, pp. 1-2; 110, pp. 1-2; 154 p. 1
DW-03	297.7	16 Nov. 2010	9; 11, pp. 133, 135; 16, pp. 8-9; 34, pp. 22, 74 (Table 1); 78, p. 3; 105, pp. 1-2, Figure 1; 111, pp. 1-2; 112; 154 p. 1

amsl = above mean sea level. Nov. = November.

Drinking water sample DW-01 was collected from a residential property is located in Leeds, ME, depicted on the Town of Leeds, ME Tax Assessor's Map No. 4, Lot No. 55, located 0.511 miles northwest of the Leeds Metal property, Debris Pile D, Source No. 4 (see Figure 5) [9; 11, pp. 133-134; 14, p. 26; 34, pp. 8, 73 (Table 1); 78, p. 1; 105, pp. 1-2, Figure 1; 106, pp. 1-2; 107, pp. 1-2; 108]. The residence is supplied drinking water from an on-site, 87-foot deep drilled overburden private supply well [14, p. 26; 34, pp. 8, 73 (Table 1); 78, p. 1; 105, pp. 1-2, Figure 1; 106, pp. 1-2; 107, pp. 1-2; 108]. START personnel collected the sample from an in-line spigot utilizing a spigot adaptor, after system purging was completed and water quality parameters stabilized [14, p. 26; 34, pp. 8, 73 (Table 1); 78, p. 1]. The sample was collected after water flowed through a holding tank and prior to any filtration system [14, p. 26; 34, pp. 8, 73 (Table 1); 78, p. 1].

Drinking water sample DW-02 was collected from a residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 4 as Lot No. 54, located 0.514 miles northwest of the Leeds Metal property, Debris Pile D, Source No. 4 (see Figure 5) [9; 11, pp. 133, 135; 16, pp. 7-8; 34, pp. 22, 73 (Table 1); 73, p. 1, Figure; 78, p. 2; 105, pp. 1-2, Figure 1; 109, pp. 1-2; 110, pp. 1-2]. The

residence is supplied drinking water from an on-site 200-foot deep drilled bedrock private supply well [16, pp. 7-8; 34, pp. 22, 73 (Table 1); 73, p. 1, Figure; 78, p. 2; 105, pp. 1-2, Figure 1; 109, pp. 1-2; 110, pp. 1-2]. Drilling records for this well, compiled by the state of Maine, indicate an overburden thickness depth of 97 feet bgs [73, p. 1, Figure; 109, pp. 1-2; 110, pp. 1-2]. START personnel collected the sample from the kitchen sink spigot after system purging was completed and water quality parameters stabilized [16, pp. 7-8; 34, pp. 22, 73 (Table 1); 78, p. 2]. The sample was collected after water flowed through an approximately 20-gallon holding tank and the home's piping system [16, pp. 7-8; 34, pp. 22, 73 (Table 1); 78, p. 2]. No filtration systems exist within the house [16, pp. 7-8; 34, pp. 22, 73 (Table 1); 78, p. 2].

Drinking water sample DW-03 was collected from a residential property located in Leeds, ME, depicted on the Town of Leeds, ME Tax Assessor's Map No. 4, Lot No. 48), located 0.478 miles north of the Leeds Metal property, Debris Pile D, Source No. 4 [9; 11, pp. 133, 135; 16, pp. 8-9; 34, pp. 22, 74 (Table 1); 78, p. 3; 105, pp. 1-2, Figure 1; 111, pp. 1-2]. The residence is supplied drinking water from an on-site, 55-foot deep, drilled gravel-pack overburden private supply well [16, pp. 8-9; 34, pp. 22, 74 (Table 1); 78, p. 3; 111, pp. 1-2]. START personnel collected the sample from an outside spigot after system purging was completed and water quality parameters stabilized [16, pp. 8-9; 34, pp. 22, 74 (Table 1); 78, p. 3]. The sample was collected after water flowed through an approximately 30-gallon holding tank and the home's piping system [16, pp. 8-9; 34, pp. 22, 74 (Table 1); 78, p. 3]. According to the homeowner, the filtration system in the household had been bypassed due to cost issues [16, pp. 8-9; 34, pp. 22, 74 (Table 1); 78, p. 3].

Laboratory analytical results of the VOC fraction for background drinking water samples DW-01, DW-02, and DW-03 indicated that a positive spectral match for PCE and TCE was not detected, therefore the concentrations of PCE and TCE were reported to the sample-adjusted CRQL and qualified as non-detect (0.5 U µg/L) [45, Table 1 (p. 1 of 3); 46, Table 1 (p. 1 of 3); 74, pp. 1-2; 103, Exhibit C (pp. 1-6), Exhibit D Trace VOA (pp. 31-32); 104, pp. 1-10]. Background concentrations for PCE and TCE are equal to the sample-adjusted CRQL, if the hazardous substances were not detected in the background samples [1, p. 51589 (Table 2-3)]. For the purposes of this HRS documentation record, PCE and TCE in drinking water samples at concentrations greater than or equal to 0.5 µg/L can be used to document an observed release to the aquifer [1, pp. (Section 2.3), 51589 (Table 2-3)]. For the purposes of this HRS documentation record, the values for drinking water sample DW-02 are presented as background concentrations because they represent the well conditions most similar to the release samples (i.e. well depth, bedrock well, etc.).

Table 43 - Hazardous Substances Associated with Background Drinking Water Samples				
Sample ID	**Hazardous Substance**	**Concentration (µg/L)**	**Sample-Adjusted CRQL (µg/L)**	**References**
DW-02	PCE	0.5 U	0.5	16, pp. 7-8; 34, pp. 22; 46, p.7, Table 1 (p. 1 of 3); 74, pp. 1-2; 153 (pp. 13-14)
DW-02	TCE	0.5 U	0.5	16, pp. 7-8; 34, pp. 22; 46, p. 7, Table 1 (p. 1 of 3); 74, pp. 1-2; 153 (pp. 13-14)

PCE = Tetrachloroethene. TCE = Trichloroethene.
µg/L = Micrograms per Liter. CRQL = Contract Required Quantitation Limit.
U = The compound or element was analyzed for, but not detected. The associated numerical value is the sample-adjusted CRQL [103, p. B-47].

Contaminated Samples:

On 8 through 11, 16, and 17 November 2010, as part of the Leeds Metal EPA Site Assessment Site Inspection, 31 drinking water samples, including two field duplicates (DW-01 through DW-06, DW-08 through DW-16, DW-18 through DW-31, DW-33, and DW-34) were collected from 29 drinking water supply wells located northwest, west, southwest, south, southeast, and east of the Leeds Metal property (see Figure 5) [9; 10; 11, pp. 133-150 ; 14, pp. 23-28, 31-39, 44-45; 15, pp. 4-7, 12, 15-17, 19-20; 16, pp. 4-5, 7-10, 14-19, 22-23, 25-26; 34, pp. 8-16, 22-25, 41, 42-45, 73-87 (Table 1); 78, pp. 1-29; 105, pp. 1-2, Figure 1]. The drinking water samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6, pp. 79-80; 14, pp. 23-28, 31-39, 44-45; 15, pp. 4-7, 12, 15-17, 19-20; 16, pp. 4-5, 7-10, 14-19, 22-23, 25-26; 34, pp. 8-16, 22-25, 41, 42-45, 73-87 (Table 1); 78, pp. 1-29]. Drinking water samples DW-01, DW-02, and DW-03 were collected to establish background concentrations for comparison [9; 11, pp. 133-135; 14, p. 26; 16, pp. 7-9; 34, pp. 8, 22, 73-74 (Table 1)]. As noted above, the background samples were collected from within the same aquifer, at similar well screen elevations, from similar geologic formations, and during the same time period as the other drinking water samples collected for this evaluation.

Drinking water samples DW-04 through DW-06, DW-08 through DW-16, DW-18 through DW-31, DW-33, and DW-34 were collected from supply wells located west, southwest, south, southeast, and east of the Leeds Metal property to determine if a release of hazardous substances to the overburden and bedrock aquifer had occurred (see Figure 5) [9; 10; 14, pp. 23-25, 27-28, 31-39, 44-45; 15, pp. 4-7, 12, 15-17, 19-20; 16, pp. 4-5, 9-10, 14-19, 22-23, 25-26; 34, pp. 8-16, 22-25, 41, 42-45, 73-87 (Table 1); 78, pp. 1-29; 105, pp. 1-2, Figure 1].

The drinking water samples were submitted to CLP Laboratories for VOC analyses [14, pp. 23-28, 31-39, 44-45; 15, pp. 4-7, 12, 15-17, 19-20; 16, pp. 4-5, 7-10, 14-19, 22-23, 25-26; 34, pp. 8-16, 22-25, 41, 42-45, 73-87 (Table 1); 45, p. 1; 46, p. 1; 47, p. 1; 94; 95, 96;. The analytical data were validated according to EPA New England Regional Functional Guidelines Tier II requirements for VOC analysis [45, p. 1; 46, p. 1; 47, p. 1]. For the purposes of this HRS documentation record, PCE and TCE analytical results from seven drinking water samples (DW-12, DW-13, DW-16, DW-18, DW-23, DW-24, and DW-25), collected from residential properties supplied by bedrock drinking water supply wells, are used to document an observed release to the Leeds Aquifer.

