DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: ___ **Century Brass Products, Inc. (Retained Parcel)**_____
Facility Address: ____Silver Street, Waterbury, Connecticut _
Facility EPA ID #: ___CTD060008307_

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

__**X**__ If yes - check here and continue with #2 below.

_____ If no - re-evaluate existing data, or

_____ if data are not available, skip to #8 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

RDMS DOC ID 105983

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

__X__ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

_____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): See Drawing 3, attached, that shows elevated levels of VOCs and metals in the groundwater as reported in Subsurface Investigation Report, Former Century Brass Products, Waterbury, CT, dated September, 2005, prepared by Loureiro Engineering Associates, Inc.

Footnotes:

[1]"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

__**X**__ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): **See Attachment 4**

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

__**X**__ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): **See Attachment 4**

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

.

__**X**__ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):__**See Attachment 5**_____

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

__**X**__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):**The landfill will be monitored for 3 additional quarters. Well numbers D-2, D-3, MW-006 and MW-11D will be monitored for metals and VOCs to verify that ground water will not be migrating horizontally beyond the Mad River. See Drawing 3 attached for the well locations.**

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **Century Brass Retained** facility , EPA ID # CTD060008307 , located at **Silver Street, Waterbury, CT**. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by (signature) David Ringquist Date 09/28/05
(print)David Ringquist
(title) Sanitary Engineer 3

Supervisor (signature) _____ Date 09/28/05
(print) Diane Duva
(title) Supervising Environmental Analyst
(EPA Region or State) Connecticut

Locations where References may be found:

Connecticut Department of Environmental Protection, 79 Elm Street, Hartford, Connecticut 06106-1632

Contact telephone and e-mail numbers

(name) **David Ringquist**
(phone #) **860-424-3573**
(e-mail) **david.ringquist@po.state.ct.us**

Attachment 1

Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels?

Groundwater

Groundwater at the site is contaminated as shown by various monitoring wells at the site. See the attached Drawing 3 showing the location of the groundwater monitoring wells and the results of the monitoring. From a report completed by Loureiro Engineering Associates, Inc.: "Groundwater collected from the Site as part of this subsurface investigation was evaluated for the presence of VOCs, SVOCs, PCBs, [Connecticut's Extractable Total Petroleum Hydrocarbons] (CT ETPH), cyanide, and various metals. Concentrations of several VOCs including PCE, TCE, 11DCA, cDCE, and VC, and several metals were reported in groundwater collected from the areas of the Site at concentrations indicative of one or more release(s) resulting from historical site activities such as the former dry cleaning operation/exterior drum storage area and metal hydroxide sludge landfill. The presence in groundwater of chlorinated hydrocarbons that may be degradation products of PCE (e.g. vinyl chloride, TCE), particularly in the vicinity of the metal hydroxide sludge area, indicates that natural degradation of chlorinated VOCs may be occurring in groundwater at the Site; however, such degradation may be occurring to a lesser degree on the northernmost portion of the Site. With the exception of copper and zinc, the concentrations of metals reported in groundwater do not exceed respective SWPC; however, the elevated concentrations of various metals (including copper and zinc) suggest that site groundwater has been impacted by one or more releases at the Site…….In several instances, the concentrations of zinc and to a lesser degree, PCE and copper, exceed respective SWPC".

Air (indoors)

There are no buildings on the site, nor are there any within approximately 500 feet of the property boundary. This media is therefore not applicable to the site.

Soil (surface, e.g., <2 ft)

Soil at the site is contaminated as shown by recent analysis of soil samples at the site. See the attached Drawing 2 showing the location of the soil samples and the analytical results. From a report completed by Loureiro Engineering Associates, Inc.:

"Soil samples collected from the Site as part of the subsurface investigation were evaluated for the presence of VOCs, SVOCs, PCBs, CT ETPH, cyanide, and various metals, depending on proximity to certain potential or confirmed release areas,……. Generally, shallow soil at the Site was found to contain elevated concentrations of several metals, particularly copper, lead, and zinc; SVOCs; and VOCs. The presence of these contaminants in shallow soil support the CSM developed for the Site, in that historical operations including metal working, exterior storage of waste materials in drums, and dry cleaning operations, have resulted in an impact to underlying soil. Further, the presence of elevated SVOCs and metals at the Site correlates to the presence of relatively shallow deposits of fill materials including coal, ash, and slag. The concentrations of these constituents of concern exceed one or more of the [Connecticut Remediation Standard Regulations] (RSR) default, numeric criteria for soil (RDEC, IDEC, and GB PMC)".

RDEC = Residential Direct Exposure Criteria
IDEC = Industrial/Commercial Direct Exposure Criteria
GB PMC = Pollutant Mobility Criteria for areas where the groundwater is classified as "GB", i.e. not suitable for drinking without treatment.

Surface Water

The Mad River, bisecting the site, was tested by LEA and the results are presented as Attachement 7. These results show that the surface water is not contaminated above human health standards.

Sediment

Sediment in the Mad River is contaminated as shown by recent analysis of sediment samples. See the attached Drawing 2 showing the location of the samples and the analytical results. From a report completed by Loureiro Engineering Associates, Inc.:

"As part of the subsurface investigation completed at the Site, six sediment samples were collected from portions of the Mad River that transect the Site. Based on the presence of two select metals (copper and zinc) at elevated concentrations, it appears that groundwater discharging to surface water and potentially historical discharges from a former on-site tail race may have resulted in an impact to sediment quality in the river."

Subsurf. Soil (e.g., >2 ft)

Soil at the site is contaminated as shown by recent analysis of soil samples at the site. See the attached Drawing 2 showing the location of the soil samples and the analytical results.

The following six paragraphs are from the Loureiro Engineering Associates, Inc. report:

"Subsurface soil samples were compared against the default, numeric direct exposure criteria (RDEC and IDEC), and pollutant mobility criteria for a GB groundwater classification area (GB PMC), as tabulated in the RSRs.

Direct Exposure Criteria

Metals were detected at concentrations exceeding the tabulated RDEC and IDEC criteria at two locations at the Site. Specifically, concentrations of arsenic and lead exceeded the RDEC and IDEC at one or more of the following locations: MW-012 (arsenic) and SB-011 (arsenic and lead).

CT ETPH were detected at concentrations exceeding the RDEC in borings MW-010 and MW-012. These two locations are located on the northern portion of the Site. Boring MW-010 is located within the Building 5 Former Drum Storage Area. Boring MW-012 is located within an area identified as a former head race, east of Building 5 at the Site.

SVOCs were detected at concentrations above the RDEC and IDEC at one location at the Site. Concentrations of the following SVOCs exceeded the noted default, numeric criteria tabulated in the RSRs: benzo(a)anthracene (RDEC and IDEC), benzo(b)fluoranthene (RDEC and IDEC), benzo(a)pyrene(RDEC and IDEC), indeno(1,2,3-c,d)pyrene (RDEC).

The compound PCE was detected at concentrations above the RDEC in locations SB-007 and SB-008. Both of these locations are located in the Building 5 Former Drum Storage Area.

Pollutant Mobility Criteria

SVOCs were detected at concentrations above the GB PMC at only one location at the Site, MW-010. Specifically, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, carbazole, and chrysene, exceeded their respective criteria as tabulated in the RSRs. Boring MW-010 is located within the Building 5 Former Drum Storage Area. VOCs were detected at concentrations exceeding the GB PMC in two locations. Specifically, PCE and TCE were both detected at a concentration exceeding the GB PMC in boring SB-007. PCE was also detected at a concentration exceeding the GB PMC in boring SB-008. Both of these sampling locations are located within the Building 5 Former Drum Storage Area."

Air (outdoors)

There are no on-going processes or sources of soil contamination at the site that would produce significant air emissions. Although ambient air was not monitored, CTDEP made the judgment that it is not reasonably suspected to be contaminated above appropriately protective risk-based levels.

Attachment 2

Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Groundwater

There are no pathways between contaminated groundwater and any of the possible receptors under current conditions. The site is located in Waterbury where city water is provided to the residential properties adjacent to the site, therefore groundwater is not used as a drinking water source. In addition, contaminants in the groundwater that originate at the site are unlikely to migrate offsite since the groundwater discharges to the Mad River, as discussed in the Loureiro report: "*Based on an evaluation of groundwater elevation data, groundwater along the eastern portion of the Site appears to discharge to the Mad River, which transects the Site from south to north. Based on the near proximity of certain well locations to the Mad River and the interpreted groundwater flow direction, it appears that groundwater data collected as part of this subsurface investigation is representative of groundwater discharging into the Mad River."* (See Drawing 3, groundwater contour map).

Soil (surface, e.g., <2 ft), Surface Water, Sediment

Because this is an abandoned site that has a poorly maintained perimeter fence and no trespassing signs, the only potential human receptors under current conditions are trespassers.

Soil (subsurface e.g., >2 ft)

There are no pathways between contaminated subsoil and the intermittent trespasser, the only potential human receptor. These people are unlikely to excavate soil that would result in an exposure to contaminants in soil greater than two feet deep. In fact, in the past 15 years since the site has been abandoned, there has been no observed evidence of this activity at the site.

