BASELINE HUMAN HEALTH RISK ASSESSMENT:

RISK TO WORKERS FROM PCBS IN SOIL

METAL MANAGEMENT MIDWEST, INC.
1509 WEST CORTLAND STREET
CHIC AGO, ILLINOIS 22

Prepared For:

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Site Remediation Program Checklist
July 19, 2001 revised December 10, 2001, April 11, 2002, August 5, 2002, November 14, 2002, November 21, 2002, April 19, 2004, April 26, 2004, June 27, 2006
Todd M. Hall

A. General Information:

1. Site:	0316005505-Cook County Chicago/Cometco Corporation 1509 West Cortland Street Site Remediation Program/Technical Reports
2. General Site Information:	Cometco Corporation 1509 West Cortland Street Chicago, IL 60622 Approximate Size: approximately 4 acres Legal Description: as noted on page 5 in Section 2.1 in Volume 1 (Illinois EPA Log No. 01-2477) PIN(s): 14-32-302-005 Site Base Map: Site Map included as Figure 2 in Volume 1 and Figure 2 in Volume 2 Appendix C (Illinois EPA Log No. 01-2477)
3. RA:	Metal Management Midwest, Inc. Attn: Ms. Debbie Hays 12701 South Doty Avenue Chicago, IL 60633 Telephone: (773)646-2121
4. RA's Consultant:	CPI Environmental Services Attn: Mr. Michael B. Place 799 Roosevelt Road Building 6, Suite 110 Glen Ellyn, IL 60137 Telephone: (630)469-6340 Fax: (630)469-6470
5. Property Owner:	Remediation Applicant is property owner.

B. General Site Information:

1. Reason for participation in the SRP; Recognized Environmental Conditions (RECs), Areas of Concern (AOCs), and related Contaminants of Concern (COCs); Past, Current, and Future Land Use:

Reason for participation in the SRP

The Remediation Applicant is seeking a Comprehensive NFR Letter.

Recognized Environmental Conditions (RECs)

The Phase I Environmental Site Assessment conducted by CPI in April 2000 identified several potential RECs. They were identified as follows:

- Darkened, oily soil under and around a 3000-gallon hydraulic oil collection tank, north of the Baler Building. Additional soil staining, sheens on pooled stormwater , and milky appearance of pooled stormwater were observed near the rail spur, crane operating areas, and under metal scrap piles;
- Two floor drains and an oil water seperator/triple basin were observed in the Maintenance Building. This system is not associated with current occupants of the building;
- Phased and emulsified oils were observed in a stormwater retention pond located on the southeast portion of the property;
- A former transformer house, which was present along the northwestern fence line, was identified on Sanborn Fire Insurance maps;
- An adjoining property to the west, which was a metal plating facility, was identified as a CORRACTS site; and
- The assessment also identified previous land use of the subject property as a coal storage yard, fuel company yard and an automobile repair shop.

Areas of Concern (AOCs)

The AOCs were addressed in the sample location selection. Test pit and boring locations were selected to evaluate potential RECs. Subsurface samples were collected at the following specific areas to address potential AOCs identified in the Phase I:

- Borings were advance near the floor drains and the triple basin system in the Maintenance and Paint Shop;
- Borings were advanced near a catch basin system within the Weld Shop;
- A boring was advanced at the location of an unidentifiable feature shown on historical Sanborn Map at the southwest corner of the Maintenance and Paint shop;
- A boring was advanced near the location of a former transformer house immediately north of the present scale;
- Three borings were advanced at the far southwest, central, and northeast portion of the property to obtain Shelby™ tube sample of native silty clay for purposes of obtaining site-specific physical characteristics of the material;
- Test pits and borings were excavated throughout operational portions of the property at areas displaying greatest surficial impact to assess overall soil quality at the subject property;

- Borings were advances south of the Maintenance Office to delineate extent of potential gasoline and diesel impact from the former UST area;
- Hand augers were advanced at four locations surrounding the stormwater pond to assess potential impact from stormwater accumulations;
- Sediment samples were collected from the stormwater pond to assess overall water quality;
- Perched fill water encountered in test pits that displayed greatest sensory impact was sampled to assess overall water quality.

The sampling locations are identified on Figure 3 of Volume 1 (Illinois EPA Log No. 01-2477).

Contaminants of Concern (COCs)

A Tier 1 evaluation indicates that PNAs, PCBs, lead, arsenic, benzene, vinyl chloride, and petroleum hydrocarbons are present in fill material. The following table (included on page 4 of Volume 1 – Illinois EPA Log No. 01-2477) summarizes the COCs and exceedences of Tier 1 SRO.

Contaminant of Concern	Industrial-Commercial		Construction Worker	
vinyl chloride				
benzene				
PCBs		---		---
benzo(a)anthracene		---		---
benzo(b)fluoranthene		---		---
benzo(a)pyrene				
dibenzo(a,h)anthracene		---		---
indeno(1,2,3-cd)pyrene		---		---
arsenic				
lead		---		---

= COC exceeds Tier 1 SRO established for exposure pathway

--- = No Tier 1 SRO established for pathway

????????revise to include ethylbenzene, PCE, selenium … also address soil component of the groundwater ingestion exposure rout??????????????/

*******MAKE SURE PCBs MEET APPROPRIATE ROs!!!!!!!!!!!!!!!!!!!!!!!!!!

Past, Current, and Future Land Use

From pre-1914 to pre-1950, Eureka Coal and Dock company, which included a blacksmith operation, occupied the premises. From pre-1950 to post-1975, Roth Adams Fuel Company stored coal at the property and an auto repair shop occupied the Welding Shop building. Between 1975 and 1988, the subject property was utilized as a scrap metal processing facility. Currently the subject property is utilized as a scrap

metal recycling facility. The future land use has yet to be determined, however the DRM-1 form indicates that the land use will be consistent with the existing industrial/commercial zoning.

2. *Site Description:*

The subject property is comprised of approximately four (4) acres of land within an urban setting containing a mixture of residential, commercial and industrial properties that are supplied with municipal water and sanitary sewer.

Six buildings are present on the subject property: the Office Building (two-story brick; contains offices and conference rooms), Maintenance and Paint Shop (one-story brick and concrete, concrete floor; includes maintenance and paint areas, used oil storage and new oil storage, sealed oil-water separator/triple basin in central portion; two floor drains in building discharge into triple basin), Welding Shop (one-story brick and concrete; used to repair lugger boxes; a floor drain inlet in this building discharges to stormwater drainage system), Maintenance Office (one-story brick; used for office space), Metals Warehouse (primarily one-story brick, concrete floor, a second story of office rooms exist along the south end; currently contains few spent lead-acid batteries on pallets; previously used for storage of nonferrous peddler scrap) ,and Baler Control Building (one-story concrete, concrete floor; used for electrical components, a 3000-gallon hydraulic oil reservoir, and a 500-gallon hydraulic oil reserve tank).

Other significant features include a truck scale, two inactive rail spurs (one that runs adjacent to the southern boundary elevated approximately 10 feet and one that trends in a north-south direction bisecting the subject property), chain-linked fencing along the northern and western boundaries, a barge-loading dock along the eastern side, and a stormwater collection pond on the southeast portion of the subject property.

The property is situated on the south side of West Cortland Street and bordered by the following:

- To the west – restaurant, residential dwellings, a plumber's shop, a gravel parking lot and North Elston Avenue;
- To the east – North Branch of the Chicago River;
- To the north – W. Courtland Street; and
- To the south – a railroad easement and a gas cylinder manufacturing company.

3. *Groundwater Class:*

Groundwater at the site was classified as Class II groundwater under 35 IAC 620.220 based on the following findings:

- The average in-situ hydraulic conductivity of the water bearing unit at the site is 7.59×10^{-7} cm/sec.;

- The site is located outside a well protection area for a community water supply well;
- The site is not located in the minimum setback zone of a well, which serves as a potable water supply;
- No community or potable water supply wells are located within a 2500-foot radius of the site;
- The City of Chicago obtains water from Lake Michigan and has a potable water supply ordinance that prohibits the installation of new potable water supply wells.

Subsurface geology at the site consists of fill material overlying disturbed silty clay, followed by clay till. As shown in the boring logs in Appendix A in the *Groundwater Investigation Report*, fill material consists of sand, gravel, slag, and cinders. The fill material is dry to saturated and its thickness varies from four (4) to 21 feet throughout the subject property. The thickness of the disturbed silty clay unit varies from 0 feet to 8 feet. No saturated zone was encountered in this unit. A glacial till unit underlies the upper silty clay confining unit. Wet to saturated intervals were encountered in the clay unit, therefore monitoring wells were screened in this unit.

4. *Description of how the remediation objectives meet the Tiered Approach to Corrective Action Objectives ("TACO") criteria 35 IAC 742:*

<u>Soil</u>

A *Soil Remediation Objectives Report*, dated January 30, 2002 and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. Included within the *Soil Remediation Objectives Report* is a presentation of the following:

- Demonstrations that the requirements for excluding an exposure route under 35 IAC 742 have been satisfied;
- Statement of applicable Tier 1 and Tier 2 soil remediation objectives for detected chemicals; and
- Summary of Areas of Concern (i.e., areas at which remediation and/or institutional controls will be required to comply with soil remediation objectives.