Table 44 - Drinking Water Sample Location Description			
Sample ID	**Well Depth (feet amsl)**	**Date**	**References**
DW-12	188.4	17 Nov. 2010	10; 16, pp. 22-23; 34, pp. 25, 78 (Table 1); 78, p. 11; 105, pp. 1-2, Figure 1; 115, pp. 1-2; 116, pp. 1-2, Attachment; 117; 154 p. 1
DW-13	142.3	8 Nov. 2010	10; 14, pp. 23-25; 34, pp. 8, 78 (Table 1); 78, p. 12; 105, pp. 1-2, Figure 1; 118, pp. 1-2; 119; 154 p. 1
DW-16	144.5	8 Nov. 2010	10; 14, pp. 37-38; 34, pp. 11, 80 (Table 1); 78, p. 15; 105, pp. 1-2, Figure 1; 120, pp. 1-2; 121, pp. 1-2; 154 p. 1
DW-18	114.5	10 Nov. 2010	10; 15, pp. 16-17; 34, pp. 15, 80 (Table 1); 73, p. 1, Figure; 78, p. 16; 105, pp. 1-2, Figure 1; 123, pp. 1-2; 124, pp. 1-4; 154 p. 1
DW-23	-149.9	16 Nov. 2010	10; 16, pp. 9-10; 34, pp. 22-23, 83 (Table 1); 73, p. 1, Figure; 78, p. 21; 105, pp. 1-2, Figure 1; 125, pp. 1-2; 126, pp. 1-4; 127; 154 p. 1
DW-24	approx. -39.1 to -64.1	9 Nov. 2010	10; 14, pp. 44-45; 34, pp. 12, 83 (Table 1); 73, p. 1, Figure; 78, p. 22; 105, pp. 1-2, Figure 1; 128, pp. 1-2; 129; 154 p. 1
DW-25	-41.5	8 Nov. 2010	10; 14, pp. 35-36; 34, pp. 10, 84 (Table 1); 78, p. 23; 105, pp. 1-2, Figure 1; 130, pp. 1-2; 131; 132; 154 p. 1

amsl = above mean sea level. Nov. = November.
approx. = Approximately.

Drinking water sample DW-12 was collected from a residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 1, Lot No. 67-1), located 0.149 miles southwest of the Leeds Metal property, Debris Pile D, Source No. 4 (see Figure 5) [10; 16, pp. 22-23; 34, pp. 25, 78 (Table 1); 78, p. 11; 105, pp. 1-2, Figure 1; 115, pp. 1-2; 116, pp. 1-2, Attachment; 117]. The residence is supplied drinking water from an on-site 160-foot deep drilled bedrock private supply well [16, pp. 22-23; 34, pp. 25, 78 (Table 1); 116, pp. 1-2, Attachment; 117]. START personnel collected the sample from a basement spigot after system purging was completed and water quality parameters stabilized [16, pp. 22-23; 34, pp. 25, 78 (Table 1); 78, p. 11]. The sample was collected after water flowed through an approximately 20-gallon holding tank [16, pp. 22-23; 34, pp. 25, 78 (Table 1); 78, p. 11]. The homeowner reported that the residence had a filter system; however, the system was not used [16, pp. 22-23; 34, pp. 25, 78 (Table 1); 78, p. 11].

Drinking water sample DW-13 was collected from a residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 1, Lot No. 67-A), located 0.199 miles southwest of the Leeds Metal property, Debris Pile D, Source No. 4 [10; 14, pp. 23-25; 34, pp. 8, 78 (Table 1); 78, p. 12; 105, pp. 1, Figure 1; 118, pp. 1-2; 119]. The residence is supplied drinking water from an on-site, approximately 187-foot deep drilled bedrock private supply well [14, pp. 23-25; 34, pp. 8, 78 (Table 1); 78, p. 12; 118, pp. 1-2; 119]. START personnel collected the sample from the kitchen sink faucet after system purging was completed and water quality parameters stabilized [14, pp. 23-25; 34, pp. 8, 78 (Table 1); 78, p. 12]. The sample was collected after water flowed through an approximately 30-gallon holding tank and the home's piping system [14, pp. 23-25; 34, pp. 8, 78 (Table 1); 78, p. 12]. A sediment filtration system was

noted by START; however, according to the homeowner, the filtration system was previously bypassed and was no longer in service [14, pp. 23-25; 34, pp. 8, 78 (Table 1); 78, p. 12].

Drinking water sample DW-16 was collected from a residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 1, Lot No. 58-7), located 0.166 miles southwest of the Leeds Metal property, Debris Pile D, Source No. 4 (see Figure 5) [10; 14, pp. 37-38; 34, pp. 11, 80 (Table 1); 78, p. 15; 105, pp. 1, Figure 1; 120, pp. 1-2; 121, pp. 1-2; 122]. The residence is supplied drinking water from an on-site 198-foot deep drilled bedrock private supply well [14, pp. 37-38; 34, pp. 11, 80 (Table 1); 78, p. 15; 120, pp. 1-2; 121, pp. 1-2; 122]. START personnel collected the sample from an inside basement spigot after system purging was completed and water quality parameters stabilized [14, pp. 37-38; 34, pp. 11, 80 (Table 1); 78, p. 15]. The sample was collected after water flowed through a holding tank [14, pp. 37-38; 34, pp. 11, 80 (Table 1); 78, p. 15]. No filtration or water softener system were observed in the house [14, pp. 37-38; 34, pp. 11, 80 (Table 1); 78, p. 15].

Drinking water sample DW-18 was collected from a residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 1, Lot No. 58-5), located 0.232 miles southwest of the Leeds Metal property, Debris Pile D, Source No. 4 (see Figure 5) [10; 15, pp. 16-17; 34, pp. 15, 80 (Table 1); 73, p. 1, Figure; 78, p. 16; 105, pp. 1, Figure 1; 123, pp. 1-2; 124, pp. 1-4]. The residence is supplied drinking water from an on-site 220-foot deep drilled bedrock private supply well [15, pp. 16-17; 34, pp. 15, 80 (Table 1); 73, p. 1, Figure; 124, pp. 1-4]. START personnel collected the sample from the kitchen sink faucet after system purging was completed and water quality parameters stabilized [15, pp. 16-17; 34, pp. 15, 80 (Table 1); 78, p. 16]. The sample was collected after water flowed through an approximately 20-gallon holding tank and the home's piping system, prior to any filtration system [15, pp. 16-17; 34, pp. 15, 80 (Table 1); 78, p. 16].

Drinking water sample DW-23 was collected from a residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 1, Lot No. 63), located 0.317 miles southwest of the Leeds Metal property, Debris Pile D, Source No. 4 (see Figure 5) [10; 16, pp. 9-10; 34, pp. 22-23, 83 (Table 1); 78, p. 21; 105, pp. 1, Figure 1; 125, pp. 1-2; 126, pp. 1-4; 127]. The residence is supplied drinking water from an on-site, 497-foot deep, drilled bedrock private supply well [16, pp. 9-10; 34, pp. 22-23, 83 (Table 1); 73, p. 1, Figure; 126, pp. 1-4;127; 157]. START personnel collected the sample from an inside (utility room) spigot after system purging was completed and water quality parameters stabilized [16, pp. 9-10; 34, pp. 22-23, 83 (Table 1); 78, p. 21]. The sample was collected prior to an approximately 30-gallon holding tank and two sediment filters [16, pp. 9-10; 34, pp. 22-23, 83 (Table 1); 78, p. 21].

Drinking water sample DW-24 was collected from a residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 1, Lot No. 63-2), located 0.336 miles southwest of the Leeds Metal property, Debris Pile D, Source No. 4 (see Figure 5) [10; 14, pp. 44-45; 34, pp. 12, 83 (Table 1); 105, pp. 1, Figure 1; 129]. The residence is supplied drinking water from an on-site, approximately 375- to 400-foot deep, drilled bedrock private supply well [14, pp. 44-45; 34, pp. 12, 83 (Table 1); 73, p. 1, Figure; 129; 157]. START personnel collected the sample from an outdoor spigot after system purging was completed and water quality parameters stabilized [14, pp. 44-45; 34, pp. 12, 83 (Table 1); 78, p. 22]. The sample was collected after water flowed through a 40-gallon holding tank and the home's piping system [14, pp. 44-45; 34, pp. 12, 83 (Table 1); 78, p. 22]. According to the homeowner, the house has a water softener system; however, the system was bypassed for sample collection purposes [14, pp. 44-45; 34, pp. 12, 83 (Table 1); 78, p. 22].

Drinking water sample DW-25 was collected from a residential property is located in Leeds, ME, and is depicted on the Town of Leeds, ME Tax Assessor's Map No. 1, Lot No. 63-1), located 0.353 miles southwest of the Leeds Metal property, Debris Pile D, Source No. 4 see Figure 5) [10; 14, pp. 35-36; 34, pp. 10, 84

(Table 1); 78, p. 23; 105, pp. 1-2, Figure 1; 130, pp. 1-2; 131; 132]. The residence is supplied drinking water from an on-site 355-foot deep drilled bedrock private supply well [14, pp. 35-36; 34, pp. 10, 84 (Table 1); 131; 132]. START personnel collected the sample from a basement spigot after system purging was completed and water quality parameters stabilized [14, pp. 35-36; 34, pp. 10, 84 (Table 1); 78, p. 23]. The sample was collected after water flowed through an approximately 25-gallon holding tank [14, pp. 35-36; 34, pp. 10, 84 (Table 1); 78, p. 23]. The sample was collected prior to a filter system [14, pp. 35-36; 34, pp. 10, 84 (Table 1); 78, p. 23]. According to the homeowner, the drilled well was recently installed due to problems with water yield from the former dug drinking water supply well [131].

Of the seven drinking water samples presented, PCE was detected at a maximum concentration of 3.9 µg/L in drinking water sample DW-12 [16, pp.22-23; 34, pp. 25; 46, Table 1 (p. 1 of 3); 74, pp. 1-2]. PCE was detected in five of the selected drinking water samples (DW-12, DW-13, DW-18, DW-23, and DW-24) at concentrations greater than or equal to the background sample concentration (DW-02, concentration 0.5 U µg/L) [14, pp. 23-25, 44-45; 15, pp. 16-17; 16, pp. 7-10, 22-23; 34, pp. 8, 12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp. 1-2].

Of the seven drinking water samples presented, TCE was detected at a maximum concentration of 18 µg/L in drinking water sample DW-12 [16, pp. 22-23; 34, pp.25; 46, Table 1 (p. 1 of 3); 74, pp. 1-2]. TCE was detected in each of the seven drinking water samples as concentrations greater than or equal to the relevant background sample concentrations (DW-02, TCE concentration of 0.5 U µg/L) [14, pp. 23-25, 35-38, 44-45; 15, pp. 16-17; 16, pp. 7-10, 22-23; 34, pp. 8, 10-12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp. 1-2].