Attachment 3

Can the **exposures** from any of the complete pathways identified in #3 (of the checklist) be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

Soil (surface, e.g., <2 ft), Surface Water, Sediment

Because this is an abandoned site, the only potential human receptors under current conditions are trespassers. Exposures from complete pathways between contaminated surface soil, surface water (Mad River), sediment (Mad River) and trespassers are not reasonably expected to be significant due to the very low exposure frequency resulting from:

- The limited exposure time. Trespassers are generally on foot or bicycle. They pass through the site and spend very little time at the site. Motorcycles and all-terrain vehicles have been observed at the site. This appears to occur infrequently as there are no worn trails, a common characteristic of high-use areas;
- The local law enforcement agency makes an effort to keep people out of the site;
- There are a limited number of areas at the site (as shown on Drawing 2) that are contaminated to levels that exceed risk-based criteria.
- It is unlikely that trespassers would use the Mad River for swimming or fishing. These activities have never been observed or reported during the 15 years the CTDEP has been overseeing this site. The Mad River at this location is not an attractive location for either of these uses.
- The site has a perimeter fence and warning signs that, while not in perfect condition, are able to keep people from trespassing to some degree.

Attachment 4

Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater" as defined by the monitoring locations designated at the time of this determination)?

Based on the data presented on Drawing 3 (attached) of the Loureiro report, we can conclude that contaminated groundwater is expected to remain within the existing area of contaminated groundwater because the groundwater discharges to the Mad River. This conclusion is supported by: 1) the groundwater contours on the eastern side of the Mad River, 2) comparison of VOC concentrations on the eastern side of the river to the western side, and 3) the elevated level of metals found in the Mad River sediments.

The groundwater contours, as shown on Drawing 3 of the Loureiro report (attached), show that the flow is toward the west and northwest, i.e. toward the river. The Loureiro report states: "Groundwater elevations for the Site (on the eastern side of the Mad River) exhibit a decreasing trend from southeast to northwest, indicating an overall flow direction of shallow groundwater towards the northwest and the Mad River. Based on an evaluation of the topographic and geologic maps, as well as the thickness and distribution of the unconsolidated deposits in the vicinity of the Site, it is possible that groundwater from deeper zones in the overburden aquifer beneath the Site migrates beneath the Mad River without directly discharging to the river in the immediate vicinity of the Site. However, the bedrock high located west and north of the Site would limit migration of overburden groundwater in that direction, and it is more likely that deeper groundwater from the Site follows the general trend of the Mad River Valley to the north."

The VOC concentrations at monitoring well D3 (eastern side of river) show elevated levels of vinyl chloride, perchloroethylene, and trichloroethylene. These same constituents are all non-detect at well MW-11D, located on the opposite side and down stream of the river. Both wells are screened at similar depths.

The sediment contains elevated levels of lead and copper. This could be the result of either surface water run-off or the discharge of contaminated groundwater into the Mad River, or both.

Attachment 5

Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

The discharge of contaminated groundwater into surface water is insignificant, based on a recent analysis of surface water samples that show no exceedances of the human or ecological risk-based standards. The surface water data can be found at Attachment 7. The surface water sample locations can be found on Drawing 1, attached.

Attachment 6
Bibliography

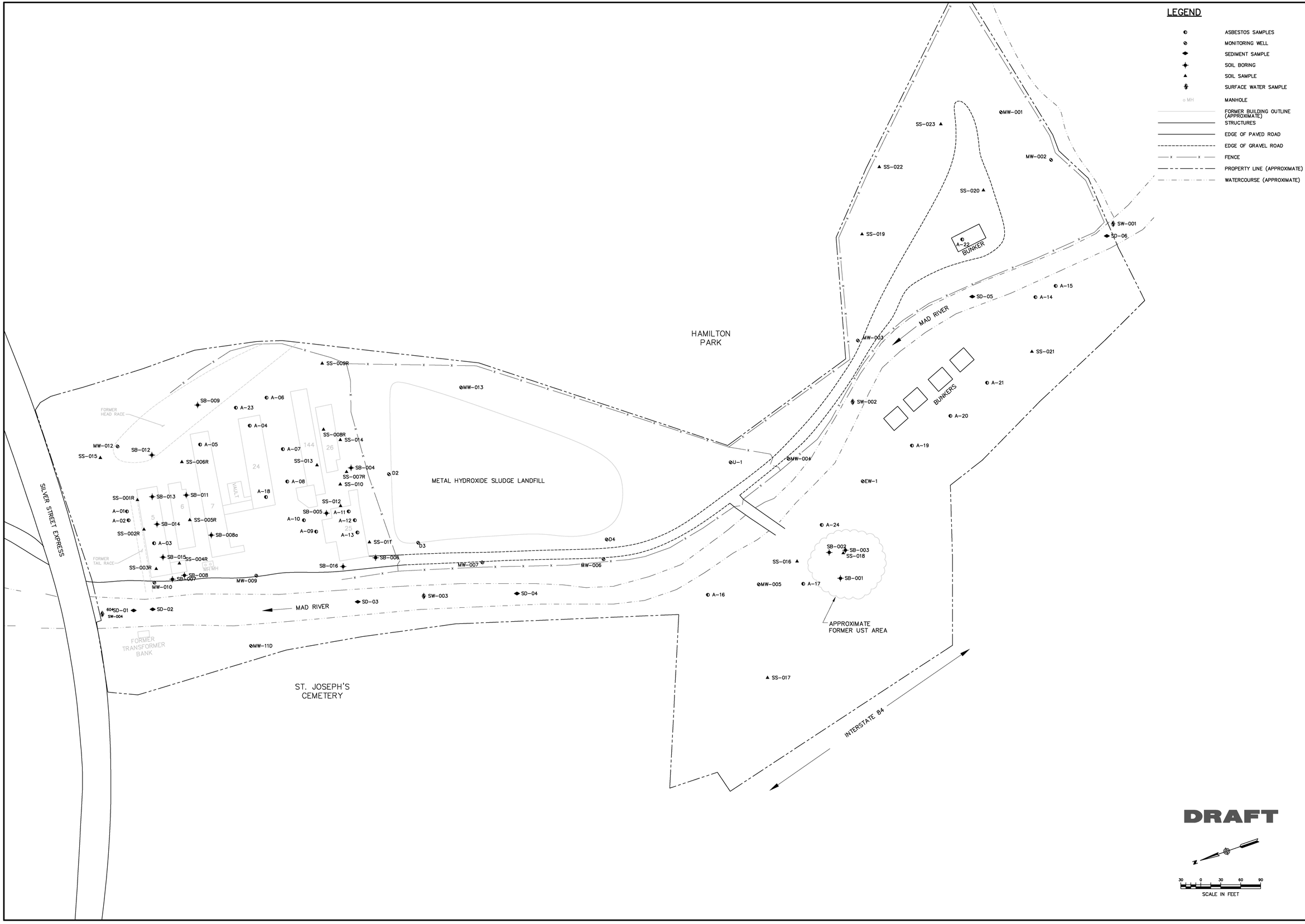
Loureiro Engineering Associates, Inc., 2005, Subsurface Investigation Report, Former Centruy Brass Products, Waterbury, Connecticut

Attachment 7

Surface Water Analytical Data

	Sample Date	9/19/2005	9/19/2005	9/19/2005	9/19/2005
	Sample Time	10:15	11:15	13:50	14:25
	Laboratory	Spec	Spec	Spec	Spec
	Lab. Number	SA34453-10	SA34453-12	SA34453-14	SA34453-16
Date Metals Analyzed	Units	9/23/2005	9/23/2005	9/23/2005	9/23/2005
Arsenic	mg/l	<0.004	<0.004	<0.004	<0.004
Barium	mg/l	0.0227	0.0192	0.0185	0.0183
Cadmium	mg/l	<0.0012	<0.0012	<0.0012	<0.0012
Chromium, Total	mg/l	<0.0025	<0.0025	<0.0025	<0.0025
Copper	mg/l	0.0025	<0.0025	0.0028	0.0044
Lead	mg/l	<0.0038	<0.0038	<0.0038	<0.0038
Mercury	mg/l	<0.0002	<0.0002	<0.0002	<0.0002
Nickel	mg/l	<0.0025	<0.0025	<0.0025	0.0051
Selenium	mg/l	<0.0075	<0.0075	<0.0075	<0.0075
Silver	mg/l	<0.005	<0.005	<0.005	<0.005
Zinc	mg/l	<0.04	<0.04	0.0427	<0.04
Date VOCs Analyzed	Units	9/22/2005	9/22/2005	9/22/2005	9/22/2005
cis-1,2-dichloroethylene	ug/l	ND	ND	ND	5.5
Naphthalene	ug/l	ND	ND	ND	1.2
Tetrachloroethylene	ug/l	ND	ND	ND	4.8

Location	
SW-001	Upstream of site, at confluence of unnamed brook and Mad River.
SW-002	90' West of location MW-003.
SW-003	75' Northwest of location MW-007.
SW-004	Furthest downstream, collected beneath Silver St Express overpass.



REV.	DESCRIPTION OF REVISION	DATE	APPR.