Table 3 and Table 4 in the *Soil Remediation Objectives Report* summarize the selected SRO for industrial/commercial workers and construction workers, respectively. In accordance with 35 IAC 742.600(f), the Tier 1 soil remediation objective was applied when the calculated Tier 2 SRO for an applicable exposure route was determined to be more stringent than the corresponding Tier 1 SRO. For the following chemicals, calculated Tier 2 SROs were determined to be equal to or more stringent than the Tier 1 SRO: arsenic, benzene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene. Therefore, RA selected the Tier 2 SRO only for the inhalation exposure route for vinyl chloride; Tier 1 SROs are selected for other

chemicals detected on-site. The project manager cross-checked the Tier 2 inhalation industrial/commercial and construction worker SROs for vinyl chloride and derived the same results as the RA. In addition, SROs (using Tier 2) were developed for parameters detected in fill material with no established Tier 1 SROs. These parameters are 2-butanone, chloromethane, dibenzofuran, 2-methylnaphthalene, and 3&4 methylphenol. The project manager randomly cross-checked the SROs for these parameters and derived the same results as the RA.

Ingestion

Inhalation

Construction Worker Ingestion

Construction Worker Inhalation

Soil Migration to Groundwater

Sampling Methodology

Groundwater

A *Groundwater Investigation Plan*, dated January 30, 2002 and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. The *Groundwater Investigation Plan* was submitted to address Illinois EPA comments in the December 12, 2001 Illinois EPA comment letter. Specifically, the two (2) comments involved investigating groundwater at the facility and determine the groundwater classification at the facility. Upon completion of the work described in the proposed *Groundwater Investigation Plan*, CPI will submit a *Groundwater* Investigation Report to the Illinois EPA to supplement the *Comprehensive Site Investigation Report.*

The groundwater investigation plan proposed by CPI is as follows:

a. Five (5) groundwater monitoring wells (MW-6 through MW-10) are to be installed at the property at the locations indicated on Figure 1 of the *Groundwater Investigation Plan* (Illinois EPA Log No. 02-0400). In general, the locations of the wells were chosen to provide property wide coverage, to provide the greatest likelihood of detecting migration of groundwater contamination, and to be place in areas where potential future damage will be minimized. Two (2) inch PVC wells are proposed to be screened in saturated conditions within or below the native silty clay.

   Groundwater samples from the five wells will be collected and analyzed for potential COCs in the area of the well (as discussed on page 5 of the *Groundwater Investigation Plan*).

b. Slug tests will be performed at two (2) selected monitoring wells to determine hydraulic conductivity through in-situ methods.

c. A groundwater investigation report will be prepared.

Sampling Methodology

5. *Remedial Action(s) Performed:*

A *Remedial Action Plan (RAP)*, dated January 30, 2002, and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. The proposed *RAP* met the requirements of 35 IAC 740.450 and is summarized below:

- Remove and off-site disposal of contaminated soils is selected in the areas: around the baler foundation/ former AST location (Area #1) and within gravel fill at the scrap storage area north of the stormwater retention pond (Area #2). Removal and disposal of stormwater pond media (surface water, bottom sediments, and bank fill material are proposed for the stormwater retention pond area (Area #14).

- An engineered barrier is planned at Areas #1 through #14. Material and design specifications of the engineered barrier in these areas are discussed in Section F.2 of the January 30, 2002 *RAP*.

- A *Construction Worker Health & Safety Plan* is proposed to be established and implemented to protect construction workers conducting future subsurface work under engineered barriers.

- Confirmation sampling is planned for Areas #1, #2, and #14. In Areas #1 and #2, confirmation sampling is being conducted to demonstrate the total petroleum hydrocarbon concentrations are less than the natural organic carbon fraction of the soil. In Area #1 a minimum of four (4) sidewall and two (2) bottom samples are proposed and at Area #2 a minimum of three (3) sidewall and two (2) bottom samples are proposed. For Area #14, confirmation sampling is being conducted to demonstrate the residual contamination does not exceed the natural attenuation capacity in accordance with 35 IAC 742.305 and the SROs of identified COCs are not exceeded within Area #14. A minimum of three 93) perimeter sidewall and two (2) bottom samples are proposed.

All Areas identified above are depicted on Figure 2 of the January 30, 2002 *RAP*.

6. *Applicable Engineered Barriers and Institutional Controls:*

7. *Post-remediation requirements:*

8. *Other Environmental Determinations or Actions:*

In September 1998, two USTs that contained diesel fuel were removed from the eastern portion of the Welding Shop. A release was subsequently reported to the Illinois Emergency Management Agency and assigned incident number 982317. An NFR letter for the release was issued by the Illinois EPA Lust Section on February 20, 2001.

9. *Other services requested by the RA:*

N/A

10. *RELPE services:*

N/A

NOTES:

August 21, 2001

Mr. Frank Santella, CPI Environmental Services, called me today regading the subject property. I left a message on Mr. Santella's voice mail yesterday stating that I had completed my initial review of Illinois EPA Log No. 01-24477. On the voice mail, I stated that the sedimentation basin issues had not been review by myself at this time due to the fact that the regulatory status of the basin was in question, the PCB issues would have to be coordinated with USEP – Region 5 (due to the concentrations), and the groundwater investigation was a concern. Mr. Santella requested clarification regarding the sedimentation basin. I stated that after I left the voice mail message, I did review the section of the report discussing the sedimentation basin, and I did not have any comments at this time. Mr. Santella indicated that he was aware that the PCB efforts would have to be coordinated with USEPA, and he had already been in contact with them about this issue. I also stated that additional sampling (VOC, SVOC and metals) was being requested in the area where a strong gasoline odor was detected (TP-116). I stated that my comment letter should be sent out by later this week.

August 27, 2001

On August 27, 2001 the following comments were forwarded to the RA:

1. The Remediation Applicant has not provided the Parcel Index Number(s) (PINs) for the site.

2. 35 Illinois Administrative Code (35 IAC) 740.425(b)(2)(D)(ii) states that the Comprehensive Site Investigation shall include site base map(s) meeting the requirements of Section 740.210(a)(7) and include on-site and off-site injection wells and withdrawal wells. Appendix D in Volume II of the *Comprehensive Site Investigation* contains groundwater well records. However, it does not appear as if a map of the locations of the wells has been included in this report. The Remediation Applicant should provide a map of the locations of the injection and withdrawal wells in accordance with this regulation.

3. 35 IAC 740.425(b)(2)(E) states a Comprehensive Site Investigation report shall include a legal description or reference to a plat showing the boundaries of the remediation site. The subject property description included on page 5, Section 2.1 of Volume I of the *Comprehensive Site Investigation* does not appear to be the full legal description of the property.

4. 35 IAC 740.420(b)(3) states that the phase II environmental site assessment shall determine the nature, concentration, direction and rate of movement, and extent of the contaminants of concern at the remediation site and the significant physical features of the remediation site and vicinity that may affect contaminant fate and transport and risk to human health, safety and the environment. The phase II environmental site assessment shall include characterization of the extent of the contaminants of concern, identifying the contaminated medium or media; the three-dimensional configuration of the contaminants of concern with the concentrations delineated; and the nature, direction, and rate of movement of the contaminants of concern and degradation products. Furthermore, 35 IAC 742.300(b) states that no exposure route may be excluded from consideration until characterization of the extent and concentrations of contaminants of concern at a site has been performed. The *Comprehensive Site Investigation* did not adequately address the requirements of 35 IAC 740.420(b)(3) or 35 IAC 742.300(b) due to the fact that groundwater conditions were not investigated at the facility. Page 28 of Volume I of the *Comprehensive Site Investigation* states that no groundwater was encountered during the subsurface investigation; and only limited and confined perched water was observed in fill material. However, the 30-foot boring drilled (B-1) by Andrews Environmental Engineering on January 4, 2000 showed that the borehole was saturated during drilling at 19.5 feet below ground surface, indicating the presence of groundwater in the native soils, below the fill material. Based on this information, a groundwater assessment is warranted to determine the hydrogeological conditions that exist at the site. The Remediation Applicant cannot exclude the Groundwater Ingestion Exposure Route until groundwater is sampled and the requirements of 35 IAC 742.300(b) are addressed.

5. 35 IAC 740.420(b)(3) states that the phase II environmental site assessment shall determine the nature, concentration, direction and rate of movement, and extent of the contaminants of concern at the remediation site and the significant physical features of the remediation site and vicinity that may affect contaminant fate and transport and risk to human health, safety and the environment. The phase II environmental site assessment shall include characterization of the extent of the contaminants of concern, identifying the contaminated medium or media; the three-dimensional configuration of the contaminants of concern with the concentrations delineated; and the nature, direction, and rate of movement of the contaminants of concern and degradation products. Borings were advanced and soil and perched water samples were collected near the two (2) underground storage tanks (UST) identified south of the maintenance building. However, page 24 of the Phase I Environmental Assessment in Volume II of the *Comprehensive Site Investigation* identifies another closed UST at the site. The location of this other UST was not discussed in the *Comprehensive Site Investigation*. The Remediation Applicant should identify the location of this UST and sample the medium in the area in question to satisfy this regulation.

6. 35 IAC 742.215(b)(2) states that the soil attenuation capacity is not exceeded if the total petroleum hydrocarbon concentration is less than the natural organic carbon fraction of the soil as demonstrated using a method approved by the Agency. Page 21 of Volume I of the *Comprehensive Site* Investigation indicates that a strong gasoline-like odor was prevalent in the area of test pit TP-116. However, it appears as if the soil sample collected from this test pit was only analyzed for Polychlorinated biphenyls (PCBs). The Remediation Applicant should collect samples in this area, and analyze the samples for VOCs, SVOCs and metals to determine the existing concentrations.