Table 45 - Hazardous Substances Associated with Drinking Water Samples

Sample ID	Hazardous Substance	Concentration (µg/L)	Sample-Adjusted CRQL (µg/L)	References
DW-12	PCE	3.9	0.5	16, pp. 22-23; 34, p. 25; 46, Table 1 (p. 1 of 3)); 74, pp. 1-2; 153, pp. 17-18
	TCE	18	0.5	16, pp. 22-23; 34, p. 25; 46, Table 1 (p. 1 of 3)); 74, pp. 1-2; 153, pp. 17-18
DW-13	PCE	0.91	0.5	14, pp. 23-25; 34, p. 8; 45, Table 1 (p. 1 of 3); 153, pp. 19-20
	TCE	0.96	0.5	14, pp. 23-25; 34, p. 8; 45, Table 1 (p. 1 of 3); 153, pp. 19-20
DW-16	TCE	0.63	0.5	14, pp. 37-38; 34, p. 11; 45, Table 1 (p. 2 of 3); 153, pp. 21-22
DW-18	PCE	1.1	0.5	15, pp. 16-17; 34, p. 15; 47, Table 1 (p. 1 of 3); 153, pp. 23-24
	TCE	0.52	0.5	15, pp. 16-17; 34, p. 15; 47, Table 1 (p. 1 of 3); 153, pp. 23-24

Table 45 - Hazardous Substances Associated with Drinking Water Samples (Concluded)				
Sample ID	**Hazardous Substance**	**Concentration (µg/L)**	**Sample-Adjusted CRQL (µg/L)**	**References**
DW-23	PCE	0.61	0.5	16, pp. 9-10; 34, pp. 22-23; 46, Table 1 (p. 2 of 3); 153, pp. 25-26
	TCE	0.91	0.5	16, pp. 9-10; 34, pp. 22-23; 46, Table 1 (p. 2 of 3); 153, pp. 25-26
DW-24	PCE	0.77	0.5	14, pp. 44-45; 34, p. 12; 45, Table 1 (p. 2 of 3); 153, pp. 27-28
	TCE	1.5	0.5	14, pp. 44-45; 34, p. 12; 45, Table 1 (p. 2 of 3); 153, pp. 27-28
DW-25	TCE	0.65	0.5	14, pp. 35-36; 34, p. 10; 45, Table 1 (p. 2 of 3); 153, pp. 29-32

PCE = Tetrachloroethene.
µg/L = Micrograms per liter.
TCE = Trichloroethene.
CRQL = Contract Required Quantitation Limit.

Note: TCE was also detected in three additional drinking water well samples (DW-09, DW-15, and DW-34) at concentrations above CLP laboratory reporting limits, but below the sample-adjusted CRQL, and these samples were therefore not evaluated for scoring in this HRS documentation record [45, Table 1 (p. 1 of 3); 46, Table 1 (p. 2 of 3); 103, Exhibit C (pp. 1-6), Exhibit D Trace VOA (pp. 31-32); 104, pp. 1-10]. TCE is a common breakdown product of PCE [49, pp. 189-190; 50, pp. 197, 202-203; 51, Section 1 (pp. 8-12), Table 1.1, Figure 1.4, Section 2 (pp. 1-16), Figure 2.2, Figure 2.3, Figure 2.4].

Attribution:

Attribution of PCE and TCE are established based on the following: documentation of the historical operations conducted on site, which included parts cleaning for resale; the common practice of using solvents containing PCE and TCE to remove grease from metal parts; the documentation, via chemical analyses, of PCE in on-site source samples; the documented chemical breakdown process of PCE to TCE; the documentation, via chemical analyses, of PCE in on-site “shallow” and “deep” overburden monitoring wells; and the documentation, via chemical analyses, of PCE and TCE in off-site drinking water samples. In addition, other possible sources of PCE and TCE to ground water were investigated through review of file information and observations made during field activities. These are explained in further detail at the end of this section.

As outlined below, historical records document that from approximately 1969 to 1984, scrap metal recovery processes were conducted on the Leeds Metal property. According to a former Town of Leeds official, cars were transported to the property for “shredding”; however, lead batteries and other auto parts were salvaged and cleaned for resale [26]. Automotive part cleaners, rust removers (penetrating oils), and lubricants commonly contain large amounts of PCE [156]. Many common aerosol and liquid automotive part cleaners contain high percentages of PCE; these include brake cleaners (greater than 90% PCE), carburetor cleaners

(15-20% PCE), non-flammable Penetrating Oils (60-65% PCE), automotive wire drying products (45-55% PCE), and multipurpose lubricants (65-80% PCE) [156]. A former town official also stated that materials such as "gasoline, diesel, transformer oil, brake fluid, oils, battery acid, and antifreeze" were dumped on the ground and that approximately 100 "barrels" were staged along the southern property boundary [26]. This same official noted that the Leeds and Monmouth Fire Departments responded to fires at the property, and that gasoline tanks would ignite and cause oil-saturated soil to burn [26].

According to information compiled by the State of Maine, from approximately 1969 to 1984, scrap metal recovery processes were conducted on the property by various entities [18, pp. 1-2; 19, p. 1, Figure 2]. Prior to 1969, the Leeds Metal property, then known as Libby's Pit, was mined for sand and gravel [18, p. 1]. According to records summarized by a lawyer representing Maine Central Railroad, National Metal Converters, Inc. leased the Leeds Metal property in 1969, to conduct a metal shredding operation at the site [136, pp. 1-2; 137, pp. 1-7]. In addition, in a 1968 internal letter between railroad employees, Saco Steel Co. (believed by the lawyer representing the railroad to be the predecessor of National Metal Converters, Inc.) proposed the use of a machine known as a 'fragmentizer' to demolish junked cars [136, pp. 1-2]. The material would then be separated into ferrous and non-ferrous material, and the non-ferrous material would be discarded as waste suitable to be used as fill material [136, pp. 1-2; 137, pp. 1-7]. A newspaper article published in April 1970 stated that operations at the Leeds Metal property had recently been initiated [136, p. 4]. In February 1976, National Metal Converters, Inc. sought and obtained consent from the railroad to transfer their 10-year lease at the Leeds Metal property to Michael Schiavone & Sons, Inc. [136, p. 2, 4]. Available records indicate that Michael Schiavone & Sons, Inc. operated an automobile shredding plant on the property until 1978 [18, p. 2]. From 1978 to 1980, Lucas Salvage Company operated a scrap metal recovery facility as a tenant of Michael Schiavone & Sons, Inc. [18, p. 2]. In 1980, Leeds Metal acquired the assets of Michael Schiavone & Sons, Inc., and operated a scrap metal recovery operation on the property until 1982 [18, p. 2]. Available file information indicates that the last operations on the Leeds Metal property were conducted by a private individual, who operated a scrap metal recovery facility on the site for a portion of 1984 [18, p. 2]. According to the Town of Leeds Tax Assessor's records, the 36-acre property is currently owned by Maine Central Railroad Guilford Transportation Industries, Inc., which was rebranded under the name of Pan AM Railways in March 2006 [9; 12, p. 1; 13; 18, pp. 1-3; 52].

On 2 March 2000, as part of the investigation of past industrial practices at the Leeds Metal property, ME DEP personnel interviewed the former Assistant Fire Chief of the Town of Leeds, ME [26]. The former Assistant Fire Chief stated that cars were transported to the property via truck for 'shredding' [26]. He also stated that within an on-site cement building, lead batteries and other auto parts were cleaned for resale [26]. The former Assistant Fire Chief added that metal from the shredded cars was salvaged (sent off site via railroad), while upholstery was piled in former gravel excavation pits [26]. He also stated that such materials as 'gasoline, diesel, transformer oil, brake fluid, oils, battery acid, and antifreeze' were dumped on the ground and that approximately 100 'barrels' were staged along the southern property boundary [26]. The former Assistant Fire Chief recalled that the Leeds and Monmouth Fire Departments responded to fires at the property, and that gasoline tanks would ignite and cause oil-saturated soil to burn [26].

On 2 June 1983, ME DEP personnel responded to a complaint of a leaking transformer at the Leeds Metal property (Spill No. P-10-83) [22, pp. 1-3]. ME DEP personnel performed an on-site reconnaissance, noting the presence of five transformers and 27 drums, some of which were leaking [22, p. 3].

Several investigations of the surface and subsurface soils in various areas on the Leeds Metal property have been conducted [11, p. 13; 21, pp. 1, 7-8; 25, pp. 3-5; 32, pp. 16, 40-41 of 480]. On 15 through 18 June 2009, as part of the EPA Removal Program Preliminary Assessment/Site Investigation, START collected a total of 196 surface and subsurface soil samples from locations throughout the Leeds Metal property [32, pp. 24-26, 39, 44-49]. Of the 196 surface and subsurface soil samples collected, 177 samples were screened on site for

VOCs, and 152 samples were screened on site for metals [32, pp. 77, 50-55, 118-136]. In addition, for confirmatory results, 24 of the soil samples were submitted to the EPA OEME laboratory for VOAs in soil (high level method) analysis, and 20 of the soil samples were submitted to the EPA OEME laboratory for metals in soil (medium level) analysis by ICP [32, pp. 27-28, 40-41, 57-60, 233-284, 333-378, 411-453]. VOC screening results indicated the presence of PCE in 30 surface and subsurface soil samples at a maximum concentration of 4,140 µg/Kg [32, pp. 27, 40, 50-52, 118-136]. Laboratory confirmation analysis indicated the presence of 14 VOCs and 17 total metals above laboratory reporting limits, including PCE, arsenic, cadmium, chromium, and lead [32, p. 27-28, 40-41, 57-60, 233-284, 333-378, 411-453].