Loureiro Engineering Associates, Inc.
100 Northwest Drive • Plainville, Connecticut 06062
An Employee Owned Company

SCALE: SHOWN
COMM. NO.: 18HW501.001
DRAWN BY: J.A.M. DATE: 8/16/05
APP. BY: K.M.C. DATE: 8/16/05

SUBSURFACE INVESTIGATION - FORMER CENTURY BRASS PRODUCTS SITE, WATERBURY, CT

SITE PLAN

An Employee Owned Company

DRAWING 1

SHEET NO. 1 NO. OF SHEETS 1

G:\AutoCAD\PROJECTS\18HW501\18HW501-D1.DWG Tab: D1 Saved: 9/29/2005 11:04 AM Plotted: 9/29/2005 11:04 AM

G:\Autocad\PROJECTS\18HW501\18HW501-D1.dwg, D1, 9/29/2005 11:04:16 AM

ASBESTOS SAMPLES

A-01	7/5/2005
Constituent	ND
Asbestos	ND
As	2.21

A-02	7/5/2005
Constituent	ND
Asbestos	ND

A-03	7/5/2005
Constituent	ND
Asbestos	ND

A-04	7/5/2005
Constituent	ND
Asbestos	ND

A-05	7/5/2005
Constituent	ND
Asbestos	ND

A-06	7/5/2005
Constituent	ND
Asbestos	ND

A-07	7/5/2005
Constituent	ND
Asbestos	ND

A-08	7/5/2005
Constituent	ND
Asbestos	ND

A-09	7/5/2005
Constituent	–
Asbestos, Chrysotile	*80%*

A-10	7/5/2005
Constituent	–
Asbestos, Chrysotile	*80%*

A-11	7/5/2005
Constituent	ND
Asbestos	ND

A-12	7/5/2005
Constituent	ND
Asbestos	ND

A-13	7/5/2005
Constituent	ND
Asbestos	ND

A-14	7/5/2005
Constituent	ND
Asbestos	ND

A-15	7/5/2005
Constituent	–
Asbestos, Chrysotile	*20%*

A-16	7/5/2005
Constituent	ND
Asbestos	ND

A-17	7/5/2005
Constituent	ND
Asbestos	ND

A-18	7/5/2005
Constituent	ND
Asbestos	ND

A-19	7/5/2005
Constituent	ND
Asbestos	ND

A-20	7/5/2005
Constituent	ND
Asbestos	ND

A-21	7/5/2005
Constituent	ND
Asbestos	ND

A-22	7/5/2005
Constituent	–
Asbestos, Chrysotile	*20%*

A-23	7/5/2005
Constituent	ND
Asbestos	ND

A-24	7/5/2005
Constituent	ND
Asbestos	ND

SEDIMENT SAMPLES

SD-01	7/11/2005
Constituent	0' – 0.25'
METAL	–;–
As	2.21
Cd	ND;0.402
Cr	5.00;5.67
Cu	27.5;27.4
Pb	*8.87;144*
Ni	6.42;7.06
Zn	43.4;50.1
Depth of Boring	0.25'

SD-02	7/11/2005
Constituent	0' – 0.25'
METAL	–
Ba	12.7
Cr	8.76
Cu	*152*
Pb	28
Ni	14
Zn	73.7
Depth of Boring	0.25'

SD-03	7/11/2005
Constituent	0' – 0.25'
METAL	–
Ba	19.2
Cd	0.42
Cr	8.78
Cu	13.6
Pb	12.7
Ni	5.2
Zn	58.7
Depth of Boring	0.25'

SD-04	7/11/2005
Constituent	0' – 0.25'
METAL	–
Ba	14.4
Cr	6.65
Cu	10.2
Pb	7.46
Ni	3.41
Zn	42.7
Depth of Boring	0.25'

SD-05	7/11/2005
Constituent	0' – 0.25'
METAL	–
Ba	10.2
Cr	3.22
Cu	7.54
Pb	5.37
Ni	2.71
Zn	37.2
Depth of Boring	0.25'

SD-06	7/11/2005
Constituent	0' – 0.25'
METAL	–
Ba	11
Cr	2.62
Cu	5.45
Pb	3.19
Ni	2.72
Zn	43.7
Depth of Boring	0.25'

SOIL SAMPLES

MW-001	7/7/2005
Constituent	0' – 2'
METAL	–;–
As	2.21
Cd	0.669;0.601
Cr	52.9;48.4
Cu	287;253
Pb	65.9;70.5
Ni	13.8;12.6
Zn	254;254
METALS	–
Cr (SPLP)	0.0095
SVOCs	ND;ND
VOCs	ND;ND
Depth of Boring	16.00'
Depth of Groundwater	~8.23'

MW-002	7/8/2005
Constituent	0' – 2'
METAL	–
Ba	94.3
Cd	1.19
Cr	19.1
Cu	66.6
Pb	51.4
Ni	18.3
Zn	130
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
Depth of Boring	13.80'
Depth of Groundwater	~10.21'

MW-003	7/9/2005
Constituent	0' – 2'
METAL	–
Ba	58.3
Cd	1.88
Cr	14.7
Cu	125
Pb	256
Ni	40.8
Zn	682
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	102
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	102
TPH (As Motor Oil)	ND
TPH, Unidentified	102
SVOCs	–
BA	285
BBF	293
BAP	462
BGP	352
BKF	243
CRYS	349
FA	852
IP	377
PHN	284
PAH	4038
PYR	541
VOCs	ND
Depth of Boring	18.00'
Depth of Groundwater	~16.68'

MW-004	7/8/2005	
Constituent	0' – 2'	6' – 8'
METAL	–	–
Ba	32	15.8
Cd	4.68	1.01
Cr	88.3	11
Cu	*3620*	28.3
Pb	228	4.2
Hg	0.24	ND
Ni	362	30.1
Ag	1.58	ND
Zn	1970	234
METALS	–	
Cr (SPLP)	0.0104	
Cu (SPLP)	0.359	
Pb (SPLP)	0.0247	
Zn (SPLP)	0.272	
SVOCs	ND	ND
VOCs	–	ND
ACT	116	
Depth of Boring	20.03'	
Depth of Groundwater	~15.65'	

MW-005	7/9/2005
Constituent	0' – 2'
METAL	–
As	3.97
Ba	244
Cd	*225*
Cr	58.9
Cu	*36600*
Pb	*4680*
Hg	1.04
Ni	159
Zn	*307000*
METALS	–
Ba (SPLP)	0.155
Cd (SPLP)	0.0026
PCB	–
PCB-1254	1660
PCB-1260	695
PCB	*2360*
PCBs (SPLP)	ND
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	77
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	77
TPH (As Motor Oil)	ND
TPH, Unidentified	77
SVOCs	–
FA	465
PAH	465
VOCs	–
PCE	273
T8010calc	273
Depth of Boring	12.30'
Depth of Groundwater	~13.19'

MW-006	7/13/2005		
Constituent	0' – 2'	2' – 4'	12' – 14'
METAL	–;–		–
Ba	80.2;92.8		57.3
Cr	14.6;17.4		13.7
Cu	18.9;25.6		17.6
Pb	ND;3.33		1.2
Ni	12.8;15.6		21.5
Zn	37.0;45.9		82.5
PHYSC	ND;ND		
Fuel Oil No. 2	ND;ND		
Fuel Oil No. 4	ND;ND		
Fuel Oil No. 6	ND;ND		
Gasoline	ND;ND		
C9–C36, NOS	ND;ND		
Jet Fuel #4 ;#5	ND;ND		
Oil, Other	ND;ND		
CT ETPH	ND;ND		
TPH (As Motor Oil)	ND;ND		
TPH, Unidentified	ND;ND		
SVOCs	ND;ND	–	
CRYS		827	
A-MLNE		627	
PHN		741	
PAH	ND;ND	3100	
PYR		1530	
B-MLNE		2160	
VOCs	ND;–	ND	
ACT	ND;151		
Depth of Boring	17.30'		
Depth of Groundwater	~14.03'		

MW-007	7/7/2005	
Constituent	0' – 2'	14' – 16'
METAL	–	–
Ba	64.2	29.7
Cr	15.4	6.76
Cu	19.8	24.2
Pb	3.48	ND
Ni	18.5	35.1
Zn	41.8	40.5
PHYSC	ND	ND
Fuel Oil No. 2	ND	ND
Fuel Oil No. 4	ND	ND
Fuel Oil No. 6	ND	ND
Gasoline	ND	ND
C9–C36, NOS	ND	ND
Jet Fuel #4 ;#5	ND	ND
Oil, Other	ND	ND
CT ETPH	ND	ND
TPH (As Motor Oil)	ND	ND
TPH, Unidentified	ND	ND
SVOCs	ND	ND
VOCs	ND	ND
Depth of Boring	24.00'	
Depth of Groundwater	~17.41'	

SB-016	7/7/2005	
Constituent	2' – 4'	6' – 8'
METAL	–	–
Ba	5.79	57.3
Cr	6.26	13.9
Cu	4.9	20.2
Ni	20.2	35.8
Zn	49.7	68.6
PHYSC	ND	
Fuel Oil No. 2	ND	
Fuel Oil No. 4	ND	
Fuel Oil No. 6	ND	
Gasoline	ND	
C9–C36, NOS	ND	
Jet Fuel #4 ;#5	ND	
Oil, Other	ND	
CT ETPH	ND	
TPH (As Motor Oil)	ND	
TPH, Unidentified	ND	
SVOCs	ND	ND
VOCs	ND	ND
Depth of Boring	20.00'	