7. 35 IAC 742.305 states that no exposure route shall be excluded from consideration relative to a contaminant of concern unless the requirements of 35 IAC 742.305(a), (b), (c), (d), and (e) are met. 35 IAC 742.305(e) states any soil which contains contaminants of concern in the following list of inorganic chemicals or their salts shall not exhibit any of the characteristics of toxicity for hazardous waste as determined by 35 IAC 721.124, or an alternative method approved by the Agency: arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver. To ensure compliance with this regulation, the Remediation Applicant should collect additional Toxicity Characteristic Leaching Procedure (TCLP) metals samples at various locations across the site. Specifically, samples should be collected in the areas of TP-108 and TP-127, which contained concentrations of total arsenic at 120 mg/kg and total lead at 6930 mg/kg, respectfully.

Note: At this time, the Illinois EPA Site Remediation Program Project Manager has no comments regarding the investigation conducted in the sedimentation basin due to the fact that the regulatory status of the basin is under review.

December 10, 2001

On October 25, 2001, CPI Environmental Services, Inc. submitted a response letter to the August 27, 2001 Illinois EPA comment letter. The response letter was received by the Illinois EPA on October 25, 2001 (Illinois EPA Log No. 01-4001). The following narrative summarizes the responses provided by CPI Environmental Services, Inc followed by Illinois EPA comments.

CPI Environmental Services, Inc. – response to comment #1

The PIN number is 14-32-302-005.

Illinois EPA Comments:

Comment #1 from the August 27, 2001 letter has been satisfied.

CPI Environmental Services, Inc. – response to comment #2

The Figure D1, attached to the October 25, 2001 response letter, shows the locations of the injection and withdrawal wells. The location of these wells is based on well record information obtained from the Illinois State Water survey, Illinois Geological Survey, and records compiled by Environmental Data Resources.

Illinois EPA Comments:

Comment #2 from the August 27, 2001 letter has been satisfied.

CPI Environmental Services, Inc. – response to comment #3

The legal description is provided on pages 1-2 of the October 25, 2001 response letter.

Illinois EPA Comments:

Comment #3 from the August 27, 2001 letter has been satisfied.

CPI Environmental Services, Inc. – response to comment #4

Groundwater is present in native soil below fill material and has been characterized. Andrews Environmental Engineering (AEEI) characterized the groundwater by installing five (5) groundwater monitoring wells. CPI conducted subsequent investigations of hydrogeologic conditions to supplement AEEI's data. Based on the extent of characterization performed and the incomplete groundwater ingestion exposure route that exists due to the City of Chicago ordinance, the groundwater exposure pathway has been excluded.

AEEIs groundwater sampling results showed, that chemicals of concern present in soil samples collected from fill material in the area of the monitoring wells were not detected in groundwater samples. Due to these results, CPI concentrated its subsequent sampling efforts to fill material and native silty clay on the principal that if mobility of contaminants of concern was such to affect saturated zones 19.5 feet below grade, these contaminants would be evident in the upper zones of the silty clay. Not only were contaminants of concern not detected in groundwater wells, but also no significant signs of contaminants were detected in silty clay located directly underlying impacted fill and beneath saturated zones.

Groundwater flow direction, hydraulic conductivity, and yield of geologic material measurements were conducted by AEEI (refer to the *Site Classification Completion Report* included in Volume 2, Appendix C). Further characterization was conducted to determine a more representative hydraulic conductivity value. CPI used an ex situ method to establish a hydraulic conductivity value of $1.23 \times {}^{10-}7$ cm/sec. of native silty clay underlying impacted fill material.

Illinois EPA Comments:

The groundwater has only been characterized in the northern portion of the property. AEE installed five monitoring wells in the vicinity of the USTs, as discussed and shown in the *Site Classification Completion Report* in Appendix C of Volume 2 of the *Comprehensive Site Investigation Report*. The RA is still required to model the extent of contamination in groundwater on/off-site regardless of the City of Chicago groundwater ordinance. Furthermore, even though no BTEX or PNA constituents were detected by AEE in the above named wells at concentrations above the most stringent 35 IAC 742 TACO standards, only BTEX and PNA constituents were monitored for at these

locations. Additionally, as stated above no groundwater sampling was conducted in the southern portions of the site. In order to fully define the extent of contaminants in groundwater in accordance with 35 IAC 740.420(b)(3), the Illinois EPA believes additional groundwater samples should be collected south of the samples collected by AEE, and analyzed for all the potential contaminants of concern at the facility, including, VOCs, SVOCs, metals, and PCBs. In addition, groundwater samples should be analyzed for metals and PCBs in the north portions of the property boundary, as they were not sampled previously during AEE's sampling.

In addition, the RA should define the class of groundwater at the site in accordance with 35 IAC 620.620.210 through 620.240.

CPI Environmental Services, Inc. – response to comment #5

The third UST is suspected to have been a 500-gallon heating oil tank present in the vicinity of the other USTs removed under supervision of the Fire Marshall in 1998. The Fire Marshall reported no release associated with this third UST. In addition, thorough characterization has been completed in the former UST area. AEE characterized this UST area during LUST closure activities in which an NFR letter has been granted. CPI performed additional characterization in the vicinity of the former UST area. No evidence was noted that this UST is present.

Illinois EPA Comments:

As stated by CPI, the Fire Marshall reported no release associated with the third UST. Characterization in the former UST area (eastern portion of the welding shop) included collection of several soil and groundwater samples. Some of these sampling locations are B-333, B-334, B-336, and B-206 for soil, and MW-1, MW-2, MW-3, MW-4 and MW-5 for groundwater. Based on this characterization, the fact that no evidence was found that the UST is present in this area, and the medium in this area has been sampled, additional investigation is not warranted in this UST area at this time. Comment #5 from the August 27, 2001 letter has been adequately addressed.

CPI Environmental Services, Inc. – response to comment #6

TP-116 was excavated during initial investigations conducted to define areas warranting further investigations. Due to the presence of gasoline odor in this TP-116, additional borings were advanced and soil was analyzed for BTEX to define the extent of possible gasoline-impacted soil in this area. Not only was a strong gasoline-odor prevalent in TP-116, but also at B-333. Gasoline-like odors were noted at B-336 and B-334. Gasoline odors were not noted at TP-115, B-335, TP-133, B-207, and B-340. As shown in the Figure on page 3 of the October 25, 2001 response letter, the maximum concentrations of gasoline indicator parameters, such as benzene, were detected northwest of TP-116 at B-333. A similar isocontour profile is displayed for concentrations of toluene, ethylbenzene, and total xylene. The sum of organic contaminant residual concentrations at B-333 is 72.26 mg/kg-less than 2000 mg/kg, the default value for natural carbon

fraction of soil. Therefore, soil attenuation capacity is not exceeded at B-333 where the greatest concentrations of BTEX are documented.

Illinois EPA Comments:

As discussed by CPI, additional borings were advanced in the vicinity of TP-116 and analyzed for BTEX, VOCs, SVOCs, and metals. As discussed on page 3-4 of the October 25, 2001 response letter, the maximum concentrations of the gasoline indicator parameters were detected northwest of TP-116 at B-333. As shown on the *Sample Locations Map* (Figure 3, Volume 1) several soil samples were collected in the vicinity and analyzed for a combination of same/all of VOCs, SVOCs, metals and PCBs. Comment #6 from the August 27, 2001 letter has been adequately addressed.

CPI Environmental Services, Inc. – response to comment #7

TCLP metal analysis was conducted on soil, and no characteristics of toxicity for hazardous waste were detected. TCLP metal analyses were performed on soil from the following discrete locations: S-105, S-121, S-127, S-129, TP-301, TP-302, and TP-310, and the following composited locations: S-101, S-103, S-107, S-109, S-111, S-116, S-118, S-121, S-124, S-127, S-129, S-133, and S-135. Results of TCLP and corresponding total values are presented in the table on page 4 of the October 25, 2001 response letter. Discrete sampling locations were selected for TCLP analysis either based on displaying the maximum total metal concentration during that sampling event, by random selection, or for purposes of waste characterization in PCB-impacted areas. The composite sample is representative of soil determined to contain contaminants of concern in excess of Tier 1 Soil Remediation Objectives.

Illinois EPA Comments:

As discussed by CPI, TCLP metals analysis was conducted at various locations across the site. TCLP was conducted at TP-127 and in the area of TP-108 (i.e., TP-105, TP-310). The TCLP analysis for these areas, and all other areas, showed no characteristics of toxicity for hazardous waste. The TCLP results were compared to the regulatory levels listed in 35 IAC 721.124(b). The TCLP results and locations are depicted on page 4 of the October 25, 2001 comment letter. Comment #7 from the August 27, 2001 letter has been adequately addressed.

CPI Environmental Services, Inc. – response to Note

There is no sedimentation basin located on the subject property. If instead, the Illinois EPA is referring to the lined stormwater retention pond present in the southeast corner of the property, please be aware that the stormwater retention pond is slated for removal as part of planned remedial activities.

Illinois EPA Comments:

The Illinois EPA was referring to the stormwater retention pond present in the southeast corner of the property. At this time, the Illinois EPA Site Remediation Program Project Manager has no comments regarding the investigation conducted in the sedimentation basin due to the fact that the regulatory status of the retention pond is under review.

December 11, 2001

On December 11, 2001 I called Mr. Frank Santella of CPI Environmental Services and asked him for the specific sampling locations of certain points. Specifically, I requested the locations of sample EQ-1 (stormwater pond sampling event), W-101 thru W-104 (sampling event #1), and wanted to verify that the S-101 thru S-136 sampling results corresponded to the TP-101 thru TP-136 sampling results. I found that Table 1 in Volume 1 of the *Comprehensive Site Investigation Report* contained the applicable sample I.D (S-sample) and cross-referenced that the corresponding TP sample location. Mr. Santella stated that sample EQ-1 was an equipment blank, and W-101, W-102, W-103, and W-104 were surface water/standing water samples collected from TP-128, TP-130, TP-135, and a pond water sample, respectively. Mr. Santella also stated that for boring B-201 in Table 2, Volume 1 of the *Comprehensive Site Investigation Report*, three parameter's concentrations showed incorrect results. 4-chlorophenyl-phenylether was actually recorded as non-detect in the analysis; chrysene was reported as 183 mg/kg in the analysis, and dibenzo[a,h] anthracene was reported as 35.5 mg/kg in the analysis.