On- and off-site surface and subsurface soil samples were also collected between 9 and 30 November 2010, as part of the EPA Site Assessment Site Inspection [11, p. 13; 14, pp. 21-48; 15, pp. 2-26, 29-48; 16, pp. 2-40, 46-48; 17, pp. 2-6; 34]. A total of 47 surface soil/source samples, and 29 subsurface soil/source samples were collected to identify source areas on the property, and determine potential impacts [6; 11, pp. 25-41, 79-90; 14, pp. 21-48; 15, pp. 2-26, 29-48; 16, pp. 2-40, 46-48; 17, pp. 2-6; 34]. Analytical results of one surface soil/source sample (SS-07) collected from Debris Pile A indicated a source containing two VOCs, three PCBs, and 13 total metals at concentrations above background [11, pp. 42-43, Attachment A [Table 1 (p. 1 of 7), Table 2 (p. 1 of 7), Table 3 (p. 1 of 7)]; 17, pp. 3-4; 34, p. 30, Table 1; 37, Table 2 (p. 1 of 3); 42, Table 1 (p. of 3)]. Analytical results of seven surface and subsurface soil/source samples (SS-34, SS-35, SS-36, SB-34, SB-35, SB-36, and SB-43) collected from Debris Pile B indicated a source containing 15 VOCs, four PCBs, and 20 total metals at concentrations above background, including TCE at a concentration of 52 J µg/Kg [11, pp. 67-70, 101-107, Attachment A [Table 1 (p. 5 of 7), Table 2 (p. 5 of 7), Table 3 (pp. 5-6 of 7)], Attachment C [Table 1 (pp. 3-4 of 4), Table 2 (pp. 3-4 of 4), Table 3 (pp. 3-4 of 5)]; 16, pp. 33-35; 34, pp. 27-28; 38, Table 2 (pp. 1-2 of 2); 43, Table 1 (pp. 1-2 of 2)]. Analytical results of four surface and subsurface soil/source samples (SS-32, SS-33, SB-32, and SB-33) collected from Debris Pile C indicated a source containing four VOCs, two PCBs, and five total metals at concentrations above background [11, pp. 66, 100-101, Attachment A [Table 1 (p. 5 of 7), Table 2 (p. 5 of 7), Table 3 (p. 5 of 7)], Attachment C [Table 1 (p. 3 of 4), Table 2 (p. 3 of 4), Table 3 (p. 3 of 5)]; 15, p. 48; 16, p. 2; 34, p. 21; 35, Table 2 (pp. 1-2 of 3); 40, Table 1 (p. 1-3 of 3)]. Analytical results of eight surface and subsurface soil/source samples (SS-28, SS-29, SS-30, SS-31, SB-28, SB-29, SB-30, SB-31) collected from Debris Pile D indicated a source containing nine VOCs, four PCBs, and 16 total metals at concentrations above background, including PCE at a maximum concentration of 3,900 µg/Kg [11, pp. 61-66, 95-99, Attachment A [Table 1 (pp. 4-5 of 7), Table 2 (pp. 4-5 of 7), Table 3 (pp. 4-5 of 7)], Attachment C [Table 1 (pp. 2-3 of 4), Table 2 (pp. 2-3 of 4), Table 3 (p. 3 of 5)]; 14, pp. 46-48; 15, pp. 2-3; 34, pp. 12-13; 39, Table 1 (pp. 1-2 of 3), Table 2 (pp. 1-2 of 2); 44, Table 1 (pp. 1-2 of 2)]. Analytical results of surface and subsurface soil/source samples (SS-09, SS-13, SS-17, SS-20 through SS-27, SS-44, SB-09, SB-17, SB-22, SB-27 and SB-44) collected from the Former Operations Area indicated a source containing 10 VOCs, four PCBs, and 23 total metals at concentrations above background, including PCE at a maximum concentration of 10,000 µg/Kg [11, pp. 44, 47, 51, 53-61, 73-74, 91-92, 95, Attachment A [Table 1 (pp. 2-4, 7 of 7), Table 2 (pp. 2-4, 7 of 7), Table 3 (pp. 2-4, 7 of 7)], Attachment C [Table 1 (pp. 1-2 of 4), Table 2 (pp. 1-2 of 4), Table 3 (pp. 1-2 of 5)]; 15, pp. 18-19; 16, pp. 28-31, 38-39; 17, p. 6; 34, pp. 13, 16, 26-28, 31].

TCE and PCE are among the most common chlorinated solvents released to the environment [49, p. 179; 51, p. 1-7].

TCE is a colorless, highly volatile liquid that is miscible with water and a number of organic solvents [50, pp. 1, 184; 147, pp. 1-2]. TCE is mainly used as a solvent to remove grease from metal parts, but is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers [50, p. 1; 147, pp. 1-2; 149, p. 8]. TCE does not occur naturally in the environment [50, p. 191; 147, pp. 1-2]. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical [50, pp. 197-200; 147, pp. 1-2]. TCE has a molecular weight of 131.4 grams per

mole (g/mol) and a density of 1.465 grams per milliliter (g/mL) [50, p. 184; 51 pp. 2-24 (Table 2.5), 6-17 (Table 6.4)149, p. 9]. TCE dissolves a little in water, but can remain in ground water for a long time [147, pp. 1-2].

PCE is a colorless, highly volatile liquid with a limited tendency to mix with or dissolve in water [146, pp. 1-2; 148, pp. 1-3]. PCE is a manufactured chemical that is widely used for metal degreasing and for dry cleaning of fabrics [49, pp. 1, 181]. PCE is also a common compound found in part cleaners, rust removers (penetrating oils), and lubricants. Some common automotive aerosol and liquid part cleaners, rust removers and lubricants contain high percentages of PCE; these include brake cleaners (greater than 90% PCE), carburetor cleaners (15-20% PCE), non-flammable Penetrating Oils (60-65% PCE); automotive wire drying products (45-55% PCE), and multipurpose lubricant (65-80% PCE) [156]. PCE has a high vapor pressure allowing it to easily evaporate into the air [148, pp. 1-3]. PCE has a molecular weight of 165.83 g/mol and a density of 1.6227 g/mL [49, p. 171; 51 pp. 2-24 (Table 2.5), 6-17 (Table 6.4)]. As a result of its low solubility and high density, liquid PCE tends to "sink" through water and can exist in the ground water environment as a separate dense non-aqueous phase liquid (DNAPL) that will collect or pool at or along low points in water containing vessels or conveyances [145, Appendix B (pp. B-1 – B-8); 148, p. 1].

Given the high vapor pressure of PCE, much of it that enters into the environment evaporates into the air [148, pp. 1-3]. In the air, PCE is broken down by sunlight or brought back to the soil and water by rain [148, pp. 1-3]. Small amounts of PCE (roughly 0.012 % by volume) can dissolve in ground water or surface water [148, pp. 1-3]. This PCE will move as a dissolved phase along with the water [148, pp. 1-3]. Releases of larger amounts of PCE can exist as a separate DNAPL [148, pp. 1-3].

Under reducing conditions in soil and/or ground water, naturally occurring microorganisms can break PCE down (through a process known as anaerobic reductive dechlorination) [51, Section 1.4.4 (pp. 1-10 - 1-11, Figure 1.4); 148, pp. 1-3]. Under oxygenated conditions in soil and/or ground water, PCE tends to be environmentally persistent [148, pp. 1-3]. TCE is a common degradation product of PCE through biotic anaerobic reductive dechlorination [51, Section 1.4.4 (pp. 1-10 - 1-11, Figure 1.4)]. Degradation of TCE continues and breaks down TCE to the dichloroethene (DCE) isomers (*cis*-DCE or *trans*-DCE) [51, Section 1.4.4 (pp. 1-10 - 1-11, Figure 1.4)]. Both TCE and PCE can exist as DNAPLs [149, p. 8].

ME DEP staff notes that anaerobic, reduced ground water in Maine bedrock is common, especially under this hydrogeologic setting where deeper ground water is not in contact with the atmosphere [165, p. 2]. The presence of dissolved arsenic, iron, and sulfates in many of the water supply wells drilled into bedrock suggests that the ground water in the bedrock is reduced and anaerobic [165, p. 2]. PCE degradation is a relatively slow and complex process even under reducing conditions [165, p. 2]. This allows the compound to travel greater distances before attenuation can reduce it below levels capable of producing daughter compounds that exceed safe levels for human consumption [165, p. 2].

DNAPLs are denser than water and are relatively immiscible in water, allowing them to remain in a non-aqueous phase [145, Appendix B (pp. B-1 – B-8)]. DNAPLs are difficult to detect in the environment and can act as a source for dissolved contamination in ground water over time [148, pp. 1-3]. While these are defining features of DNAPLs, there are a number of other physical and chemical properties that influence actual migration in the subsurface and their physical/geochemical behavior [145, Appendix B (pp. B-1 – B-8)]. Their behavior is determined by complex interactions between the DNAPL chemicals and the hydrogeological formations through which the DNAPLs move [145, Appendix B (pp. B-1 – B-8)]. DNAPL chemicals are subject to several processes, including downward migration by gravity; absorption and adsorption on soil; volatilization into soil gas; dissolution and dispersion in ground water; preferential solution of components; phase separation or the formation of emulsions; and transformation into other chemicals by microbiological and/or chemical processes (when chemicals are in solution or air) [145,

Appendix B (pp. B-1 – B-8)]. Given relatively equal viscosities, the greater the specific gravity, the greater the tendency of the substance to migrate under the influence of gravity through the subsurface [145, Appendix B (pp. B-1 – B-8)].

Provided there is sufficient mass to drive the movement, the DNAPL will continue to move downward through preferential pathways (i.e., coarser grained materials that provide less capillary resistance) until it meets a zone of low permeability, where it will tend to pool or, if the zone has a dip, will move across the surface to lower areas [145, Appendix B (pp. B-1 – B-8)]. DNAPLs will tend to move vertically downward and collect in low spots or along impermeable barriers [148, pp. 1-3].