MW-009	7/6/2005	
Constituent	2' – 4'	6' – 8'
METAL	–	–
Ba	30.9	35.3
Cd	0.643	ND
Cr	8.64	9.88
Cu	1380	33.8
Pb	36.9	ND
Hg	0.42	ND
Ni	214	48.9
Ag	3.67	ND
Zn	258	76.4
PHYSC	ND	ND
Fuel Oil No. 2	ND	ND
Fuel Oil No. 4	ND	ND
Fuel Oil No. 6	ND	ND
Gasoline	ND	ND
C9–C36, NOS	ND	ND
Jet Fuel #4 ;#5	ND	ND
Oil, Other	ND	ND
CT ETPH	ND	ND
TPH (As Motor Oil)	ND	ND
TPH, Unidentified	ND	ND
SVOCs	ND	ND
VOCs	–	ND
PCE	965	ND
TCE	194	ND
T8010calc	1159	ND
Depth of Boring	16.00'	
Depth of Groundwater	~11.71'	

MW-010	7/5/2005	
Constituent	0' – 4'	6' – 8'
METAL	–	–;–
As	5.44	ND;ND
Ba	45	111;69.7
Cd	0.946	0.659;0.429
Cr	10.8	24.3;12.8
Cu	1450	98.0;93.6
Pb	102	ND;6.75
Hg	0.644	ND;ND
Ni	157	101;70.8
Ag	4.89	ND;ND
Zn	488	204;142
PHYSC	–	ND;ND
Fuel Oil No. 2	ND	ND;ND
Fuel Oil No. 4	ND	ND;ND
Fuel Oil No. 6	ND	ND;ND
Gasoline	ND	ND;ND
C9–C36, NOS	536	ND;ND
Jet Fuel #4 ;#5	ND	ND;ND
Oil, Other	ND	ND;ND
CT ETPH	*536*	ND;ND
TPH (As Motor Oil)	ND	ND;ND
TPH, Unidentified	536	ND;ND
SVOCs	–	ND;ND
ACNE	1710	ND;ND
BA	*12000*	ND;ND
BBF	*8530*	ND;ND
BAP	*7520*	ND;ND
BGP	3470	ND;ND
BKF	*8230*	ND;ND
Carbazole	*8170*	ND;ND
CRYS	*10600*	ND;ND
FA	26900	ND;ND
FLE	1710	ND;ND
IP	*3680*	ND;ND
A-MLNE	2690	ND;ND
PHN	32700	ND;ND
PAH	156000	ND;ND
PYR	28000	ND;ND
ACN	2570	ND;ND
ANTH	6510	ND;ND
DBF	4210	ND;ND
B-MLNE	2590	ND;ND
VOCs	–	–;–
NAP	566	ND;ND
TCA	57.5	ND;ND
CDCE	1420	6.4;12.2
PCE	*8570*	78.9;110
TCE	581	ND;6.5
T8010calc	10630	85.3;130
Depth of Boring	14.00'	
Depth of Groundwater	~12.77'	

MW-11D	7/14/2005	
Constituent	0' – 2'	8' – 10'
METAL	–;–	
As	*12.0;10.5*	
Ba	116;63.1	
Cd	6.94;0.433	
Cr	6.08;6.12	
Cu	261;143	
Pb	55.2;34.2	
Ni	25.2;8.81	
Zn	575;131	
PHYSC	–;ND	
Fuel Oil No. 2	ND;ND	
Fuel Oil No. 4	ND;ND	
Fuel Oil No. 6	ND;ND	
Gasoline	ND;ND	
C9–C36, NOS	118;ND	
Jet Fuel #4 ;#5	ND;ND	
Oil, Other	ND;ND	
CT ETPH	118;ND	
TPH (As Motor Oil)	ND;ND	
TPH, Unidentified	118;ND	
SVOCs	–;–	ND
ACNE	2270;ND	
BA	*3730;ND*	
BBF	*3920;ND*	
BAP	*3070;ND*	
BGP	891;ND	
BKF	*2850;ND*	
CRYS	*3780;371*	
FA	6590;ND	
IP	*1300;ND*	
NAP	3030;ND	
PHN	2400;486	
PAH	37000;857	ND
PYR	2340;ND	
ANTH	783;ND	
DBF	604;ND	
B-MLNE	1190;310	
VOCs	–;ND	ND
NAP	137;ND	ND
Depth of Boring	28.00'	
Depth of Groundwater	~11.08'	

MW-012	7/7/2005
Constituent	2' – 4'
METAL	–
As	*12.1*
Ba	143
Cd	4.42
Cr	8.85
Cu	269
Pb	32.2
Ni	32.6
Zn	209
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	735
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	*735*
TPH (As Motor Oil)	ND
TPH, Unidentified	735
SVOCs	–
PAH	209
VOCs	–
NAP	209
Depth of Boring	12.00'
Depth of Groundwater	~9.10'

MW-013	7/13/2005
Constituent	0' – 2'
METAL	–
As	8.03
Ba	152
Cd	2.37
Cr	47.6
Cu	*2930*
Pb	205
Hg	0.241
Ni	67.8
Ag	1.49
Zn	1890
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
	368
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	368
TPH (As Motor Oil)	ND
TPH, Unidentified	368
SVOCs	–
ACNE	1650
BA	*1680*
BBF	*1600*
BAP	*1710*
BGP	725
BKF	*1330*
CRYS	*2120*
FA	5170
IP	853
PHN	2690
PAH	22600
PYR	2340
ANTH	706
VOCs	ND
Depth of Boring	20.00'
Depth of Groundwater	~16.60'

SB-001	7/14/2005	
Constituent	0' – 2'	4' – 6'
METAL	–	–
As	4.48	5.72
Ba	86.2	50.7
Cd	11.8	1.86
Cr	21.8	16.1
Cu	*4470*	233
Pb	374	50.1
Hg	0.298	ND
Ni	143	27.7
Zn	15900	610
PCB	–	–
PCB-1254	618	ND
PCB-1260	99.5	33.9
PCB	718	33.9
PHYSC	–	ND
Fuel Oil No. 2	ND	ND
Fuel Oil No. 4	ND	ND
Fuel Oil No. 6	ND	ND
Gasoline	ND	ND
C9–C36, NOS	96.2	ND
Jet Fuel #4 ;#5	ND	ND
Oil, Other	ND	ND
CT ETPH	96.2	ND
TPH (As Motor Oil)	ND	ND
TPH, Unidentified	96.2	ND
SVOCs	–	–
FA	289	365
PAH	557	717
PYR	268	352
VOCs	–	–
CDCE	ND	6.6
PCE	16.1	89.3
TCE	ND	14.4
T8010calc	16.1	110.3
Depth of Boring	16.00'	

SB-002	7/14/2005	
Constituent	0' – 2'	6' – 8'
PHYSC	–	ND
Fuel Oil No. 2	ND	ND
Fuel Oil No. 4	ND	ND
Fuel Oil No. 6	ND	ND
Gasoline	ND	ND
C9–C36, NOS	954	ND
Jet Fuel #4 ;#5	ND	ND
Oil, Other	ND	ND
CT ETPH	*954*	ND
TPH (As Motor Oil)	ND	ND
TPH, Unidentified	954	ND
SVOCs	ND	ND
VOCs	ND	ND
Depth of Boring	16.00'	

SB-005	7/14/2005
Constituent	2' – 4'
METAL	–
Ba	20.5
Cr	14.5
Cu	19.6
Pb	1.31
Ni	38.5
Zn	49.3
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	–
PCE	13.8
T8010calc	13.8
Depth of Boring	9.00'

SB-006	7/14/2005
Constituent	0' – 2'
METAL	–
Ba	88.6
Cr	17.1
Cu	35.9
Pb	6.9
Ni	14.4
Zn	54.1
PCB	–
PCB-1260	471
PCB	471
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	30
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	30
TPH (As Motor Oil)	ND
TPH, Unidentified	30
SVOCs	ND
VOCs	ND
Depth of Boring	4.00'

SB-007	7/5/2005
Constituent	0' – 4'
METAL	–
As	4.14
Ba	25.1
Cd	1.46
Cr	5.36
Cu	1930
Pb	115
Hg	1.45
Ni	350
Ag	11.6
Zn	591
METALS	–
Cu (SPLP)	0.462
Hg (SPLP)	0.00102
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	53
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	53
TPH	53
TPH (As Motor Oil)	ND
TPH, Unidentified	53
SVOCs	ND
VOCs	–;–
TCA	179
CDCE	1790
PCE	*42000;60500*
TCE	*2550*
T8010calc	47000;60500
Depth of Boring	16.00'