December 21, 2001

I talked to Frank Santella today regarding the December 12, 2001 Illinois EPA comment letter. Mr. Santella did not understand why a groundwater investigation would be warranted at this site due to the low hydraulic conductivity and the fact the silty clay underlying the fill material was minimally or not impacted. I stated that based on the SRP regulations (35 IAC 740.420(3)) all media (i.e., soil and groundwater) has to be addressed at the site. I stated that several things could cause contaminants to travel from soil to groundwater including heterogeneous site geology, the length of time contaminants have been in the fill/soil, etc. I stated that also due to the proximity of the Chicago River, I would anticipate groundwater to be located at the site. I stated that under a Tier 3 scenario, the groundwater exposure pathway may be eliminated, however this issue would have to be presented to senior managers at CORE. Mr. Santella agreed that a groundwater investigation would be conducted at the site and anticipated sending in a plan for the groundwater monitoring well location after January 1, 2002.

January 10, 2002

Sarah Schlichtholz, CPI Environmental, called me today regarding sampling at the Cometco facility. She asked what "a method approved by the Agency" was under 35 IAC 742.215(b)(2) was. I stated that a site specific natural organic carbon fraction of the soil could be determined by taking unimpacted sample(s) from location(s) across the site, and compare that value to the total petroleum hydrocarbon (TPH) value in a sample to determine if the soil attenuation capacity has been exceeded (i.e., free product exists).

She also asked how many confirmatory samples were required once the free product was removed. I stated that the 35 IAC 740 regulations do not specify distances when confirmation samples should be collected. I stated it would be a judgement call on the part of CPI, however enough samples should be collected at the base of the excavation(s) and side walls to adequately demonstrate that free product concentrations do not exist in the areas of concern.

February 7-19, 2002

A *Groundwater Investigation Plan*, dated January 30, 2002 and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. Further detail of this plan is discussed in Section B.4 above (**General Site Information** - *Description of how the remediation objectives meet the Tiered Approach to Corrective Action Objectives ("TACO") criteria 35 IAC 742).*

A *Remedial Action Plan*, dated January 30, 2002, and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. Further detail of this plan is discussed in Section B.5 above (**General Site Information** - *Remedial Action(s) Performed*). The proposed *RAP* met the requirements of 35 IAC 740.450.

A *Soil Remediation Objectives Report*, dated January 30, 2002 and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. A summary of this report is discussed in Section B.4 above (**General Site Information** - *Description of how the remediation objectives meet the Tiered Approach to Corrective Action Objectives ("TACO") criteria 35 IAC 742).*

After review of the above named three (3) documents, the Illinois EPA has the following comments:

1. The soil component of the groundwater ingestion route exposure pathway was not addressed in the January 30, 2002 *Soil Remediation Objectives Report* (Illinois EPA Log No. 02-0400). The Remediation Applicant (RA) should address this exposure pathway using one of the tiered approaches for this pathway referenced in 35 Illinois Administrative Code (35 IAC) 742.505(a)(3), 742.700, or 742.925.

2. As referenced in 35 IAC 742.215(b)(1)(B), a site-specific f_{oc} (organic carbon content of the soil) value may be determined as measured by ASTM D2974-87, Nelson and Sommers, or by SW-846 Method 9060: Total Organic Carbon, as incorporated by referenced in Section 742.210. Page 10 of the January 30, 2002 *Soil Remediation Objectives Report* states that the site-specific f_{oc} of 19,550 mg/kg was derived from an average concentration of f_{oc} collected from non-impacted native soil at the subject property. The RA should provide the sample locations from which this f_{oc} value was derived.

3. The Illinois EPA Toxicity Assessment Unit (TAU) has developed provisional soil cleanup objectives of 61,000 mg/kg for the ingestion exposure route for industrial/commercial land use and for construction workers for the parameters acenaphthylene, benzo(g,h,i)perylene, 2-methylnaphthalene, and phenanthrene. No toxicity criteria available for the inhalation exposure route for these parameters are currently available.

A Illinois EPA comment letter, containing these three (3) comments was sent to the RA on February 20, 2002.

February 28, 2002

Sue Brauer, USEPA, called me today and stated that there were "pumping" activities occurring today at the sedimentation basin. Ms. Brauer planned on traveling to the site this afternoon to observe the pumping of the basin, and to determine where the pumped material was being disposed of.

April 4, 2002

Mr. George Opec, USEPA – Region 5, called me today and stated that he was the enforcement officer in the RCRA section. He stated he is another point of contact for the site.

April 11, 2002

I spoke with Greg Gehrig today regarding February 20, 2002 Illinos EPA comment letter. Mr. Gehrig indicated that he was a consultant, obtained by USEPA, to review the *Groundwater Investigation Plan, Soil Remediation Objectives Report*, and *Remedial Action Plan*. He stated that his main concern, as noted in the February 20, 2002 comment letter was that the RA did not address the soil component of the groundwater ingestion pathway. He indicated that he was going to prepare a report of his findings for the USEPA.

In addition, a letter from CPI dated April 8, 2002 (Illinois EPA Log No. 02-1294) was submitted to respond to the February 20, 2002 Illinois EPA comment letter. The letter addresses the three (3) Illinois EPA comments from the February 20, 2002 and is summarized as follows:

CPI Environmental Services, Inc. – response to comment #1

The soil component of the groundwater ingestion route exposure pathway will be addressed in the *Groundwater Investigation Report* to be prepared and submitted to the Illinois EPA upon completion of further groundwater investigation and classification activities.

CPI Environmental Services, Inc. – response to comment #2

The organic carbon fraction (f_{oc}) was obtained from sample locations B-212, B-213, B-214, and B-216.

CPI Environmental Services, Inc. – response to comment #3

The maximum concentrations of acenaphthylene (4.46 mg/kg), benzo(g,h,I)perylene (66 mg/kg), 2-methylnaphthalene (59.2 mg/kg), and phenanthrene (284 mg/kg) at the subject property do not exceed the provisional soil cleanup objective of 61,000 mg/kg, these chemicals are not considered COCs. Due to the limited occurrence and extent of 4-chloro-3-methylphenol, it likely poses no additional significant risk to human health or the environment.

Illinois EPA Comments:

Regarding comment #1, the Illinois EPA anticipates the receipt of the *Groundwater Investigation Report* and, if necessary, will develop additional comments at that time. Comment #2 has been addressed. Regarding comment #3, the Illinois EPA TAU is currently in the process of reviewing the applicable RO for 4-chloro-3-methylphenol. Once a RO is provided to the project manager, additional comments may be developed, if necessary.

August 5, 2002

CPI provided three (3) reports to the Illinois EPA. The reports were titled *Groundwater Investigation Report* (June 12, 2002), *Letter report responding to IEPA's February 20, 2002 comment regarding the soil component of the groundwater ingestion pathway* (June 17, 2002), and *Interim Remedial Action Completion Report* (June 20, 2002). All three (3) reports were received by the Illinois EPA on July 1, 2002. A summary of these reports is presented below.

Groundwater Investigation Report

In March 2000, five (5) monitoring wells (MW-1 through MW-5) were installed at the subject site. Samples were collected from these wells and were analyzed for BTEX and PNAs. No BTEX or PNA compounds were reported to have been detected in these groundwater samples. The results of this investigation were presented in a *Site Classification Completion Report* dated March 2000.

On April 24-25, 2002, five (5) additional boreholes were drilled at the site. In accordance with the *Groundwater Investigation Plan*, these soil borings were converted to 2-inch diameter PVC monitoring wells (MW-6 through MW-10). Well locations are shown on Figure 2 in the *Groundwater Investigation Report*. The monitoring wells were screened from depths ranging from 10-28 feet bgs. Well MW-6 is located south of the paint shop, downgradient of previously identified areas impacted with arsenic and PNAs. Well MW-7 is located northeast of the baler building along the riverbank, downgradient of previously identified areas displaying elevated arsenic, lead, and PCB concentrations. Well MW-8 is located north of the central material storage area and downgradient of areas displaying elevated concentrations of metals and PCBs. Well MW-9 is located along the southern extent of the riverbank, downgradient of elevated concentrations of metals and PCBs were detected. Well MW-10 is located on the southwest corner of the property downgradient of areas displaying elevated lead and arsenic concentrations.

The geologic and hydrogeologic characterization and Class II groundwater classification is discussed in detail in the *Groundwater Class* Section B.3 in this checklist above.

Based on depth-to-water measurements, groundwater elevations were calculated and used to prepare the potentiometric surface map presented in Figure 3 in the *Groundwater Investigation Report*. Based on the potentiometric surface map, groundwater at the site flows to the northeast toward the North Branch of the Chicago River.

In accordance with the *Groundwater Investigation Report*, groundwater samples collected from wells MW-6 and MW-7 were analyzed for dissolved metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and PCBs. Groundwater samples collected from wells MW-8, MW-9, and MW-10 were analyzed for VOCs, SVOCs, metals, and PCBs. No dissolved metals, VOCs, SVOCs, or PCBs were detected at concentrations that exceeded the Class I or Class II groundwater ROs.