In September 1998, ERM, on behalf of Maine Central Railroad, installed 11 temporary ground water monitoring wells at various locations throughout the Leeds Metal property [24, pp. 1-2, 7, 11]. The temporary ground water monitoring wells were installed to a maximum depth of 28 feet bgs [24, p. 2]. The ground water elevation survey performed on the installed wells indicated that the depth to ground water on the property ranged from between 5.5 and 22.0 feet bgs, and that ground water flow beneath the property was generally from north to south [24, pp. 3, 12]. In addition, on 16 and 17 September 1998, 11 ground water samples were collected from the temporary ground water monitoring wells [24, pp. 2-3]. The ground water samples were collected in laboratory prepared containers and shipped to Alpha Analytical Laboratories for VOC analysis [24, p. 3]. Analytical results of the ground water samples indicated the presence of one VOC (PCE) above MDLs, at concentrations of 0.27 mg/L in sample MW-8 and 0.13 mg/L in sample MW-9 [24, pp. 4, 11, 15-48]. These two temporary monitoring wells were located along the southeastern property boundary [24, p. 12].

In November 1999, ERM, on behalf of Maine Central Railroad, installed nine overburden ground water monitoring wells on the Leeds Metal property [25, pp. 2-3, 12]. Eight of the ground water monitoring wells were installed as shallow and deep couplets on the southern portion of the Leeds Metal property [25, pp. 2-3, 12]. One shallow ground water monitoring well (ERM-5) was installed on the central portion of the Leeds Metal property [25, pp. 2-3, 12]. The shallow ground water monitoring wells were installed to a maximum depth of 22 feet bgs in order to intersect the ground water table [25, pp. 2-3, 12, 14-26]. The deep overburden ground water monitoring wells were installed to a maximum depth of 47 feet bgs [25, pp. 2-3, 12, 14-26]. On 18 November 1999, ERM conducted a ground water elevation survey of the newly installed wells, and noted that ground water flow in the shallow overburden was predominately from the southeast to the northwest [25, pp. 3, 5, 13]. On 18 and 19 November 1999, ERM collected 10 ground water samples, including one field duplicate, from the nine wells installed on the property [25, pp. 3-4, 12, 27-28, 43]. The ground water samples were collected using low-flow techniques and submitted to Alpha Analytical Laboratories for VOC analysis by Method 8260 [25, pp. 3-4, 12, 43]. Analytical results of the ground water samples indicated the presence of the two VOCs, 1,1,1-trichloroethane and PCE, above laboratory RLs, at concentrations of 2.6 µg/L and 140 µg/L, respectively [25, pp. 6, 11-12, 44-76].

Based on the ERM data from previous investigations, ME DEP personnel noted that ground water flow appears to be directed west, towards lot 43 and 44 [9; 141, p. 2, Figure 3]. ME DEP also pointed out that the ERM November 1999 report did not discuss the ground water flow in the deeper overburden or the vertical gradient measured between the shallow and the deep wells [141, p. 2]. ME DEP noted that all of the wells have a downward vertical gradients [141, p. 2]. In addition, ME DEP noted that the flow direction in the deeper aquifer appears to be much different from the shallow ground water flow direction [141, p. 2]. The water levels measured in ground water monitoring wells ERM-3D and ERM-4D have the same elevation of 90.00 (90.01 is within the accuracy of the measurement) [141, p. 2]. ME DEP suggested that the flow in the deep overburden has a more westerly component than the shallow ground water flow direction [141, p. 2]. ME DEP concluded that looking at the hydrogeology setting, the stratigraphy will influence ground water flow and contaminant distribution [141, p. 3]. ME DEP stated that it was not clear if the stratigraphy will

dominate both ground water flow and contaminant distribution, but it is likely to play a major role in one or both [141, p. 3].

Due to on-site ground water sampling results from the previous investigations, which indicated the presence of chlorinated solvents in ground water on the Leeds Metal property, ME DEP initiated an inventory of downgradient local drinking water supply wells in anticipation of collecting drinking water samples [135]. Between February 2000 and December 2005, ME DEP personnel collected drinking water samples from residential drinking water supply wells located south and southwest of the Leeds Metal property [135]. The drinking water samples were submitted to the State of Maine Health and Environmental Testing Laboratory for VOC analysis [135]. Analytical results of the ME DEP drinking water samples collected during this time period indicated the presence of several VOCs above MDLs, including cis-1,2- DCE, PCE, and TCE [135].

In November 2000, on behalf of Maine Central Railroad, ERM oversaw a shallow ground water investigation [28, pp. 1-4, 16-25]. As part of the investigation, 12 temporary monitoring well points were installed from 8 to 24 feet bgs, at locations near existing on-site permanent and temporary ground water monitoring wells where PCE had previously been detected in ground water samples [28, pp. 1-4, 10, 16-25]. As part of the ERM investigation, 13 ground water samples were collected from the 12 newly installed temporary ground water monitoring wells, and five samples were collected from previously installed ground water monitoring wells [28, p. 19]. All 18 ground water samples collected were submitted to Pine & Swallow personnel for field analysis of target compounds (1,1-DCE, cis-1,2-DCE, trans-DCE, PCE, TCE, and vinyl chloride) using a gas chromatograph [28, pp. 3-4, 19-20]. Field screening analytical results of the samples collected from the newly installed temporary ground water monitoring wells indicated the presence of PCE in samples collected from four of the wells, at a maximum concentration of 4.3 µg/L [28, pp. 4-6, 10-11, 30]. In addition, field screening results indicated the presence of PCE in three of the ground water samples collected from the previously installed monitoring wells, at a maximum concentration of 46 µg/L [28, p. 4-6, 1030]. ME DEP submitted the five ground water samples collected from the previously installed ground water monitoring wells to the Maine Health and Environmental Testing Laboratory for VOC analysis by Method 8260 [28, pp. 4, 31-47]. Laboratory analytical results of the five ground water samples indicated the presence of PCE and 1,1,1-trichloroethane at maximum concentrations of 120 µg/L and 2.8 µg/L, respectively [28, pp. 4-6, 12-13, 31-47].
In June 2009, as part of an EPA Removal Program Preliminary Assessment/Site Investigation, ME DEP personnel collected 10 ground water samples, including one field duplicate, from the nine on-site ground water monitoring wells installed by ERM in November 1999 [31, pp. 1-15]. The ground water samples were relinquished to START personnel and submitted to the EPA OEME Laboratory for VOAs in water, total recoverable metals in water by ICP, total mercury in water, and total cyanide in water analyses [31, p. 4; 32, pp. 28, 155-157]. Analytical results of the ground water samples collected by ME DEP indicated the presence of one VOC (PCE), at a maximum concentration of 15 µg/L in samples ERM-4S and field duplicate ERM-6S [32, pp. 61, 158-200].

On 17 and 18 June 2009, as part of the EPA Removal Program Preliminary Assessment/Site Investigation, eight temporary well points were installed at locations throughout the Leeds Metal property [32, pp. 26, 39]. Six of the temporary well points (WP-01 through WP-06) were installed in areas west and north of Debris Pile D, while two temporary well points (WP-07 and WP-08) were installed along the southeastern property boundary [32, pp. 26, 39]. A total of 19 ground water samples were collected, using a peristaltic pump, from various depth intervals within the temporary monitoring well points, and submitted to the EPA Mobile Laboratory for VOC field screening [32, pp.26-28, 39, 56, 118-136]. In addition, two ground water samples were collected, using a peristaltic pump, from two ground water monitoring wells previously installed on the property (ERM-4S and ERM-4D), and submitted to the EPA Mobile Laboratory for VOC field screening [32, pp. 26-27, 39, 56, 118-136]. Analytical results of the ground water samples indicated the presence of PCE in all of the samples, at a maximum concentration of 86 µg/L, and the presence of 1,1,1-trichloroethane in one

sample at a concentration of 1.0 µg/L [32, pp. 26-28, 39, 56, 118-136].

On 10, 11, and 16 November 2010, as part of the EPA Site Assessment Site Inspection, 12 ground water samples (GW-01 through GW-12), including one field duplicate, were collected from 11 permanent on-site monitoring wells installed throughout the Leeds Metal property (see Figure 4) [11, pp. 123-128; 15, pp. 8-26, 39-46; 34, pp. 14-17, 19-23; 77, pp. 1-13]. The ground water samples were collected from nine overburden ground water monitoring wells installed by ERM on 1 through 3 November 1999, and from two overburden ground water monitoring wells installed by Roux Associates on 10 May 2004 [11, pp. 123-128; 15, pp. 8-26, 39-46; 21, p. 7, Figure 2, Appendix G; 25, p. 3, 12, 14-26; 34, pp. 14-17, 19-23; 77, pp. 1-13]. Ground water sample GW-12 was collected to determine background concentrations for comparison, while ground water samples GW-01 through GW-11 were collected to determine if a release of hazardous substances to the overburden aquifer had occurred [11, pp. 123-128; 15, pp. 8-26, 39-46; 34, pp. 14-17, 19-23, 69-72 (Table 1); 77, pp. 1-13].