SB-008	7/6/2005	
Constituent	2' – 4'	8' – 10'
METAL	–	–
Ba	108	22
Cd	2.26	ND
Cr	19.5	4.92
Cu	1550	12.2
Pb	75.1	ND
Hg	0.255	ND
Ni	413	17.1
Ag	14.7	ND
Zn	849	54
PCB	–	
PCB-1260	117	
PCB	117	
PHYSC	–	ND
Fuel Oil No. 2	ND	ND
Fuel Oil No. 4	ND	ND
Fuel Oil No. 6	ND	ND
Gasoline	ND	ND
C9–C36, NOS	229	ND
Jet Fuel #4 ;#5	ND	ND
Oil, Other	ND	ND
CT ETPH		ND
TPH	229	
TPH (As Motor Oil)	ND	ND
TPH, Unidentified	229	ND
SVOCs	–	ND
BA	500	ND
BAP	460	ND
CRYS	523	ND
FA	1030	ND
IP	427	ND
PHN	675	ND
PAH	4500	ND
PYR	760	ND
VOCs	–	–
NAP	76.9	ND
CDCE	159	52.4
PCE	*18100*	ND
TCE	745	ND
MC	ND	66.6
T8010calc	19000	119
Depth of Boring	16.00'	

SB-008a	7/14/2005
Constituent	2' – 4'
METAL	–
Ba	28.8
Cr	7.87
Cu	23.4
Pb	2.91
Ni	10.1
Zn	27.8
PHYSC	ND
CN (Tot)	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	–
PCE	5
T8010calc	5
Depth of Boring	16.00'

SB-009	7/14/2005
Constituent	0' – 2'
METAL	–
As	4.82
Ba	113
Cr	10
Cu	432
Pb	56.5
Ni	19.9
Zn	225
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	170
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	170
TPH (As Motor Oil)	ND
TPH, Unidentified	170
SVOCs	ND
VOCs	–
PCE	60.4
T8010calc	60.4
Depth of Boring	16.00'

SB-011	7/12/2005	
Constituent	2' – 4'	8' – 10'
METAL	–	–
As	*19.2*	ND
Ba	147	57.6
Cd	1.01	0.847
Cr	10.7	25.2
Cu	1330	49.4
Pb	*5410*	ND
Hg	4.59	ND
Ni	611	36.7
Ag	16	ND
Zn	1350	122
METALS	–	
Pb (SPLP)	0.114	
Hg (SPLP)	0.00189	
Ni (SPLP)	0.28	
PHYSC	–	
Fuel Oil No. 2	ND	
Fuel Oil No. 4	ND	
Fuel Oil No. 6	ND	
Gasoline	ND	
C9–C36, NOS	402	
Jet Fuel #4 ;#5	ND	
Oil, Other	ND	
CT ETPH	402	
TPH (As Motor Oil)	ND	
TPH, Unidentified	402	
SVOCs	ND	ND
VOCs	–	ND
CDCE	77.6	ND
PCE	102	ND
TCE	121	ND
T8010calc	301	ND
Depth of Boring	16.00'	

SB-012	7/14/2005
Constituent	0' – 2'
SVOCs	ND
VOCs	ND
Depth of Boring	9.00'

SB-013	7/12/2005		
Constituent	0' – 2'	4' – 6'	8' – 9'
METAL	–		
As	2.01		
Ba	37.9		
Cd	0.502		
Cr	6.24		
Cu	125		
Pb	7.39		
Ni	140		
Zn	150		
PCB	ND		
PHYSC	–		
Fuel Oil No. 2	ND		
Fuel Oil No. 4	ND		
Fuel Oil No. 6	ND		
Gasoline	ND		
C9–C36, NOS	64.8		
Jet Fuel #4 ;#5	ND		
Oil, Other	ND		
CT ETPH	64.8		
TPH (As Motor Oil)	ND		
TPH, Unidentified	64.8		
SVOCs	ND	ND	ND
VOCs	–	ND	ND
PCE	56.6	ND	ND
T8010calc	56.6	ND	ND
Depth of Boring	9.00'		

SB-014	7/12/2005
Constituent	6' – 8'
METAL	–
Ba	34.5
Cd	0.632
Cr	17
Cu	85.5
Ni	18.8
Zn	65.6
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
Depth of Boring	16.00'

SB-015	7/12/2005
Constituent	0' – 2'
METAL	–
As	4.7
Ba	52.1
Cd	6.66
Cr	8.89
Cu	953
Pb	106
Hg	1.27
Ni	30.3
Ag	1.15
Zn	2180
METALS	ND
PCB	ND
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	57.3
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	57.3
TPH (As Motor Oil)	ND
TPH, Unidentified	57.3
SVOCs	–
BA	247
CRYS	288
FA	324
PAH	1223
PYR	364
VOCs	–
CDCE	11100
PCE	*31800*
TCE	*4200*
T8010calc	47100
Depth of Boring	16.00'

SS-001R	7/19/2005
Constituent	0'
METAL	–
As	4.21
Ba	406
Cd	5.24
Cr	111
Cu	*3560*
Pb	*983*
Hg	1.2
Ni	406
Ag	11.8
Zn	2560
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	524
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	*524*
TPH (As Motor Oil)	ND
TPH, Unidentified	524
SVOCs	–
FA	2260
PAH	2260
VOCs	ND

SS-002R	7/19/2005
Constituent	0'
METAL	–
Ba	1100
Cd	4.75
Cr	72.3
Cu	913
Pb	*1720*
Hg	0.383
Ni	111
Ag	3.83
Zn	3530
SVOCs	ND
VOCs	ND

SS-003R	7/19/2005
Constituent	0'
METAL	–
Ba	61.2
Cd	1.16
Cr	14.4
Cu	265
Pb	62.3
Hg	0.406
Ni	28.6
Ag	3
Zn	258
PHYSC	ND
CN (Tot)	ND
SVOCs	ND
VOCs	–
ACT	343
BZ	13.6
T8020calc	13.6

SS-004R	7/19/2005
Constituent	0'
METAL	–
Ba	50.9
Cd	2.79
Cr	50.4
Cu	*2600*
Pb	241
Hg	0.223
Ni	195
Ag	2.67
Zn	1830
PHYSC	–
CN	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	232
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	232
TPH (As Motor Oil)	ND
TPH, Unidentified	232
SVOCs	–
ACNE	532
BA	927
BBF	768
BAP	673
BKF	590
CRYS	*1130*
FA	3170
PHN	1900
PAH	11700
PYR	1330
ANTH	712
VOCs	–
PCE	14.6
TCE	14.2
T8010calc	28.8

SS-005R	7/19/2005
Constituent	0'
METAL	–
Ba	26.3
Cd	0.608
Cr	15.7
Cu	366
Pb	50.1
Ni	29.7
Zn	238
SVOCs	ND
VOCs	–
PCE	13.3
T8010calc	13.3

SS-006R	7/19/2005
Constituent	0'
METAL	–
Ba	48.3
Cd	0.65
Cr	12.2
Cu	998
Pb	111
Ni	33.5
Zn	590
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	60.4
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	60.4
TPH (As Motor Oil)	ND
TPH, Unidentified	60.4
SVOCs	ND
VOCs	ND

SS-007R	7/19/2005
Constituent	0'
METAL	–
As	2.45
Ba	174
Cd	6.62
Cr	249
Cu	*8520*
Pb	431
Hg	0.982
Ni	479
Ag	9.02
Zn	3050
PHYSC	ND
CN (Tot)	ND
SVOCs	ND
VOCs	–
PCE	203
T8010calc	203

SS-008R	7/19/2005
Constituent	0'
METAL	–
As	*21.6*
Ba	135
Cd	4.6
Cr	43.9
Cu	2460
Pb	258
Hg	0.416
Ni	67.6
Ag	8.76
Zn	537
PHYSC	–
CN (Tot)	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	111
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	111
TPH (As Motor Oil)	ND
TPH, Unidentified	111
SVOCs	–
BA	611
BBF	577
CRYS	914
FA	2050
PHN	872
PAH	5710
PYR	686
VOCs	ND

SS-009R	7/19/2005
Constituent	0.6'
METAL	–
As	8.76
Ba	16.5
Cd	1.81
Cr	21.1
Cu	*41700*
Pb	116
Hg	0.39
Ni	*9170*
Ag	*1020*
Zn	10100
PHYSC	–
CN (Tot)	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	7660
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	*7660*
TPH (As Motor Oil)	ND
TPH, Unidentified	7660
SVOCs	ND
VOCs	ND

SS-016	7/7/2005
Constituent	0'
METAL	–
Ba	104
Cd	*35.6*
Cr	57.6
Cu	*11000*
Pb	*1250*
Hg	1.88
Ni	128
Se	4.74
Zn	*61900*
METALS	–
Cd (SPLP)	0.0027
Cu (SPLP)	0.466
Pb (SPLP)	0.0608
Zn (SPLP)	3.88
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	174
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	174
TPH	174
TPH (As Motor Oil)	ND
TPH, Unidentified	174
SVOCs	–
ACNE	640
BA	*1060*
BBF	998
BAP	*1030*
BGP	678
BKF	773
CRYS	*1250*
FA	1820
IP	903
PHN	643
PAH	11200
PYR	1400
VOCs	ND

SS-017	7/7/2005
Constituent	0'
METAL	–
Ba	63.3
Cd	5.39
Cr	28.6
Cu	1340
Pb	153
Ni	68.1
Zn	5320
SVOCs	ND
VOCs	–
ACT	253