Letter report responding to IEPA's February 20, 2002 comment regarding the soil component of the groundwater ingestion pathway (June 17, 2002), and *Interim Remedial Action Completion Report*

In response to comment #1 in the February 20, 2002 Illinois EPA comment letter, this letter-report evaluates the soil component of the groundwater ingestion exposure pathway.

A review of Tier 1 soil component of the groundwater ingestion exposure route evaluation indicates that concentrations of the following COCs exceed 35 IAC 742 Tier 1 soil component of the groundwater ingestion exposure route ROs: benzene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, ethylbenzeene, tetrachloroethene, vinyl chloride, and selenium. The identified organic COCs were detected in soil samples representing fill material in areas #2, #8, #13, and the area in the immediate vicinity of borehole B-318. Concentration of selenium exceeded the pH specific SRO in area #6.

As indicated in the Illinois EPA approved *Remedial Action Plan*, impacted fill material will be removed from Area #2, eliminating COCs (vinyl chloride) from this area.

The COCs identified in areas #6, #8, #13, and B-318 are evaluated under 35 IAC 742 Tier 2 soil component of the groundwater ingestion exposure route evaluation. Tier 2 calculation sheets are included in Attachment B of June 17, 2002 response letter. CPI's modeling results indicate that the concentrations on COCs in groundwater will not exceed Tier 1 ROs at the point of exposure, therefore, there is no potential for off-site migration of COCs.

Interim Remedial Action Completion Report

The *Interim Remedial Action Completion Report* includes the following: a narrative of field activities and remedial actions; discussion of special conditions including engineered barriers and institutional controls; results of Area 14 post-excavation sampling; and CPI's conclusions pertaining to the remediation of Area 14.

The *Interim Remedial Action Completion Report* states that the following field activities were performed during the remediation of Area 14:

- Pumping, transporting and off-site disposal at permitted facility of accumulated stormwater (approximately 23,500 gallons);
- Bulking bottom sediments with fly ash (approximately 20 cubic yards) and sawdust (approximately 120 cubic yards) to absorb excess water, then excavating and transporting the bulked sediments to a permitted off-site disposal facility;
- Removing a synthetic poly-liner found beneath the stormwater pond sediments and disposal at a permitted off-site disposal facility;
- Removing silty clay soil (approximately 1 to 2.5 feet) underlying the poly-liner based on odor, visual observations and field screening instrumentation readings and disposal at a permitted off-site disposal facility (approximately 1 to 2.5 feet);
- Collecting post-excavation confirmation soil samples from the excavation floor and sidewalls for laboratory analysis in accordance with the RAP;
- Comparing the laboratory analytical results of the soil samples to the soil SROs;
- Removing additional soil from areas of the excavation, as defied by the area of inference of the sample, where the initial confirmation samples failed to meet the SROs and disposal of this soil at a permitted off-site disposal facility;
- Collecting a second round of post-excavation confirmation samples for laboratory analysis;
- Comparing the second round analytical results to the soil SROs and determining that no further excavation was needed; and
- Backfilling the excavation with clean fill material.

Excavation

The completed excavation measured approximately 54 feet north to south and approximately 58 feet east to west, resulting in a roughly circular excavation with a 40-foot diameter bottom. The depth of the completed excavation ranged from approximately 8 to 10 feet below the edge of the excavation area. The average excavation depth was 8.5 feet below average grade of the excavation edge. The slope of the excavation walls varied in angle from vertical to approximately 45 degrees.

Confirmation Sampling

Initial confirmation sampling results from the excavation bottom center sample location (CA14BCS) and east sidewall location (CA14WES) exceeded the soil SROs for select VOCs and TPH, respectively. Based on these results, and additional one (1) foot of silty clay was removed from the area of inference of CA14BCS, defined as a 20-foot square centered within the excavation bottom, as presented on Figure 3 in the *Interim Remedial*

Action Completion Report. Due to riverbank stability issues, further remediation along the eastern sidewall was impractical; no additional material could be removed from the eastern sidewall of the excavation.

Five (5) excavation bottom confirmatory samples and four (4) sidewall confirmatory samples were collected to verify that attenuation capacity of the soil was not exceeded by demonstration that the TPH concentrations had been reduced as a result of remedial activities to concentrations less than the natural organic carbon fraction of the soil. The five (5) excavation bottom samples displayed TPH concentrations ranging from below detection limits to 20 mg/kg, and three (3) out of the four (4) sidewall also displayed TPH concentrations less than the site-specific natural organic carbon fraction of 18,000 mg/kg. A TPH concentration of 37,900 mg/kg detected at the sample location representing the eastern sidewall (CA14WES) exceeded the soil attenuation capacity. Due to riverbank stability issues, further remediation along the eastern sidewall was impractical; no additional material could be removed from the eastern sidewall of the excavation. Since the confirmation sample was collected from the vertical midpoint of the sidewall and was biased to the most visually impacted horizon, additional samples subsequently were collected from the visually impacted horizon along the eastern sidewall to further characterize the distribution of TPH at the eastern sidewall. TPH concentrations from the subsequent three (3) sampling locations ranged from 199 mg/kg to 1290 mg/kg, with an arithmetic mean of TPH concentrations of 9969 mg/kg. In addition to limited horizontal extent, the visually impacted horizon appears limited in lateral extent to the east since no visual indication of similar impact is apparent along the riverbank. Based on this CPI states TPH exceedences are likely limited within the confined visually impacted area with the overall TPH concentrations at the eastern extent of the excavation less than the attenuation capacity of the soil.

<u>August 9, 2002</u>

On August 8, 2002 the Illinois EPA project manager conducted a site visit to the site. I met Mr. Mike Place, CPI, and Ms. Debbie Hayes, Metal Management, Inc. Mr. Place and Ms. Hays showed me around the site. They showed me the area of soil/sediment that had been removed and filled with clean fill (Area #14). We also walked in the baler building. Several piles of metal, white goods, etc. were present on the subject site.

<u>August 15, 2002</u>

On August 15, 2002, the following comments were forwarded to the RA:

1. 35 Illinois Administrative Code (35 IAC) 742.225 states that compliance with remediation objectives is achieved if each sample result does not exceed that respective remediation objective unless a person elects to proceed under subsections (c), (d) and (e) of this Section. The Remediation Applicant (RA) has not satisfied this regulation for the following reasons:

    a. A Toxicity Characteristic Leaching Procedure (TCLP) analytical result from soil from boring TP-310 revealed a concentration of lead at 1.46 mg/l. This exceeds the 35 IAC 742 Appendix B.Table B Tier 1 Class II soil component of the groundwater ingestion

exposure route value of 0.1 mg/l. The Remediation Applicant (RA) should address this lead concentration above the applicable Tier 1 remediation objective (RO).

b. Trichloroethene (TCE) detected in soil sample S-4 at a concentration of 0.61 mg/kg, which exceeds the 35 IAC 742 Appendix B.Table B Tier 1 Class II soil component of the groundwater ingestion exposure route value of 0.3 mg/kg. The RA should address this TCE concentration above the applicable Tier 1 RO.

2. 35 IAC 742.215(b)(2) states that the soil attenuation capacity is not exceeded if the total petroleum hydrocarbon (TPH) concentrations is less than the natural organic carbon fraction of the soil as demonstrated using a method approved by the Agency. A TPH concentration of 37,900 mg/kg detected at sidewall sample location (CA14WES) exceeds the site-specific soil attenuation capacity of 18,000 mg/kg. The RA must address this discrete TPH concentration, as the arithmetic mean TPH concentration should not be compared to the site-specific TPH concentration. The RA might consider addressing the TPH concentration at sample location CA14WES under 35 IAC 742.900.

Note:

The Illinois EPA Toxicity Assessment Unit is currently investigating applicable groundwater RO for the parameter dibenzofuran.

November 14, 2002

A document, prepared by CPI, was provided to respond to the August 15, 2002 Illinois EPA comment letter. The response document is dated October 23, 2002 and was received by the Illinois EPA on October 25, 2002. The following narrative summarizes CPI's response to the comments, followed by additional Illinois EPA comments.

CPI Environmental Services, Inc. – response to comment #1a

As depicted in the figure in the response document, TP-310 is located within a PCB impacted area (Area B). As part of PCB clean up to 40 CFR 761, impacted fill material in this area, including the location wher TP-310 was taken, will be removed and properly disposed off-site. The PCB Remedial Action Plan and Risk Assessment Report, which will include the aforementioned figure, is in final stages of preparation. Upon completion, this report will be submitted to USEPA Region V for review and approval. Confirmation samples documenting PCB cleanup success also will include lead analysis in the area where TP-310 was taken for SRP closure of the lead issue.

Illinois EPA Comments:

The response to comment #1 is conditionally appropriate for Illinois EPA approval. Based on the future excavation in this area, the elevated levels of lead may be removed from this location. The RA will be required to provide confirmation sampling for lead in the TP-310 location to determine if concentrations are below the 35 IAC 742 Appendix B, Table B Tier 1 Cass II soil component of the groundwater ingestion exposure route value of 0.1 mg/l.

CPI Environmental Services, Inc. – response to comment #1b

The location of soil sample S-4 is shown in a schematic figure included in a letter report prepared by Ecology and Environment, Inc. (E&E) dated January 20, 1999. From the E&E schematic figure it was determined that the location of soil sample S-4 falls within the boundary of Area #2. As indicated in the approved Remedial Action Plan, impacted fill material from Area #2 will be removed and properly disposed off-site. Post clean-up confirmation samples will include TCE analysis in the suspected area of S-4 for SRP closure of the TCE issue.