The ground water samples were submitted to CLP Laboratories for VOC analyses [11, pp. 123-128, Attachment D; 15, pp. 8-26, 39-46; 34, pp. 14-17, 19-23, 69-72 (Table 1); 46, p. 1; 47, p. 1; 94; 95; 96]. For the purposes of this HRS documentation record, PCE analytical results from four ground water samples (GW-02, GW-06, GW-07, and GW-11) are used to document an observed release to the overburden ground water aquifer. Background sample GW-12 was utilized to establish background chemical composition/conditions of the matrix materials within the local vicinity, and to establish a local conditions and determine if contamination is attributable to sources and demonstrates that a significant concentration of a hazardous substance is present above background concentrations. Analytical results of the ground water samples indicated the presence of PCE in all of the samples, at a maximum concentration of 19 µg/L in ground water sample GW-06 [15, pp. 9-10; 34, p. 14; 47, Table 1 (p. 2 of 3)]. PCE was detected in each of the four selected ground water samples at concentrations greater than or equal to the relevant background sample concentrations (GW-12, PCE concentration 0.5 U µg/L) [11, pp. 123-133, Attachment D; 15, pp. 9-11, 21-22, 41, 43-44, 46; 34, pp. 14-15, 17, 20; 46, Table 1 (p. 2 of 3); 47, Table 1 (pp. 1-2 of 3)]. In addition, TCE was detected in two ground water samples (GW-06 and GW-07) at concentrations above CLP laboratory reporting limits, but below the sample-adjusted CRQL, and were therefore not evaluated for scoring in this HRS documentation record [47, Table 1 (p. 2 of 3); 103, Exhibit C (pp. 1-6), Exhibit D Trace VOA (pp. 31-32); 104, pp. 1-10]. TCE is a common breakdown product of PCE [49, pp. 189-190; 50, pp. 197, 202-203; 51, Section 1 (pp. 8-12), Table 1.1, Figure 1.4, Section 2 (pp. 1-16), Figure 2.2]

On 8 through 11, 16, and 17 November 2010, as part of the Leeds Metal EPA Site Assessment Site Inspection, 31 drinking water samples, including two field duplicates (DW-01 through DW-06, DW-08 through DW-16, DW-18 through DW-31, DW-33, and DW-34) were collected from 29 drinking water supply wells located northwest, west, southwest, south, southeast, and east of the Leeds Metal property (see Figure 5) [9; 10; 11, pp. 133-149; 14, pp. 21-48; 15, pp. 2-26, 39-48; 16, pp. 2-26; 34, pp. 7-17, 19-26, 73-87 (Table 1); 78, pp. 1-29; 105, pp. 1-2, Figure 1]. The drinking water samples were collected in accordance with the EPA-approved Site-Specific QAPP, dated 26 October 2010 [6, pp. 79-80; 14, pp. 21-48; 15, pp. 2-26, 39-48; 16, pp. 2-26; 34, pp. 7-17, 19-26, 73-87 (Table 1); 78, pp. 1-29]. Drinking water samples DW-01, DW-02, and DW-03 were collected from overburden and bedrock supply wells located northwest of the Leeds Metal property to establish background concentrations for comparison [11, pp. 133-135; 14, p. 26; 16, pp. 7-9; 34, pp. 8, 22, 73-74 (Table 1)]. Drinking water samples DW-04 through DW-06, DW-08 through DW-16, DW-18 through DW-31, DW-33, and DW-34 were collected from supply wells located west, southwest, south, southeast, and east of the Leeds Metal property to determine if a release of hazardous substances to the overburden and bedrock aquifer had occurred [9; 10; 11, pp. 133-149; 14, pp. 21-48; 15, pp. 2-26, 39-48; 16, pp. 2-26; 34, pp. 7-17, 19-26, 73-87 (Table 1); 78, pp. 1-29; 105, pp. 1-2, Figure 1].

The drinking water samples were submitted to CLP Laboratories for VOC analyses [14, pp. 21-48; 15, pp. 2-

26, 39-48; 16, pp. 2-26; 34, pp. 7-17, 19-26, 73-87 (Table 1); 45, p. 1; 46, p. 1; 47, p. 1; 94; 95, 96]. For the purposes of this HRS documentation record, PCE and TCE results from seven drinking water samples (DW-12, DW-13, DW-16, DW-18, DW-23, DW-24, and DW-25), collected from residences with bedrock drinking water supply wells, are used to document an observed release to the aquifer. Of the seven drinking water samples presented, PCE was detected at a maximum concentration of 3.9 µg/L in drinking water sample DW-12 (see Table 45 of this HRS documentation record) [16, pp. 22-23; 34, pp. 25; 46, Table 1 (p. 1 of 3); 74, pp. 1-2]. PCE was detected in five (DW-12, DW-13, DW-18, DW-23, and DW-24) of the seven selected drinking water samples at concentrations greater than or equal to the background sample concentration (DW-02, PCE concentration of 0.5 U µg/L) [14, pp. 23-25, 44-45; 15, pp. 16-17; 16, pp. 7-10, 22-23; 34, pp. 8, 12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp.1-2]. Of the seven drinking water samples presented, TCE was detected at a maximum concentration of 18 µg/L in drinking water sample DW-12 [16, pp. 22-23; 34, p. 25; 46, Table 1 (p. 1 of 3); 74, pp. 1-2]. TCE was detected in each of the seven selected ground water samples, at concentrations greater than or equal to the relevant background sample concentration (DW-02, TCE concentration of 0.5 U µg/L) [14, pp. 23-25, 32-33, 35-38, 44-45; 15, pp. 16-17; 16, pp. 7-10, 22-23; 34, pp. 8, 10-12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp. 1-2].

A review of available information was conducted to identify other potential sources of PCE and TCE contamination in the area of the Leeds Metal property. As part of the review effort, a search of the Hazardous & Oil Spill System for Maine was conducted. This database allows spills to be searched and identified by the following attributes: spill number, reported date range, location, tank type, and/or keywords. This service allows users to retrieve a report once the data relative to it have been approved by MEDEP for public viewing. As part of the potential source search, the database was queried for the following spill criteria: Reported Date Range equal to 1 January 1961 (the earliest possible search date within the system) to 30 November 2010 (the last day of sampling conducted as part of the EPA SI); Municipality equal to Town of "Leeds"; and Keywords equal to "Hazardous" [161, pp. 1-5]. The database search identified 64 spill records based on these criteria [161, pp. 1-5]. The majority (52 records) were listed as "hazardous material incidents", while 12 were listed as "non-oil, non-hazardous incidents" [161, pp. 1-5]. A review of the online documentation of the 52 hazardous material incident spills identified one spill in which PCE or TCE was identified: Spill Number A-708-1998 [161, pp. 1-7]. The Spill Report for Spill Number A-708-1998 summarized that "a leaking gasket on a drum caused a minor perchloroethylene spill inside a truck. It was picked up using sorbents" [161, p. 7]. The documentation further noted that 0.10 gallons of PCE were spilled and recovered at the Safety-Kleen facility located along Route 202, Leeds, Maine, at the corner of Goldrup Road (see Figure 1) [161, p. 7]. The Safety-Kleen facility is located approximately 1.1 miles southwest of the Leeds Metal site [7]. The other hazardous material incident spills identified by the database query either were not located with 4 radial miles of the Leeds Metal site, or were not identified as spills containing PCE or TCE contamination [158; 161, pp. 1-5].

As part of the review effort, Weston START personnel also queried the Maine Hazardous & Oil Spill System database by the following spill criteria: Reported Date Range equal to 1 January 1961 to 30 November 2010; Municipality equal to Town of "Monmouth"; and Keywords equal to "Hazardous" [161, pp. 8-10]. The database search identified 27 records based on these criteria [161, pp. 8-10]. Only four of the spills were listed as "hazardous material incidents", while the majority of the spills (23 records) were listed as "non-oil, non-hazardous incidents" [161, pp. 8-10]. A review of the online documentation of the four hazardous material incident spills identified no hazardous material incidents involving PCE or TCE [161, pp. 8-10].

In addition, a former Concrete Manufacturing Facility was observed during field activities along Route 106, which was comprised of a large warehouse and garage buildings [14, pp. 12-13; 158]. Database reviews did not identify any PCE and/or TCE releases at the former Concrete Manufacturing Facility [158; 159; 160; 161].

In the effort to identify other potential sources of PCE and TCE contamination, reviews of the EPA RCRA and CERCLIS databases were conducted. These database reviews identified three RCRA and one CERCLIS (Leeds Metal) sites in Leeds, Maine, and zero RCRA or CERCLIS sites in Monmouth, Maine [159; 160]. One of the three RCRA sites identified in Leeds, Maine was identified as containing known PCE and TCE contamination: the Safety-Kleen Systems Inc. (Safety-Kleen) facility (EPA Facility ID Number MED980667810), located on a 5.8-acre lot identified on the Town of Leeds Tax Assessors Map No. 1 as Lot 47-1, along Route 202 [corner of Goldrup Road (also known as Sumner Road)] [10; 159; 162; 175, p. 9]. The other RCRA sites identified were two gravel pits located to the north of the Leeds Metal property, which were not identified as containing PCE or TCE contamination [159].

Safety-Kleen operated a facility in Leeds, Maine beginning on 15 October 1982 [175, p.1]. From October 1982 until operations ceased in June 2008, Safety-Kleen operated the Leeds facility for the distribution and recycling of cleaning and degreasing solvents and paint-related wastes, most of which are identified as hazardous wastes under Chapter 850 of the ME DEP Rules [175, p. 3; 174, p 1-1]. Safety-Kleen distributed unused or recycled solvents to approximately 2,000 businesses in Maine for use, then collected and transported the resulting waste to its facility in Leeds for storage, prior to shipment to the appropriate recycling centers (located throughout the United States) for treatment and recovery [175, pp. 3, 9-10]. The Leeds Safety-Kleen facility consisted of five distinct activity and storage areas: the Warehouse Area, the Return and Fill Area, the Tank Storage Area, the Flammable Storage Shelter, and the Containerized Transfer Waste Storage Area [175, pp. 4, 9-10]. The Warehouse Area (Area A) contained offices, storage areas for new products, and storage areas for solid dry-cleaning wastes, and could store a maximum volume of 1,584 gallons of waste [175, pp. 4, 10]. The Return and Fill Area (Area B) building permitted the transfer of waste part washers or mineral spirits (*i.e.* petroleum naphtha) from containers to metal dumpsters, and pumped the material via piping to the Tank Storage Area (Area C) [175, pp. 4, 9-11]. The Tank Storage Area (Area C), comprised two above-ground 12,000-gallon capacity tanks (which included a stainless steel containment liner): one for waste mineral spirits, and the other for recycled mineral spirits that had been reclaimed at one of Safety-Kleen's recycling facilities and returned to the Leeds facility [175, pp. 4, 9-11]. The Flammable Storage Shelter (Area D) was a storage area (with a secondary containment system) for various waste paint materials, spent immersion cleaners, chlorinated solvents, additional dry-cleaning waste, universal wastes, and sediment or sludge for the waste mineral spirit dumpsters [175, pp. 4, 9-10, 12-13]. The Containerized Transfer Waste Storage Area (Area E) building was used for waste streams not generated or recycled by Safety-Kleen in their solvent recycling system, including wastes designated as hazardous and typically assigned "D" waste codes due to toxicity characteristics [175, pp. 4, 12].