SS-018	7/7/2005
Constituent	0'
METAL	–
As	6.48
Ba	297
Cd	20
Cr	460
Cu	*26700*
Pb	*1960*
Hg	12.8
Ni	827
Ag	4.47
Zn	19700
METALS	–
Ba (SPLP)	0.0713
Cr (SPLP)	0.0051
Cu (SPLP)	0.575
Pb (SPLP)	0.101
Hg (SPLP)	0.00074
Ni (SPLP)	0.0144
Zn (SPLP)	0.602
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	1120
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	*1120*
TPH (As Motor Oil)	ND
TPH, Unidentified	1120
SVOCs	ND
VOCs	ND

SS-019	7/7/2005
Constituent	0'
METAL	–
As	8.25
Ba	123
Cd	8.24
Cr	56.8
Cu	2260
Pb	*629*
Hg	0.617
Ni	106
Ag	6.14
Zn	4860
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	381
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	381
TPH (As Motor Oil)	ND
TPH, Unidentified	381
SVOCs	ND
VOCs	ND

SS-020	7/7/2005
Constituent	0'
METAL	–
As	2.76
Ba	65.4
Cd	1.2
Cr	58
Cu	1200
Pb	121
Ni	32.7
Zn	747
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	140
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	140
TPH (As Motor Oil)	ND
TPH, Unidentified	140
SVOCs	ND
VOCs	ND

SS-021	7/7/2005
Constituent	0'
METAL	–
As	3.79
Ba	78.5
Cd	14.9
Cr	55.2
Cu	*4470*
Pb	*593*
Hg	0.678
Ni	174
Ag	3.85
Zn	2110
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	290
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	290
TPH	290
TPH (As Motor Oil)	ND
TPH, Unidentified	290
SVOCs	ND
VOCs	–
ACT	101

SS-022	7/7/2005
Constituent	0'
METAL	–
As	2.76
Ba	59.5
Cd	1.03
Cr	32.8
Cu	*2890*
Pb	418
Ni	53
Zn	1200
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	124
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	124
TPH (As Motor Oil)	ND
TPH, Unidentified	124
SVOCs	ND
VOCs	–
PCE	8.9
T8010calc	8.9

SS-023	7/7/2005
Constituent	0'
METAL	–
As	4.69
Ba	101
Cd	3.33
Cr	87.8
Cu	*3420*
Pb	*578*
Hg	0.993
Ni	80.3
Ag	2.19
Zn	2330
METALS	–
Cu (SPLP)	0.232
Zn (SPLP)	0.191
PHYSC	–
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	98.7
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	98.7
TPH (As Motor Oil)	ND
TPH, Unidentified	98.7
SVOCs	ND
VOCs	ND

DATA BLOCK LEGEND

SB-006	11/06/1997	
Constituent	0' – 2'	2' – 4'
METALs	–	
As	2.4	
Pb	15.8 J	
TPH		*900*
VOCs		ND

- LOCATION IDENTIFIER
- SAMPLE DATE
- SAMPLE DEPTH
- DASH INDICATES DETECT(S) IN CONSTITUENT GROUP (SPECIFIC COMPOUNDS IDENTIFIED BELOW)
- BLANK CELL INDICATES NO ANALYSIS CONDUCTED
- "J" IS A CONSTITUENT CONCENTRATION QUALIFIER
- ITALICIZED AND RED COLORED CONSTITUENT CONCENTRATION INDICATES AN EXCEEDANCE OF ONE OR MORE CRITERIA IDENTIFIED IN THE CONNECTICUT REMEDIATION STANDARD REGULATIONS

NOTES:

1. THE RESPECTIVE UNITS FOR SOILS IN WHICH QUANTIFIABLE CONCENTRATIONS ARE DETECTED ARE AS FOLLOWS: VOCs, SVOCs, PCBs – MICROGRAMS PER KILOGRAM (ug/kg); MASS METALS AND TPH – MILLIGRAMS PER KILOGRAM (mg/kg); TCLP METALS AND SPLP METALS – MILLIGRAMS PER LITER (mg/L).
2. VOCs CATEGORY REFERS TO COMPOUNDS DETECTED USING EPA METHOD 8260.
3. TPH IS CONSIDERED TO BE UNDER THE GENERAL GROUP HEADING OF "PHYSICAL ANALYSES".

CONSTITUENT ABBREVIATIONS

VOCs

ACT	Acetone
BZ	Benzene
CDIS	Carbon disulfide
CBZ	Chlorobenzene
CFM	Chloroform
CEA	Chloroethane
2DCB	1,2-Dichlorobenzene
3DCB	1,3-Dichlorobenzene
4DCB	1,4-Dichlorobenzene
11DCA	1,1-Dichloroethane
12DCA	1,2-Dichloroethane
11DCE	1,1-Dichloroethylene
12DCE	1,2-Dichloroethylene
CDCE	Cis-1,2-Dichloroethylene
TDCE	Trans-1,2-Dichloroethylene
EBZ	Ethylbenzene
MCM	Methyl chloride (Chloromethane)
MC	Methylene chloride
MEK	Methyl ethyl ketone
MTBE	Methyl-tert-butyl ether
PCE	Tetrachloroethylene
1122TTCA	1,1,2,2-Tetrachloroethane
TL	Toluene
TCA	1,1,1-Trichloroethane
112TCA	1,1,2-Trichloroethane
TCE	Trichloroethylene
VC	Vinyl chloride
XYL (o)	Xylenes (ortho-)
XYL (m,p)	Xylenes (meta-, para-)

SVOCs

ANTH	Anthracene
ACN	Acenaphthene
ACNE	Acenaphthylene
BA	Benzo[a]anthracene
BAP	Benzo[a]pyrene
BBF	Benzo[b]fluoranthene
BGP	Benzo[ghi]perylene
BKF	Benzo[k]fluoranthene
DEHP	Bis(2ethylhexyl)phthalate
BBP	Butyl benzyl phthalate
CRYS	Chrysene
DBA	Dibenzo[a,h]anthracene
DBP	Di-n-butyl phthalate
FA	Fluoranthene
FLE	Fluorene
IP	Indeno(1,2,3-cd)pyrene
NAP	Naphthalene
PHN	Phenanthrene
PYR	Pyrene

METALs

As	Arsenic
Ba	Barium
Cd	Cadmium
Cr	Chromium (total)
Cu	Copper
Pb	Lead
Hg	Mercury
Ni	Nickel
Se	Selenium
Ag	Silver
Zn	Zinc

MISC.

TPH	Total Petroleum Hydrocarbons
PCB	Polychlorinated Biphenyl

CONSTITUENT CONCENTRATION QUALIFIERS

ND	NONE DETECTED; LESS THAN DETECTION LIMIT
NA	COMPOUND NOT ANALYZED
J	ESTIMATED VALUE. COMPOUND PRESENT AT A CONCENTRATION BELOW THE METHOD DETECTION LIMIT
E	ESTIMATED VALUE. CONCENTRATION OUTSIDE CALIBRATION RANGE
U	NONE-DETECTED; QUALIFIED DUE TO PRESENCE OF COMPOUND IN THE BLANK
L	FLAG RESULTS ABOVE MDL & LESS THAN QUATITATION LIMITS ESTIMATED.
LB	COMPOUND DETECTED IN LABORATORY BLANK
TB	COMPOUND DETECTED IN TRIP BLANK
EB	COMPOUND DETECTED IN EQUIPMENT BLANK
XC	SEPARATION OF INDIVIDUAL PCB COMPOUNDS WAS NOT POSSIBLE DUE TO COELUTION OF PEAKS

LEGEND

- ASBESTOS SAMPLES
- MONITORING WELL
- SEDIMENT SAMPLE
- SOIL BORING
- SOIL SAMPLE
- MANHOLE (o MH)
- FORMER BUILDING OUTLINE (APPROXIMATE)
- STRUCTURES
- EDGE OF PAVED ROAD
- EDGE OF GRAVEL ROAD
- FENCE
- PROPERTY LINE (APPROXIMATE)
- WATERCOURSE (APPROXIMATE)

SOIL EXCEEDANCES

INDUSTRIAL / COMMERCIAL DIRECT EXPOSURE CRITERIA (IDEC)
RESIDENTIAL DIRECT EXPOSURE CRITERIA (RDEC)
(GBPMC) GB POLLUTANT MOBILITY CRITERIA
(GAPMC) GA / GAA POLLUTANT MOBILITY CRITERIA

NOTES:

NOTE: THE FOLLOWING LOCATIONS WERE NOT SURVEYED; AS SUCH, LOCATIONS HAVE BEEN FIELD LOCATED / VERIFIED: SB-001, SB-008A, SB-016, SS-11, SS-12, SS-13, SS-14, SS-17 & A-01 THROUGH A-24.

REV.	DESCRIPTION OF REVISION	DATE	APPR.