Illinois EPA Comments:

The response to comment #1 is conditionally appropriate for Illinois EPA approval. Based on the future excavation in this area, the elevated levels of TCE may be removed from this location. The RA will be required to provide confirmation sampling for TCE in the S-4 location to determine if concentrations are below the 35 IAC 742 Appendix B, Table B Tier 1 Cass II soil component of the groundwater ingestion exposure route value of 0.3 mg/l.

CPI Environmental Services, Inc. – response to comment #2

As indicated in the Interim Remedial Action Completion Report Area 14: Stormwater Retention Pond report, soil sample CA14WES was collected from the east wall of the excavated area located adjacent to the Chicago River. Prior to sample collection, soils were removed from this area to the extent practical, a determination made with the subsidence into the river. Therefore, in accordance with 35 IAC 742.900(c)(5), a site-specific RO of 37,900 mg/kg for TPH is requested since it is not practical to remove additional soils from this area due to proximity to the Chicago River and the danger of subsidence.

Illinois EPA Comments:

The impractical remediation request under 35 IAC 742.900 and 742.920 will be presented to CORE for review. If CORE has any comments, these comments will be placed in the letter.

<u>November 21, 2002</u>

On November 21, 2002, the Illinois EPA Project Manager presented the 35 IAC 742.900(c)(5) Tier 3 Impractical Remediation request to the Cleanup Objectives Review and Evaluation Group (CORE). The RA recommended that the TPH impacted soils on the east side wall of the former stormwater retention pond/sedimentation remain in place. The RA stated that it is not practical to remove additional soils from this area due to its proximity to the Chicago River and the danger of subsidence. The CORE Group agreed with the RA's recommendation, and will allow the soil to remain in place. A detailed discussion of the Tier 3 request is include as the memorandum (November 21, 2002) attached to this checklist.

ATTACH CORE MEMO TO CHECKLIST FOR FILE!!!!!!!!!!!!!!!!!!!!!!!!!

April 19, 2004

A report entitled *Interim Remedial Action Completion Report Area 2: Scrap Metal Storage Area* (Interim RACR) was submitted by CPI. The report is dated February 3, 2004 and was received by the Illinois EPA on March 25, 2004 (Illinois EPA Log No. 04-19396). The following narrative provides a summary of the report, followed by Illinois EPA comments.

Report Objectives

The Interim RACR focuses on the remediation of a portion of the property referred to as Area 2, an area where historically scrap potentially containing residual oil was stored. As part of the remedial action reported in this Interim RACR, soil within Area 2 has been remediated and post-excavation soil sample results demonstrate that the remedial actions performed meet SROs as presented in the soil ROR and RAP within practical limitations.

So as to proceed with the installation of an engineered barrier in the vicinity of Area 2, based on the results or the remedial action presented in this interim RACR, the RA requests that the Illinois EPA:

1. Approve the remedial actions reported herein as having been performed in accordance with the approved RAP;
2. Approve a Tier 3 request of impractical remediation for further soil removal along the east side wall of Area 2; and,
3. Confirm that the results of the actions performed and reported herein demonstrate that the ROs have been met in Area 2.

Field Activities and Remedial Actions

The following general field activities were performed during the remediation of Area 2:

1. Removal, transportation, and off-site disposal at a permitted facility of fill material containing TPH concentrations in excess of SROs excavated from Area 2; and,
2. Post-excavation soil sampling and laboratory analysis to confirm compliance with the SROs.

Remedial Activities

1. Excavated fill material consisting of metal-laden silty clay and asphalt millings to an average depth of two (2) feet below grade based on visual observations of apparent presence of petroleum hydrocarbons (e.g., sheen, odor);

2. Loaded excavated material into plastic-lined trucks;
3. Disposed of the fill at Newton County Landfill
4. Collected post-excavation confirmation soil samples from the excavation floor and sidewalls in accordance with the RAP for laboratory analysis; and,
5. Compared the laboratory analytical results of the soil samples to the soil SROs.

Figure 2 in the report shows the final dimensions of the Area 2 excavation area. The completed excavation was irregularly shaped and measured approximately 110 feet north to south and approximately 15 feet to 25 feet east to west at the northern and southern excavation extent, respectively. The depth of the completed excavation ranged from approximately one (1) to four (4) feet below the edge of the excavation area. The average excavation depth is estimated at two (2) feet below average grade of the excavation edge. The slope of the excavation walls varied in angle from vertical to approximately 45 degrees.

Confirmatory Sampling

On December 17, 2003, as completion progress of the initial excavation allowed, confirmation samples were collected from the excavation bottom and sidewalls to verify remediation progress. The excavation bottom soil samples were collected using the procedures prescribed in the RAP section D.2 *Soil Sampling Methodology*.

To verify the lateral limit of soil remediation, one (1) sample was collected from the west wall of the excavation and one (1) from the east wall. No samples were collected from the south excavation wall since excavation was performed to the northern extent of where soil was remediated at Area 14 and subsequently backfilled with clean fill. Sidewall samples were analyzed for TPH in accordance with the RAP.

Field observation performed during remedial activities indicated no apparent visual or olfactory evidence of free product present in fill material north of the final extent of the excavation area. Due to these observations, two (2) test pits, TP301 and TP302, were excavated to observe soil conditions to determine the need to extend the excavation farther north. Soil conditions at TP501 and TP502 appeared similar to those observed along the western and northern extent of the excavated area and no presence of free product was noted. Only a slight petroleum-like odor was noted in the fill, which extends to one (1) foot below ground surface and overlies native silty clay with no apparent petroleum impact. Samples were collected at 0.5 feet bgs at both test pits to verify field observations.

Discussion of Confirmatory Sampling Results

Exposure Route Evaluation

Results from confirmation samples collected from the bottom of the excavation and analyzed for vinyl chloride and TCE were compared to SROs as defined in the ROR

dated January 30, 2002. Neither compound was detected at concentrations in excess of SROs or Tier 1 soil component of the groundwater SROs.

Soil Attenuation Capacity

One (1) excavation bottom confirmatory sample and four (4) confirmatory samples defining the lateral extent were collected to verify that attenuation capacity of the soil was not exceeded by demonstrating that TPH concentrations had been reduced as a result of remedial activities to concentrations less than the site-specific natural organic carbon fraction of 18,000 mg/kg. The excavation bottom sample and the duplicate sample displayed TPH concentrations less than detection limits. TPH concentrations of 27 mg/kg, and 5940 mg/kg to 6700 mg/kg also were confirmed along the western and northern extents of the excavation, respectively. Previous remedial activities at Area 14 confirmed TPH activities less than the natural organic carbon fraction along the southern extent. Therefore, remedial activities were successful at reducing the vertical extent of TPH in the soil below the soil attenuation capacity to the north, south, and west.

A TPH concentration of 21,700 mg/kg, detected at the sample location representing the eastern sidewall, exceeded the site-specific natural organic carbon fraction of 18,000 mg/kg. The sample collected from this location displayed a high concentration of metal shavings with a petroleum odor, but no visible sheen or free product observed. Further remediation along this sidewall was deemed impractical due to proximity of riverbank shoring and tiebacks; additional soil removal in this area may affect the stability of the riverbank. Based on this, a request for Illinois EPA approval of impracticality of remediation is requested in accordance with 35 IAC 742.920.

Special Conditions

The approved SROs achieved as part of remedial activities at Area 2 require that institutional controls and engineered controls be placed on the property. These requirements will be implemented after the remaining areas at the property are remediated.

Engineered Controls

Engineered controls will consist of a site-wide impermeable surface to be placed over affected areas, as defined in the RAP. Area 2 is included in the site-wide engineered barrier. The nature of the barrier to be installed, the operation and maintenance plan, and construction worker protection will be determined in accordance with the RAP Section F following remediation of the remaining areas at the property, and determination of the property's future use.

Conclusions

- The remedial action resulted in the residual soil at the base of the excavation meeting the prescribed SROs as defined in the ROR dated Janaury 30, 2002.

- The remedial action has reduced overall TPH at Area 2 to concentrations less than the site-specific soil attenuation capacity to allow for use of an engineered barrier at the property.
- Further remediation along this sidewall was deemed impractical due to proximity of riverbank shoring and tiebacks; therefore, a request for Illinois EPA approval of impracticality of remediation is requested in accordance with 35 IAC 742.920.
- Area 2 is sufficiently remediated to be included in the site-wide comprehensive No Further Remediation Letter that the RA will request at the completion of the remaining planned remedial activities. Remaining site-wide remedial activities include soil removal at Area 1, installation of an engineered barrier, and establishment of institutional controls.

Illinois EPA Comments

A request of impractical remediation (35 IAC 742.920) at Area 14 was previously approved in a November 22, 2002 Illinois EPA comment letter. This request was for a TPH concentration observed above the site-specific natural organic carbon fraction along the east wall of Area 14. Based on the locations of riverbank shorings and tiebacks, and the possibility of riverbank stability concerns with further excavation, the request for impractical remediation was approved by the Illinois EPA CORE group. Like Area 14, additional excavation to the east at Area 2 may affect riverbank stability. Area 2 is located immediately north-northwest of Area 14 (parallel to the North Branch of the Chicago River). It should be noted that the TPH concentration (21,700 mg/kg) along the east wall of Area 2 (CA2WES - confirmation sampling), while above the site-specific natural organic carbon fraction, was lower than the TPH concentration that remained in place in Area 14 east wall confirmation sampling. Based on the previously approved Tier 3 request by CORE for Area 14, the Illinois EPA approves the Tier 3 request at Area 2.