On 31 July 1986, Safety-Kleen submitted an application to MEDEP for a hazardous waste storage facility permit for the Safety-Kleen Leeds Service Center [167, p.1]. Because of the facility's proximity to private drinking water wells, Safety-Kleen was required to perform a hydrogeologic assessment at the facility to refute the rebuttable presumption contained in MEDEP regulations that the facility will pose a serious threat to public health and the environment [167, p.1].

Wang Engineering, Inc. (WEI) and Groundwater Technology, Inc. conducted hydrogeologic assessments and an Aquifer Investigation of the facility on behalf of Safety-Kleen [166, p 1; 167, p 1; 169, p. 1]. WEI completed a Comprehensive Hydrogeologic Study in April 1989 [197; 169, p 1; 175, p. 30]. Groundwater Technology, Inc. completed an Aquifer Investigation for Safety-Kleen in March 1990 [169, coverpage; 175, p. 30]. The Aquifer Investigation included the installation of six additional ground water monitoring wells, including five off-site wells and one on-site well [169, p. 5; 175, p. 30].

The WEI and Groundwater Technology, Inc. investigations determined that approximately 75-80 ft of overburden material overlies bedrock at the facility [167, p.16; 169, p. 25]. The overburden material consists

primarily of fluvial and lacustrine sand and silt deposits overlying marine silt and clay of the Presumpscot Formation and a lower sand and gravel stratum, underlain by metamorphosed bedrock [167, pp.14-16; 169, p.25]. Groundwater Technology, Inc. demonstrated that the facility does not overlie the mapped sand and gravel aquifer [169, p. 9].

A perched ground water surface, located at an approximate depth of 6 feet, was identified in the sand lens beneath the facility [169, p. 25]. The perched ground water surface is a result of inhibited vertical ground water flow through the marine silt and clay [169, p. 25]. Based on topography, and on ground water elevation observations in monitoring wells between 1987 and 1989, the on-site shallow ground water radiates from the facility and the predominant flow direction is to the south [169, p. 25]. Generally, the regional topographic slope to the south causes the shallow ground water to flow southerly from the facility [169, pp. 25-26]. The shallow ground water flow is occasionally interrupted by surfical depressions, which are ground water discharge zones during wet seasons [169, p. 26]. Therefore, some of the shallow ground water flow is discharged to the surface relatively close to the facility, and does not continue to the south [169, p. 26]. Additional variations in shallow flow direction are apparent to the northwest, west and east [169, p. 26]. These variations are the result of the seasonal influences on recharge and the physical characteristics of the site [169, p. 26].

The hydrogeological data revealed there is a vertical downward gradient between the upper aquifer and the lower aquifer [167, p. 16]. However, the estimated flow velocity through the marine clay aquitard ranges from 0.001 to 1.0 feet per year [167, p. 16]. Deeper ground water flow direction beneath the marine deposits is expected to be to the southeast towards the Dead River, generally following the regional topographic slope of the watershed [169, p. 26]. The attitude of the bedrock surface is also expected to influence the direction of the deep ground water flow [169, pp. 26-27].

Both PCE and TCE were detected at the Safety-Kleen facility in on-site soils [162 pp. 2-3; 168, pp 8-9; 169, p. 4; 167, pp.11-12, Appendix C-2]. Since 1987, VOCs, including PCE, have been detected in several on-site wells [169, pp. 17-20; 167, pp 12-14, Appendix D; 170 Figure 2, Table 2 (pp.1-96); 171, Table 2 (pp.1-12); 173, Table 4 (pp. 1-27)]. Trace levels of VOCs were detected in limited on-site upper aquifer monitoring wells [167, pp.16-17, Appendix D]. WEI noted that PCE was detected in 1987 at a concentration of 0.030 ppm in on-site monitoring well MW-4U and TCE was detected in 1989 at a concentration of 0.003 ppm in on-site monitoring well MW-8L [167, pp.16-17 , Exhibit 10, Appendix C-2].

As part of the hydrogeologic investigations, eight domestic drinking water supply wells within 0.25 miles of the facility were sampled and analyzed in May 1989 by representatives of ME DEP and Safety-Kleen [162 p. 2; 169, p 3, Figure 3]. Two of the wells sampled were bedrock wells, and four of the wells sampled were located in surfical deposits [169, p 3]. Information on the other two wells was not available [169, p 3]. The eight domestic drinking water supply wells that were sampled are located to the east, north, and west of the facility [169, p 3, Figure 3]. The samples were analyzed for VOCs by Maine Public Health Laboratories, and the analytical results indicated that no VOCs were detected above the sample detection limits [162 p. 2; 169, p 3].

From early 1990, until December 2010, regular ground water sampling has occurred at and around the Safety-Kleen facility [170, Table 2 (pp. 15-16); 171, Table 2 (p. 7); 173, Table 4 (pp. 1-27)]. In December 2006, Barton & Loguidice (B&L), on behalf of Safety-Kleen, advanced four borings at locations hydraulically downgradient (southeast) of the Leeds Safety-Kleen facility, across Route 202 [172, p.1]. Eight ground water samples, as well as one blind duplicate sample, were collected from four wells and analyzed for VOCs by EPA Method 8260 [172, pp. 2, 4]. Sample results indicated the presence of PCE in ground water samples from SB-25 [172, p. 4]. PCE was detected in ground water sample from SB-25 (screened depth of 15-18 ft), at a concentration of 0.003 ppm [172, p. 4, Attachment A (Figure 1), Attachment A (Table 1)]. Review of the

available ground water monitoring data indicates that PCE was detected sporadically in both on- and off-site wells associated with the facility, at a maximum concentration of 0.056 mg/L in ground water monitoring well MW-9D (on 8/10/2004) located southeast of the facility [169, p. 18 (Table II); 170 Figure 2, Table 2 (pp.1-96); 171, Table 2 (pp.1-12); 173, Table 4 (pp. 1-27)]. In addition, TCE was detected sporadically in both on- and off-site wells, at a maximum concentration of 0.009 mg/L in ground water monitoring well MW-10M (on 8/23/2005 and 4/23/2008) located southwest of the facility [169, p. 18 (Table II); 170, Figure 1, Table 1; 171, Table 2; 173, Table 4]. Based on the above information, a release of PCE has been documented at the Safety-Kleen facility; however, the recent hydrogeologic investigations have shown that the resulting impacts are to ground water to the south-southeast of the facility, and do not extend in the direction of the PCE- and TCE-contaminated drinking water wells along Route 106 investigated as part of the Leeds Metal SI.

During field activities conducted in 2010 in the area of the Leeds Metal site, small-scale automobile and small engine repair operations were observed at several of the residential properties near the Leeds Metal property [158]. These operations included, but were not limited to, the following: small engine repairs conducted at the residence depicted on the Town of Leeds, ME Tax Assessor's Office Map No. 4 as Lot No. 48 (location of drinking water sample DW-03); automobile repairs conducted at residences depicted on the Town of Leeds, ME Tax Assessor's Office Map No. 1 as Lot No. 66 (location of drinking water sample DW-14 and field duplicate DW-33), Lot No. 59-2 (location of drinking water sample DW-29), and Lot No. 59 (location of DW-30); and automobile repairs conducted at the residence depicted on the Town of Leeds, ME Tax Assessor's Office Map No. 4 as Lot No. 49 [9; 10; 158]. Based on these observations, automobile parts cleaners potentially containing PCE or TCE may be used during operations on these residential properties, resulting in a potential point source for a release of these contaminants to the environment [156; 158]. However, due to the limited scale of the operations conducted on the residential properties, compared to the relatively significantly larger scale of the former recycling operation at the Leeds Metal property, it is presumably unlikely that these potential residential point sources could contribute a significant volume of PCE and/or TCE to the environment [158]. In addition, as noted above, PCE has been documented within the source areas on the Leeds Metal site and within on-site ground water wells; therefore, at least partial attribution has been demonstrated (see Source Section and Table 41 of this HRS Documentation Record).

Hazardous Substances Released

Tetrachloroethene/Tetrachloroethylene/Perchloroethylene (PCE)
Trichloroethene/Trichloroethylene (TCE)

Ground Water Observed Release Factor Value: 550

3.2 WASTE CHARACTERISTICS

3.2.1 TOXICITY/MOBILITY

The Toxicity Factor Value and the Mobility Factor Value are assigned to the hazardous substances associated with the sources and releases at the site, and are based on the values presented in the Superfund Chemical Data Matrix (SCDM) [2, pp. BI-10, BII-11; 3, pp. BI-1, BII-1].

Hazardous Substance	Source No. (and/or Observed Release)	Toxicity Factor Value	Mobility Factor Value*	Does Hazardous Substance Meet Observed Release by Chemical Analysis? (Y/N)	Toxicity/ Mobility (Ref. 1, Table 3-9)	References
PCE	4,5	100	1	Y	100	2, pp. BI-10
TCE	Degradation Product of PCE	10,000	1	Y	10,000	3, pp. BI-1
Aroclor-1254	1, 2, 3, 4, 5	10,000	0.0001	N	1	2, pp. BI-10
Aroclor-1260	1, 2, 3, 4, 5	10,000	0.0001	N	1	2, pp. BI-10
Arsenic	1, 4	10,000	0.01	N	100	2, pp. BI-1
Chromium	1, 2, 4, 5	10,000	0.01	N	100	2, pp. BI-3
Lead	1, 2, 3, 4, 5	10,000	0.01	N	100	2, pp. BI-8

*Per the HRS, any hazardous substance that meets the criteria for an observed release by chemical analysis to one or more aquifers underlying the sources at the site, regardless of the aquifer being evaluated, assign a mobility factor value of 1 (Ref. 1, Section 3.2.1.2).

The observed release substance, TCE, is assigned a Toxicity Factor Value of 10,000 and a Mobility Factor Value of 1.0 [1, p. 51601 (Sections 3.2.1.1 and 3.2.1.2); 3, pp. BI-1. From HRS Table 3-9, a Toxicity Factor Value of 10,000 and Mobility Factor Value of 1.0 for TCE are assigned a Toxicity/Mobility Factor Value of 10,000 [1, 51602 (Table 3-9)].