Loureiro Engineering Associates, Inc.
100 Northwest Drive • Plainville, Connecticut 06062
An Employee Owned Company

SCALE 1" = 60'
COMM. NO. 18HW501
DRAWN BY A.C.L. DATE 09/06/05
APP. BY K.M.C. DATE 09/06/05

SUBSURFACE INVESTIGATION - FORMER CENTURY BRASS PRODUCTS SITE, WATERBURY, CT

ASBESTOS, SOIL & SEDIMENT SAMPLING LOCATIONS

LEA An Employee Owned Company

DRAWING 2

SHEET NO. 1 NO. OF SHEETS 1

EW-1	7/19/2005
Constituent	–
As	2.21
Ba (unfiltered)	0.0728
Cu (unfiltered)	0.0162
Zn (unfiltered)	0.0118
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ; #5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	–
CDCE	6.4
TCE	2.7
TB010calc	9.1
Depth of Groundwater	~9.09'

MW-001	7/19/2005
Constituent	–
METAL	–
Ba (unfiltered)	0.053
Zn (unfiltered)	0.0148
SVOCs	ND
VOCs	ND
Depth of Boring	16.00'
Depth of Groundwater	~8.23'

MW-002	7/19/2005
Constituent	3.50' – 13.50
METAL	–
Ba	0.0615
Cu	0.0025
Ni	0.0711
Zn	0.0319
SVOCs	ND
VOCs	ND
Depth of Boring	13.80'
Depth of Groundwater	~10.21'

MW-003	7/19/2005
Constituent	9.00' – 18.00
METAL	–
Ba (unfiltered)	0.0221;0.0226
Cu (unfiltered)	0.0025;ND
Ni (unfiltered)	0.0418;0.0425
Zn (unfiltered)	0.422;0.427
PHYSC	ND;ND
Fuel Oil No. 2	ND;ND
Fuel Oil No. 4	ND;ND
Fuel Oil No. 6	ND;ND
Gasoline	ND;ND
C9–C36, NOS	ND;ND
Jet Fuel #4 ; #5	ND;ND
Oil, Other	ND;ND
CT ETPH	ND;ND
TPH (As Motor Oil)	ND;ND
TPH, Unidentified	ND;ND
SVOCs	ND;ND
VOCs	ND;ND
Depth of Boring	18.00'
Depth of Groundwater	~16.68'

MW-004	7/19/2005
Constituent	11.00' – 20.0
METAL	–
Ba	0.0256
Cu	0.013
Ni	0.0256
Zn	0.126
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ; #5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
Depth of Boring	20.03'
Depth of Groundwater	~15.65'

MW-005	7/19/2005
Constituent	3.20' – 12.20
METAL	–
Cu (unfiltered)	0.201
Cu (unfiltered)	0.0034
Ni (unfiltered)	0.0278
Zn (unfiltered)	6.35
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ; #5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND;ND
VOCs	ND;ND
Depth of Boring	12.30'
Depth of Groundwater	~13.19'

MW-006	7/19/2005
Constituent	–
METAL	–
Ba (unfiltered)	0.0364
Fe	9.55
Mn	1.32
Ni (unfiltered)	0.0163
Na	13.5
Zn (unfiltered)	0.084
PHYSC	–
Chloride (As Cl)	30.5
Fluoride – Total	ND
Nitrate Nitrogen (As N)	ND
Specific Conductivity	342
Sulfate (As SO4)	20.4
pH	6.5
SVOCs	ND
VOCs	–
CDCE	5.6
VC	2.3
TB010calc	7.9
Depth of Boring	17.30'
Depth of Groundwater	~14.03'

MW-007	7/18/2005
Constituent	13.00' – 22.0
METAL	–
Ba (unfiltered)	0.0329
Cu (unfiltered)	0.0037
Ni (unfiltered)	0.0278
PCB	ND
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ; #5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	–
CBZ	1
PCE	1.6
TB010calc	2.6
TB020calc	1
Depth of Boring	24.00'
Depth of Groundwater	~17.41'

MW-009	7/18/2005
Constituent	6.00' – 15.00
METAL	–
Cu (unfiltered)	0.0078
Ni (unfiltered)	0.0683
PCB	ND
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	–
TCA	11.2
PCE	33.2
TCE	7.8
TB010calc	52.2
Depth of Boring	16.00'
Depth of Groundwater	~11.71'

MW-010	7/18/2005
Constituent	4.00' – 14.00
METAL	–
Cu (unfiltered)	0.0157
Ni (unfiltered)	0.0769
Zn (unfiltered)	0.122
PCB	ND
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	–
CDCE	93
PCE	53.5
TCE	6
TB010calc	152.5
Depth of Boring	14.00'
Depth of Groundwater	~12.77'

MW-11D	7/20/2005
Constituent	19.00' – 28.0
METAL	–
Ba	0.0423
SVOCs	ND
VOCs	ND
Depth of Boring	28.00'
Depth of Groundwater	~11.08'

MW-012	7/18/2005
Constituent	2.00' – 12.00
METAL	–
Ba (unfiltered)	0.0534
Cu (unfiltered)	0.0167
Ni (unfiltered)	0.05
Zn (unfiltered)	0.243
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
Depth of Boring	12.00'
Depth of Groundwater	~9.10'

MW-013	7/19/2005
Constituent	11.00' – 20.0
METAL	–
Ba	0.0225
Cu	0.0031
Ni	0.0136
Zn	0.0377
PHYSC	ND
Fuel Oil No. 2	ND
Fuel Oil No. 4	ND
Fuel Oil No. 6	ND
Gasoline	ND
C9–C36, NOS	ND
Jet Fuel #4 ;#5	ND
Oil, Other	ND
CT ETPH	ND
TPH (As Motor Oil)	ND
TPH, Unidentified	ND
SVOCs	ND
VOCs	ND
Depth of Boring	20.00'
Depth of Groundwater	~16.60'

U-1	6/30/2005
Constituent	–
Cd	0.0057
Cu	0.0438
Fe	0.375
Mn	0.153
Ni	0.0221
Na	15
Zn	0.629
PHYSC	–
Chloride (As Cl)	18.4
Fluoride - Total	ND
Nitrate Plus Nitrite Nitrogen (As N)	0.64
Specific Conductivity	218
Sulfate (As SO4)	13.6
pH	5.84
SVOCs	ND
VOCs	ND
Depth of Groundwater	~10.32'

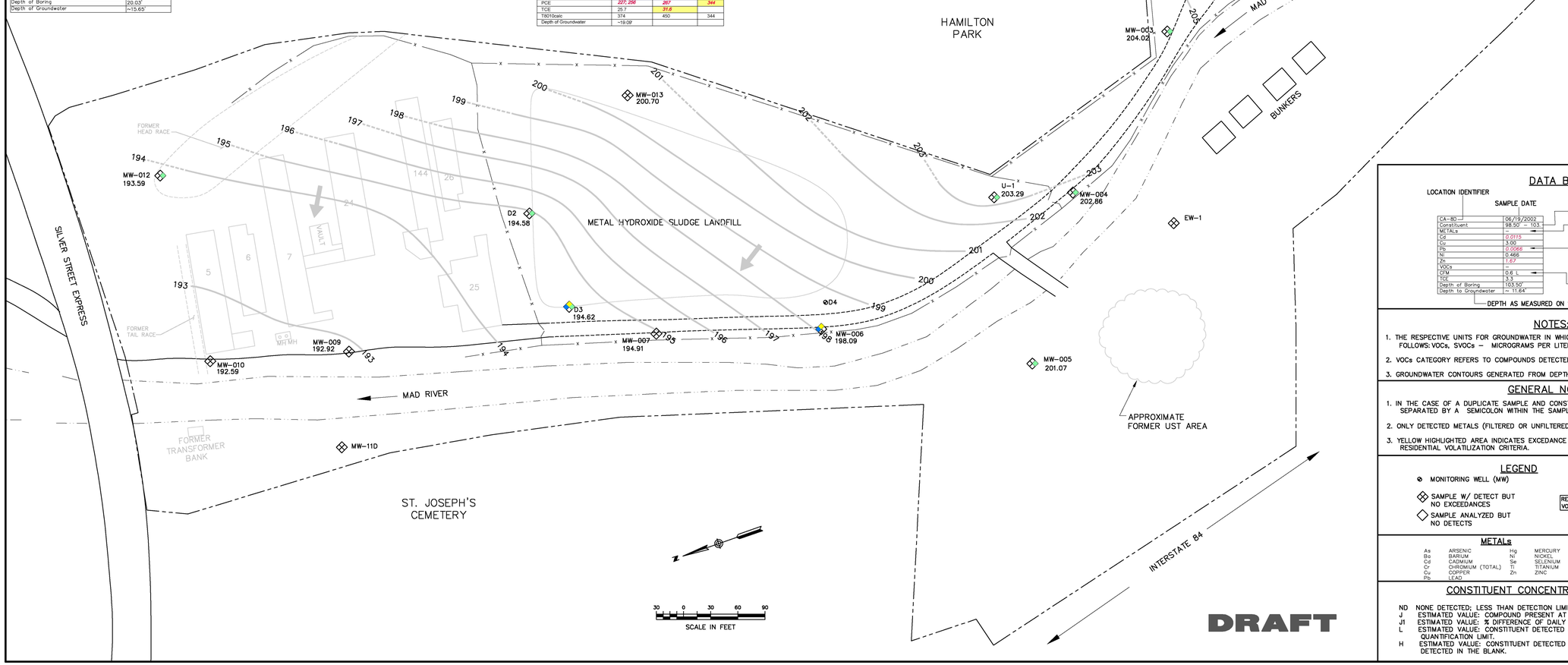
D-2	6/30/2005
Constituent	–
Ba	0.0597
Cu	0.194
Fe	10.8
Mn	0.889
Ni	0.106
Na	16
Zn	0.885
PHYSC	–
Chloride (As Cl)	27.9
Fluoride - Total	ND
Nitrate Plus Nitrite Nitrogen (As N)	0.21
Specific Conductivity	305
Sulfate (As SO4)	17.5
pH	5.99
SVOCs	ND
VOCs	–
11DCA	4.2
CDCE	4.6
PCE	8.3
TCE	3.2
TB010calc	18.3
Depth of Groundwater	~18.14'