<u>April 26, 2004</u>

On April 22, 2004 the Illinois EPA Project Manager conducted a site visit to the site. Ms. Sarah Schlichtholz, CPI, and the Cometco on-site Manager showed the Illinois EPA Project Manager the Area 2 excavation limits. The excavation was conducted to depths of up to four (4) feet in some of Area 2. The excavation had not been backfilled as of April 22, 2004 and contained surface water. The retaining wall tiebacks were observed in the limits of the excavation. Ms. Schlichtolz indicated that the excavation was tentatively scheduled to be backfilled the summer of 2004.

<u>June 27, 2006</u>

A document entitled *Interim Remedial Action Completion Report / Area 1: Baler Area* was submitted by CPI. The document is dated May 17, 2006 and was received by the Illinois EPA on June 9, 2006. The document was submitted to request Illinois EPA concurrence that remedial activities at Area 1 have been completed in accordance with the RAP dated January 30, 2002. The following narrative provides a summary of the document followed by Illinois EPA comments.

Report Objectives

This Interim RACR focuses on Area 1, or the Baler Area. Activities were carried out in accordance with the RAP at Area 1 and soil within Area 1 was sampled to demonstrate it meets the SROs.

Field Activities

The following general field activities were performed at Area 1:

1. The hydraulic baler, including concrete foundations, were removed and underlying soil conditions were observed; and,
2. Confirmatory soil sampling and laboratory analysis were performed to confirm compliance with the SROs.

Remedial Activities

Decommissioning of the baler commenced in November 2005 by removing the aboveground equipment components. During removal of subsurface components, such as concrete foundations, piping, and sumps, soil conditions were observed for the presence of free product. With the exception of small pockets of oily water in fill surrounding the baler area, which were controlled with oil-absorbing mats, no oil saturated conditions were encountered around or underlying the baler foundations in fill or underlying course base material.

In May 2006, samples were collected from the excavation bottom and sidewalls to verify that TPH concentrations were not present in excess of the soil saturation concentration. Figure 1 in the document depicts the sample locations.

Confirmatory Sampling Results

TPH concentrations from all sidewall and floor samples were less than the site-specific f_{oc} of 18,000 mg/kg. Therefore, the soil attenuation capacity of the soil is not exceeded at the Baler Area, allowing for exclusion of exposure routes with the use of an engineered barrier.

Since no TPH concentrations exceeded the soil attenuation capacity in any of the samples, including the stockpile sample, the material will be used as backfill in the excavation area.

Engineered Controls

Engineered controls will consist of a site-wide impermeable surface to be placed over affected areas, as defined in the RAP. Area 1 is included in the site-wide engineered barrier. The nature of the barrier to be installed, the operation and maintenance plan, and

construction worker protection will be determined in accordance with the RAP, Section F, following remediation of the remaining areas at the site.

Illinois EPA Comments

On June 28, 2006 the following comments were forwarded to the RA:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the document entitled *Interim Remedial Action Completion Report Area 1: Baler Area* dated May 17, 2006. The document was received by the Illinois EPA on June 9, 2006 (Illinois EPA Log No. 06-29888) and was prepared by CPI Environmental Services, Inc.

The *Interim Remedial Action Completion Report / Area 1: Baler Area* document adequately documents the remedial actions and confirmation sampling activities completed in Area 1: Baler Area as described in Section C.2.1.5 and Section D.1 in the January 30, 2002 *Remedial Action Plan* document.

The Interim Remedial Action Completion Report / Area 1: Baler Area document is approved.

As referenced in Section 4.2 of the document, an engineered barrier is anticipated to be installed at the site. Once the barrier has been installed, documentation of the barrier (i.e., photographs, etc.) should be provided to the Illinois EPA.

U.S. EPA
77 West Jackson Blvd
Chicago, IL 60604
ATTN: Bhooma Sundar LU-9J

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Continental [illegible]
CPI Environmental [illegible]
1123 Wheaton [illegible]
Wheaton, IL [illegible]

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Mr. Michael [illegible] Place, [illegible]
Continental Placer Inc.
CPI Environmental [illegible]
1123 Wheaton Oaks [illegible]
Wheaton, IL 60187

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAY 07 2009

REPLY TO THE ATTENTION OF:

L-8J

Certified Mail:
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Metal Management Midwest, Inc.
Attn: Ms. Debbie Hays
12701 South Doty Avenue
Chicago, Illinois 60633

Certified Mail:
Return Receipt Requested

CPI Environmental Services
Attn: Mr. Michael B. Place
799 Roosevelt Road
Building 6, Suite 110
Glen Ellyn, Illinois 60137

RE: Risk-Based PCB Cleanup Approval
1509 Courtland Street, Chicago IL 60642-1215

Dear Ms. Hays and Mr. Place:

We have completed our review of your February 7, 2007 application (entitled *Baseline Human Health Risk Assessment*) for approval of a risk-based cleanup under 40 CFR 761.61(c) for the Metal Management Midwest, Inc. property located at 1509 Courtland Street in Chicago, Illinois. In addition to the information in your application, Mr. Place has also agreed that Metal Management Midwest, Inc. will remove the soil represented by samples TP 302 and TP 310 and dispose of it off-site in an appropriate landfill.

There are several other locations at this facility where the PCB concentrations in soils exceed the self-implementing cleanup levels found at 40 CFR 761.61(a)(4). Based on the information provided in your application, we have determined that the existing PCB soil contamination represented by those other samples does not pose an unreasonable risk of injury to human health or the environment, as long as the land use of the property is restricted.

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We also understand that there are other chemical contaminants in the soils at this facility, and that you are working with the Illinois EPA to clean up those contaminants under a Remedial Action Plan (RAP). We expect that this will result in engineered barriers constructed and maintained over the entire contaminated area of the property. The requirements for construction, inspection, and maintenance of the engineered barrier will be established through the RAP approval process.

Accordingly, your application is hereby approved, subject to the conditions contained in the enclosure to this letter.

Please note that this approval does not relieve you from your duty to comply with all other applicable federal, state, and local requirements. If you have any questions, please contact Bhooma Sundar by e-mail at sundar.bhooma@epa.gov or by telephone at (312) 886-1660.

Sincerely,

Margaret M. Guerriero
Director
Land and Chemicals Division

Enclosure

cc: Mr. Todd Hall
Illinois Environnemental Protection Agency

Approval Conditions

A. Remedial Action

1. Metal Management Midwest Inc. shall remove accessible PCB remediation waste at locations TP 302 and TP 310 (defined as "Area A"and "Area B" respectively in the BHHRA report).

   a. All remediation waste containing concentrations of PCBs less than 50 ppm shall be disposed of in accordance with 40 C.F.R.761.61 (a)(5)(v)(A), as required by 40 CFR 761.61(a)(5)(i)(B)(2)(ii).

   b. All remediation waste containing concentration of PCBs greater than or equal to 50 ppm shall be disposed of in accordance with 40 C.F.R. 761.61(a)(5)(i)(B)(iii) in that it shall be disposed of in a hazardous waste landfill permitted by the U.S. EPA under section 3004 of RCRA, 42 U.S.C.6924, or by a state authorized under section 3006 of RCRA, 42 U.S.C.6926, or at a PCB disposal facility approved under 40 C.F.R. Part 761.

B. Land Use Restriction and Notice

1. The property must be restricted to industrial land use.

2. Within 60 days of completion of the cleanup activity, Metal Management Midwest, Inc. shall record, in accordance with State law, a notation on the deed to the property, or on some other instrument which is normally examined during a title search, that will in perpetuity notify any potential purchaser of the property that a risk-based approval for cleanup and disposal of PCB remediation waste has been issued by the U.S. EPA, and that the property is restricted to industrial land use.

C. Reporting

1. With in 60 days of competing the remediation under this approval, Metal Management Midwest, Inc. must submit to EPA, Region 5 a remedial action completion report that includes a summary of the sampling analytical results, a description of the final cap, a summary of the off-site disposal activities, and a certification that the cleanup has been conducted and completed in accordance with this approval.

2. Reports or information required by this approval must be submitted to:

   U.S. EPA, Region 5
   Attn : Bhooma Sundar
   Remediation and Reuse Branch
   77 W. Jackson Blvd., LU-9J
   Chicago, IL 60604

D. Change of Ownership

1. Metal Management Midwest, Inc. must notify U.S. EPA thirty days prior to any change in ownership of the property. Such notice must include the name, address and telephone number of the new owner, and the name of the new owner's contact person for this matter. Metals Management Midwest, Inc. must also submit a letter, signed by the potential purchaser, stating whether it intends to maintain the industrial land use, or whether it intends to remove and dispose of additional PCB-contaminated soils off-site instead.

CPI
Environmental Services, Inc.
1123 Wheaton Oaks Court, Wheaton, Illinois 60187
phone: 630/407-0800 — *fax:* 630/407-0799
www.continentalplacer.com

February 12, 2007

Bharat Mathur
EPA Regional Administrator
US EPA Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

Mr. Mathur:

A risk-based option is being pursued pursuant to 40 CFR §761.61(c) for remediation of polychlorinated biphenyls ("PCBs") at the property located at 1509 Cortland Street in Chicago, Illinois. This property currently is owned and operated by Metal Management Midwest Inc. as a scrap metal recycling facility. This notification is being sent to you pursuant to 40 CFR §761.61(c)(1).

To address the detection of PCBs at the property, a baseline human health risk assessment was completed to evaluate the risk that PCBs pose to human health, particularly outdoor industrial workers and construction workers. A *Baseline Human Health Risk Assessment: Risk to Workers from PCBs in Soil* report has been prepared detailing this evaluation, and is enclosed for USEPA review.