Toxicity/Mobility Factor Value (Ref. 1, Table 3-9): 10,000

3.2.2 HAZARDOUS WASTE QUANTITY

Source No.	Source Type	Source Hazardous Waste Quantity
1	Pile	2,565.2
2	Pile	8,226.4
3	Pile	690.8
4	Pile	4,512.0
5	Contaminated Soil	5.6

Sum of Values: 16,000.0

Based on HRS Section 2.4.2.2, if the Hazardous Constituent Quantity is not adequately determined for one or more sources, and if any target for the ground water pathway is subject to Level I or Level II concentrations, a factor value is assigned from Table 2-6 or a value of 100, whichever is greater, as the Hazardous Waste Quantity Factor Value for that pathway [1, pp. 51591 (Table 2-6), 51592 (Section 2.4.2.2)].

Hazardous Waste Quantity Factor Value (Ref. 1, Table 2-6): 10,000

3.2.3 WASTE CHARACTERISTICS FACTOR CATEGORY VALUE

The Toxicity Factor Value (10,000) and the Mobility Factor Value (1.0) for TCE are multiplied in order to determine the Toxicity/Mobility Factor Value (10,000) [1, pp. 51590 (Section 2.4.2), 51602 (Section 3.2.1.3, Table 3-9)]. The Toxicity/Mobility Factor Value for the aquifer (10,000) is multiplied by the Hazardous Waste Quantity Factor Value for the aquifer (10,000) in order to determine the Waste Characteristics Product, subject to a maximum value of 1×10^8 [1, pp. 51592 (Section 2.4.3.1), 51602 (Section 3.2.3)]. $10{,}000 \times 10{,}000 = 1 \times 10^8$.

Toxicity/Mobility Factor Value: 10,000
Hazardous Waste Quantity Factor Value: 10,000

Toxicity/Mobility Factor Value (10,000) × Hazardous Waste Quantity Factor Value (10,000): 1×10^8

From HRS Table 2-7, the Waste Characteristics Product (1×10^8) is assigned a Waste Characteristics Factor Category Value of 100 [1, pp. 51592 (Section 2.4.3.1), 51602 (Section 3.2.3)].

Waste Characteristics Factor Category Value (Ref. 1, Table 2-7): 100

3.3 TARGETS

Level I Concentrations

Of the seven drinking water samples presented, PCE was detected at a maximum concentration of 3.9 µg/L in drinking water sample DW-12 [16, pp. 22-23; 34, pp. 25; 46, Table 1 (p. 1 of 3); 74, pp. 1-2]. PCE was detected in five (DW-12, DW-13, DW-18, DW-23, and DW-24) of the seven selected drinking water samples at concentrations greater than or equal to the background sample concentration (DW-02, PCE concentration of 0.5 U µg/L) [14, pp. 23-25, 44-45; 15, pp. 16-17; 16, pp. 7-10, 22-23; 34, pp. 8, 12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp. 1-2]. PCE was detected at a

concentration above the health-based benchmarks for hazardous substances in drinking water (screening concentration for cancer corresponding to that concentration that corresponds to the 10^{-6} individual cancer risk for oral exposures) in one drinking water sample, DW-12 [1, pp. 51593 (Section 2.5.1 and Section 2.5.2), 51603 (Table 3-10); 2, BII-11; 16, pp.22-23; 34, p. 25; 46, Table 1 (p. 1 of 3); 74, pp. 1-2].

Of the seven drinking water samples presented, TCE was detected at a maximum concentration of 18 µg/L in drinking water sample DW-12 [16, pp. 22-23; 34, pp. 25; 46, Table 1 (p. 1 of 3); 74, pp. 1-2]. TCE was detected in each of the seven selected ground water samples, at concentrations greater than or equal to the relevant background sample concentration (DW-02, TCE concentration of 0.5 U µg/L) [14, pp. 23-25, 35-38, 44-45; 15, pp. 16-17; 16, pp. 7-10, 22-23; 34, pp. 8, 10-12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp. 1-2]. TCE was detected at a concentration above the health-based benchmarks for hazardous substances in drinking water (screening concentration for cancer corresponding to that concentration that corresponds to the 10^{-6} individual cancer risk for oral exposures) in seven drinking water samples (DW-12, DW-13, DW-16, DW-18, DW-23, DW-24, and DW-25) [1, pp. 51593 (Section 2.5.1 and Section 2.5.2), 51603 (Table 3-10); 3, BII-1; 14, pp. 23-25, 35-38, 44-45; 15, pp. 16-17; 16, pp. 9-10, 22-23; 34, pp. 8, 10-12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp. 1-2]. In addition, TCE was detected in two drinking water samples (DW-09 and DW-15) at concentrations at or greater than the cancer risk comparison concentration but below the sample-adjusted CRQL [3, p. BII-1; 45, Table 1 (p. 1 of 3); 46, Table 1 (p. 1 of 3); 74, pp. 1-2; 103, Exhibit C (pp. 1-6), Exhibit D Trace VOA (pp. 31-32); 104, pp. 1-10].

Sample ID	Hazardous Substance	Hazardous Substance Concentration (µg/L)	Benchmark Concentration (µg/L)	Benchmark	References for Benchmark
DW-12	PCE	3.9	1.6	Cancer Risk	2, p. BII-11
DW-12	TCE	18	0.21	Cancer Risk	3, p. BII-1
DW-13	TCE	0.96	0.21	Cancer Risk	3, p. BII-1
DW-16	TCE	0.63	0.21	Cancer Risk	3, p. BII-1
DW-18	TCE	0.52	0.21	Cancer Risk	3, p. BII-1
DW-23	TCE	0.91	0.21	Cancer Risk	3, p. BII-1
DW-24	TCE	1.5	0.21	Cancer Risk	3, p. BII-1
DW-25	TCE	0.65	0.21	Cancer Risk	3, p. BII-1

PCE = Tetrachloroethene. TCE = Trichloroethene.
µg/L = Micrograms per Liter.

3.3.1 NEAREST WELL

Based on TCE and PCE analytical results of drinking water samples, a release to the supply aquifer has been documented, and Level I concentrations confirmed [1, pp. 51593 (Section 2.5.1 and Section 2.5.2), 51603 (Table 3-10); 2, p. BII-11; 3, p. BII-1; 14, pp. 23-25, 35-38, 44-45; 15, pp. 16-17; 16, pp. 9-10, 22-23; 34, pp. 8, 10-12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp. 1-2]. As more than one drinking water supply well is subject to Level I concentrations, a Nearest Well Factor

Value of 50 is assigned [1, pp. 51602-51603 (Section 3.3.1)]. The closest drinking water supply well containing Level I concentrations of the target compounds is located 0.149 miles southwest of Source No. 4 [105, pp. 1-2, Figure 1].

Well ID: DW-12
Level of Contamination (I, II, or potential): I
If potential contamination, distance from source in miles:

Nearest Well Factor Value (Ref. 1, Table 3-11): 50

3.3.2 POPULATION

3.3.2.1 Level of Contamination

3.3.2.2 Level I Concentrations

Level I Population Targets

Based on PCE and TCE analytical results of drinking water samples, a release to seven drinking water supply wells has been documented, and Level I concentrations confirmed [1, pp. 51593 (Section 2.5.1 and Section 2.5.2), 51603 (Table 3-10); 2, p. BII-11; 3, p. BII-1; 14, pp. 23-25, 35-38, 44-45; 15, pp. 16-17; 16, pp. 9-10, 22-23; 34, pp. 8, 10-12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp. 1-2]. Information provided by the residents served by the drinking water supply wells indicate that a total of 17 Level I Actual Contamination Targets have been documented [1, pp. 51593 (Section 2.5.1 and Section 2.5.2), 51603 (Table 3-10); 2, p. BII-11; 3, p. BII-1; 14, pp. 23-25, 35-38, 44-45; 15, pp. 16-17; 16, pp. 9-10, 22-23; 34, pp. 8, 10-12, 15, 22-23, 25; 45, Table 1 (pp. 1-2 of 3); 46, Table 1 (pp. 1-2 of 3); 47, Table 1 (p. 1 of 3); 74, pp. 1-2; 114; 117; 119; 121, p. 2; 122; 124, p. 4; 127; 129; 131]

Level I Well	Aquifer No.	Population	References
DW-12	1	3	117; 16, p. 22
DW-13	1	2	119; 14, p. 23
DW-16	1	2	121, p. 2; 122; 14, p. 37
DW-18	1	2	124, p. 4; 15, pp. 16-17
DW-23	1	3	127; 16, p. 9
DW-24	1	2	129; 14, p. 44
DW-25	1	3	131; 14, pp. 35-36

Sum of Population Served by Level I Wells: 17
Sum of Population Served by Level I Wells x 10: 170

Level I Concentrations Factor Value: 170

3.3.2.3 Level II Concentrations

Level II Population Targets

No Level II Population Targets were evaluated as part of this HRS Documentation Record.

Level II Well	Aquifer No.	Population	References

Sum of Population Served by Level II Wells:

Level II Concentrations Factor Value: Not Scored

3.3.2.4 Potential Contamination

Potential Population Targets

No Potential Population Targets were evaluated as part of this HRS Documentation Record.

Distance Category	Population	References	Distance-Weighted Population Value (Ref. 1, Table 3-12)
0 to 1/4 mile			
>1/4 to 1/2 mile			
>1/2 to 1 mile			
>1 to 2 miles			
>2 to 3 miles			
>3 to 4 miles			

Calculations:

Sum of Distance-Weighted Population Values:
Sum of Distance-Weighted Population Values/10:

Potential Contamination Factor Value: Not Scored

3.3.3 RESOURCES

No Resources were evaluated as part of this HRS Documentation Record.

Well ID	Aquifer No.	Resource Use	References

Resources Factor Value: Not Scored

3.3.4 WELLHEAD PROTECTION AREA

No Wellhead Protection Areas were evaluated as part of this HRS Documentation Record.

Area	Use	References	Value

Wellhead Protection Area Factor Value: Not Scored