D-3	6/30/2005	-	
Constituent	–	–	
Cr	0.003	0.003	
Cu	0.0356	0.0346	
Fe	1.48	1.75	
Mn	2.37	2.55	
Ni	0.0212	0.021	
Na	25.3	23.8	
Zn	0.098	0.105	
PHYSC	–	–	
Chloride (As Cl)	44	42.7	
Fluoride - Total	ND	ND	
Nitrate Plus Nitrite Nitrogen (As N)	ND	ND	
Specific Conductivity	381	397	
Sulfate (As SO4)	22.9	23.1	
pH	6.04	6.08	
SVOCs	ND	ND	
VOCs	–	–	–
11DCA	ND	1	
CDCE	108	132	
VC	12.8	18	
PCE	227.206	267	344
TCE	25.7	31.8	
TB010calc	374	450	344
Depth of Groundwater	~19.09'		

Groundwater Elevations – Subsurface Investigation
Century Brass, Hamilton Avenue, Waterbury, Connecticut – 18HW501.001
July 18, 2005

Monitoring Well ID	Reference Elevation – Top of Road Box (Feet – NGVDa)	Reference Elevation – Top of PVC Casing (Feet – NGVDa)	Well Construction	Screened Interval (feetb)	Measured Depth to Water (Feetb)	Well Depth (Feetb)	Water Level Elevation (Feet – NGVDa)
MW-001	220.25316	219.96133	0.5" PVC	5 to 15	8.22	15.25	211.74
MW-002	219.34983	219.07346	0.5" PVC	3.5 to 13.5	8.02	13.00	211.05
MW-003	219.15540	217.90357	0.5" PVC	9 to 18	13.88	20.41	204.02
MW-004	215.75604	215.55750	0.5" PVC	11 to 20	12.70	21.47	202.86
MW-005	211.25823	210.81179	0.5" PVC	3.16 to 12.16	9.74	13.79	201.07
MW-006	212.53560	212.08792	0.5" PVC	11 to 21	14.00	22.81	198.09
MW-007	210.42703	210.21833	0.5" PVC	13 to 22	15.31	23.82	194.91
EW-1	212.43250	212.07905	Unknown	Unknown	NM	NM	––
MW-009	202.39728	202.18246	0.5" PVC	6 to 15	9.26	17.00	192.92
MW-010	202.27731	201.95504	1.5" PVC	4 to 14	9.37	17.75	192.59
MW-011D	201.61656	201.40536	0.5" PVC	19 to 28	NM	NM	––
MW-012	200.73310	200.68864	1.5" PVC	2 to 12	7.10	14.40	193.59
MW-013	214.99471	214.78949	0.5" PVC	11 to 20	14.09	21.79	200.70
U-1	214.09737	213.98210	2" PVC	6 to 16	10.69	17.75	203.29
D-2	212.96427	212.80780	2" PVC	5.5 to 15.5	18.23	26.38	194.58
D-3	213.95294	213.82914	2" PVC	8 to 18	19.21	30.00	194.62
D-4	213.93838	213.42810	2" PVC	7 to 17	dry	13.80	––

o NGVD – National Geodetic Vertical Datum of 1929.
b Depths in feet below ground surface.
NM = Not Measured



DRAFT

LEGEND

- MH — MANHOLE
- MONITORING WELL
- FORMER BUILDING OUTLINE (APPROXIMATE)
- EDGE OF PAVED ROAD
- EDGE OF GRAVEL ROAD
- FENCE
- PROPERTY LINE (APPROXIMATE)
- WATERCOURSE (APPROXIMATE)
- 211 — GROUNDWATER CONTOUR (DASHED IS INFERRED)
- GROUNDWATER FLOW DIRECTION

DATA BLOCK LEGEND

LOCATION IDENTIFIER
SAMPLE DATE

CA–80	06/19/2002
Constituent	98.50' – 103.'
METALS	–
Cd	0.0115
Cu	3.00
Pb	0.2068
Ni	0.466
Zn	1.67
VOCs	–
CPM	0.6 L
TCE	3.3
Depth of Boring	103.50'
Depth to Groundwater	~ 11.64'

- SCREENED INTERVAL
- DASH INDICATES DETECT(S) IN CONSTITUENT GROUP (SPECIFIC COMPOUNDS IDENTIFIED BELOW)
- ITALICIZED AND RED COLORED CONSTITUENT CONCENTRATION INDICATES AN EXCEEDANCE OF ONE OR MORE CRITERIA IDENTIFIED IN THE CONNECTICUT REMEDIATION STANDARD REGULATIONS
- "L" IS A CONSTITUENT CONCENTRATION QUALIFIER
- DEPTH AS MEASURED ON SAMPLE DATE

NOTES:

1. THE RESPECTIVE UNITS FOR GROUNDWATER IN WHICH QUANTIFIABLE CONCENTRATIONS ARE DETECTED ARE AS FOLLOWS: VOCs, SVOCs – MICROGRAMS PER LITER (ug/L); TPH AND METALS – MILLIGRAMS PER LITER (mg/L).
2. VOCs CATEGORY REFERS TO COMPOUNDS DETECTED USING EPA METHOD 8260.
3. GROUNDWATER CONTOURS GENERATED FROM DEPTH MEASUREMENTS TAKEN ON JULY 18, 2005

GENERAL NOTES:

1. IN THE CASE OF A DUPLICATE SAMPLE AND CONSTITUENT DETECTS OR NON–DETECTS (ND), THEY ARE SEPARATED BY A SEMICOLON WITHIN THE SAMPLING INTERVAL WHERE THE DUPLICATION OCCURS.
2. ONLY DETECTED METALS (FILTERED OR UNFILTERED) ARE SHOWN ON THE DATA BLOCKS.
3. YELLOW HIGHLIGHTED AREA INDICATES EXCEDANCE OF MARCH 2003 PROPOSED REVISION TO RSRs FOR RESIDENTIAL VOLATILIZATION CRITERIA.

LEGEND

- MONITORING WELL (MW)
- SAMPLE W/ DETECT BUT NO EXCEEDANCES
- SAMPLE ANALYZED BUT NO DETECTS

GROUNDWATER EXCEEDANCES

INDUSTRIAL / COMMERCIAL VOLATILIZATION CRITERIA (IVC)
RESIDENTIAL VOLATILIZATION CRITERIA (RVC)
SURFACE WATER PROTECTION CRITERIA (SWPC)
GROUNDWATER PROTECTION CRITERIA (GWPC)

METALs

As	ARSENIC	Hg	MERCURY
Ba	BARIUM	Ni	NICKEL
Cd	CADMIUM	Se	SELENIUM
Cr	CHROMIUM (TOTAL)	Ti	TITANIUM
Cu	COPPER	Zn	ZINC
Pb	LEAD		

CONSTITUENT ABBREVIATIONS

MISC.

TPH	TOTAL PETROLEUM HYDROCARBONS
PCB	POLYCHLORINATED BIPHENYL
PHYSC	PHYSICAL ANALYSES

CONSTITUENT CONCENTRATION QUALIFIERS

ND	NONE DETECTED; LESS THAN DETECTION LIMIT
J	ESTIMATED VALUE: COMPOUND PRESENT AT A CONCENTRATION BELOW THE METHOD DETECTION LIMIT
J1	ESTIMATED VALUE: % DIFFERENCE OF DAILY CALIBRATION STANDARDS OUTSIDE CONTROL LIMITS
L	ESTIMATED VALUE: CONSTITUENT DETECTED ABOVE THE METHOD DETECTION LIMIT, BUT BELOW THE QUANTIFICATION LIMIT.
H	ESTIMATED VALUE: CONSTITUENT DETECTED ABOVE THE CALIBRATION RANGE. B CONSTITUENT DETECTED IN THE BLANK.

REV.	DESCRIPTION OF REVISION	DATE	APPR.

Loureiro Engineering Associates, Inc.
100 Northwest Drive • Plainville, Connecticut 06062
An Employee Owned Company

SCALE: SHOWN
COMM. NO.: 18HW501.001
DRAWN BY: A.C.L. DATE: 09/06/05
APP. BY: K.M.C. DATE: 09/06/05

SUBSURFACE INVESTIGATION – FORMER CENTURY BRASS PRODUCTS SITE, WATERBURY, CT
GROUNDWATER SAMPLING LOCATIONS & GROUNDWATER CONTOUR MAP

An Employee Owned Company

DRAWING 3

SHEET NO. 1 NO. OF SHEETS 1

G:\AUTOCAD\PROJECTS\18HW501\18HW501-03.DWG TAB: 03 SAVED: 9/14/2005 3:01 PM PLOTTED: 9/16/2005 1:34 PM