The baseline human health risk assessment demonstrates that PCBs do not pose unacceptable risk to human health. Projected cumulative excess cancer risks are within or less than the USEPA acceptable risk range of 10^{-4} to 10^{-6} for each potential receptor population for both central and upper bound estimates. In addition, cumulative noncarcinogenic hazard quotients are less than one, which indicates that adverse systemic effects to potential receptor populations are not likely. Based on this, no remedial actions are warranted at this time.

Although engineered barriers currently exist at the property and additional barriers are proposed for the entire property, the presence of existing or proposed engineered barriers was not taken into account during the baseline human health risk assessment. The presence of these barriers will serve to further minimize human exposure and transport.

To further minimize the risks associated with the presence of PCBs at the property, MMMI proposes the following:

- Land-use restrictions will be established in conjunction with IEPA SRP activities to limit use of the property to industrial.
- Engineered barriers will continue to be installed and maintained in conjunction with IEPA SRP activities and on-going facility improvements.

- Vehicular and customer traffic will be confined to paved areas of the property. Paved areas will be subject to daily sweeping to minimize the occurrence of track-out.

With this, MMMI requests approval from USEPA for risk-based remedial options pursued pursuant to 40 CFR §761.61(c). Please contact me with questions at (630) 407-0800, ext.101, or mplace@continentalplacer.com.

Sincerely,
CPI Environmental Services, Inc.

Michael B. Place
President

Attachment: BASELINE HUMAN HEALTH RISK ASSESSMENT: RISK TO WORKERS FROM PCBS IN SOIL (TWO COPIES)

c: Erika Glombicki, Metal Management Midwest, Inc.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

LU-9J

REPLY TO THE ATTENTION OF:

Certified mail
Return Receipt Requested

January 14, 2010

Metal Management Midwest, Inc.
Attn: Ms. Debbie Hays
12701 South Doty Avenue
Chicago, Illinois 60633

CPI Environmental Services
Attn: Mr. Michael B. Place
1123 Wheaton Oaks Court
Wheaton, IL 60187

RE: PCB Remedial Action Completion Report
1509 Courtland Street, Chicago IL 60642-1215

Dear Ms. Hays and Mr. Place:

I have completed the review of the PCB Remedial Action Completion Report Submitted on November 16, 2009 for the Metal Management Midwest, Inc. property located at 1509 Courtland Street in Chicago, Illinois.

U.S.EPA approves the remedial action undertaken at Area A and Area B. The confirmatory sample results indicate that remedial action objective is met at Area A and Area B. This allows for risk-based closure of residual PCB soil concentration at the property. Please proceed with the construction of impermeable surface barrier as defined in the IEPA approved Remedial Action Plan.

While Establishing Institutional controls to limit the future use of the property, Metal Management Midwest, Inc shall record a notation on the deed to the property, that will in perpetuity notify any potential purchaser of the property that a risk-based approval for cleanup and disposal of PCB remediation waste has been issued by the U.S.EPA, and that the property is restricted to industrial land use.

Within 60 days of obtaining the IEPA No Further Remediation (NFR) letter, the owner of the Metal Management Midwest, Inc should submit a certification that he/she has recorded the notation as specified in the above paragraph.

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Please note that this approval does not relieve you from your duty to comply with all other applicable federal, state, and local requirements. If you have any questions, please contact me by e-mail at sundar.bhooma@epa.gov or by telephone at (312) 886-1660.

Sincerely,

Bhooma Sundar

Bhooma Sundar
Project Manager

cc: Mr. Todd Hall
Illinois Environnemental Protection Agency

Mr. Todd Hall
Illinois Environmental Protection Agency
Bureau of Land
Remedial Project Management Section
1021 North Grand Avenue East
Springfield, IL 62794-9276

CPI

Environmental Services, Inc.

A Division of Continental Placer Inc.

1123 Wheaton Oaks Court, Wheaton, Illinois 60187
phone: 630/407-0800 — *fax:* 630/407-0799
www.continentalplacer.com

November 16, 2009

Ms. Bhooma Sundar
U.S. Environmental Protection Agency, Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Subject: *Risk-Based PCB Cleanup*
Metal Management Midwest, Inc.
1509 Cortland St., Chicago, IL

Dear Ms. Sundar:

Enclosed are two copies of the *PCB Remedial Action Completion Report* prepared by CPI Environmental Services, Inc. ("CPI") for the above referenced facility. The report summarizes the methods and results of work performed to remove and dispose of polychlorinated-biphenyl impacted soil at two locations on the subject property. The work was performed in accordance with the approval conditions outlined in U.S. EPA's letter dated May 07, 2009.

CPI continues to work with Metal Management Midwest, Inc. ("MMMI") and the Illinois EPA to secure a No Further Remediation ("NFR") letter in accordance with the Illinois EPA Site Remediation Program requirements. To move forward with obtaining the NFR letter, CPI and MMMI request that U.S. EPA review and approve the corrective measures completed to date for PCB-impacted soil at locations TP-302 and TP-310, as described in the attached report.

As part of SRP requirements and to fulfill obligations outlined in U.S. EPA's approval conditions for the PCB Cleanup, a commercial/industrial land-use restriction and an engineered barrier are planned for the subject property. The establishment of those controls will be completed in accordance with 35 Illinois Administrative Code Section 742 and documented in the Remedial Action Completion Report ("RACR") to Illinois EPA. A copy of Illinois EPA's NFR letter, indicating that USEPA's requests for an engineered barrier and institutional controls, will be forwarded upon receipt.

We look forward to receiving U.S. EPA's confirmation that the PCB cleanup activities documented in the enclosed report are acceptable. Please contact me at (630) 407-0800 ext. 101, if you have any questions or require additional information.

Respectfully submitted,
CPI Environmental Services, Inc.

Michael B. Place
President

Enclosure: PCB Remedial Action Completion Report

C: Debbie Hays - MMMI, with enclosures

BASELINE HUMAN HEALTH RISK ASSESSMENT: RISK TO WORKERS FROM PCBS IN SOIL

Metal Management Midwest, Inc.
1509 West Cortland Street
Chicago, Illinois 60622

Prepared for:

Metal Management Midwest, Inc.
12701 South Doty Avenue
Chicago, IL 60633

Prepared by:

CPI Environmental Services, Inc.
1123 Wheaton Oaks Court
Wheaton, IL 60187

CPI Project No. E-05-74-25-591

February 2, 2007

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TABLE OF CONTENTS

EXECUTIVE SUMMARY IV

Introduction iv
Project Background iv
Project Objectives v
Technical Approach v
Summary of Nature and Extent of Contamination vi
Summary of Risk Assessment vi

PART A: SITE CHARACTERIZATION 1

A1.0 INTRODUCTION 2

A1.1 Subject Property Location & Description 2
A1.2 Historical Usage of Subject Property 4

A2.0 SAMPLING STRATEGY 5

A2.1 Property-Wide Characterization 5
A2.1.2 Summary of Sampling Events 5
A2.1.2 Soil Sample Collection Methodology 7
A2.2 Groundwater Characterization 8
A2.3 Area A and Area B Delineation 9

A3.0 DISCUSSION OF FINDINGS 11

A3.1 Observed Conditions 11
A3.2 Laboratory Analytical Results 12
A3.2.1 Fill Material 13
A3.2.2 Native Soil 14
A3.2.3 Surface Water & Sediment 14
A3.2.4 Groundwater 15

A4.0 MEDIA OF CONCERN AND AREA OF PCB IMPACT 16

PART B: RISK ASSESSMENT 17

B1.0 CONCEPTUAL SITE MODEL 18

B1.1 Anticipated Future Land Use & Development 18
B1.2 Potential Receptor Populations 18
B1.3 Contaminant Fate and Transport of Media of Concern 19
B1.4 Exposure Pathway Completeness Evaluation 19
B1.5 Exposure Area Determination 20

B2.0 QUANTIFICATION OF EXPOSURE 21

B2.1 Determination of Exposure Point Concentrations 21
B2.1.1 Industrial-Commercial Workers 21
B2.1.2 Construction Workers 23
B2.2 Exposure Estimation Methods 23
B2.2.1 Exposure Algorithms 24
B2.2.2 Exposure Parameters 24
B2.3.3 Exposure Estimates 25

B3.0 TOXICITY ASSESSMENT 26

B3.1 Quantitative Indices of Cancer Potency 27
B3.2 Quantitative Indices of Toxicity 27

B4.0 RISK CHARACTERIZATION 28

B4.1 Risk Calculation Methodology 28
B4.1.1 Cancer Risk Calculations 28
B4.1.2 Hazard Index (Noncarcinogenic) Calculations 29
B4.1 Projected Carcinogenic Risks 29
B4.2 Projected Noncarcinogenic Effects 30

B5.0 UNCERTAINTY ANALYSIS 31

B5.1 Environmental Sampling 31
B5.2 Exposure Estimation Calculations 32
B5.3 Contaminant Migration Modeling 33
B5.4 Toxicity Uncertainties 34

REFERENCES 37

FIGURES

Figure 1. Property Location Map
Figure 2. Property Features Map
Figure 3. Sample Locations and PCB Results
Figure 4. Potentiometric Surface Map
Figure 5. Cross Section of A-A' and B-B'

TABLES

Table 1. PCB Results in Fill
Table 2. Area A and Area B QA/QC Sample Results
Table 3. PCB Results in Clay
Table 4. Conceptual Site Model
Table 5. Exposure Pathway Completeness Determination
Table 6. Single-Point Exposure Point Concentrations within Exposure Area
Table 7. Summary of Average and RM EPCs
Table 8. Summary of Toxicity Indices
Table 9. Summary of Total PCB Risk Results

APPENDIX

Appendix 1. E & E Letter Report
Appendix 2. Test Pit and Boring Logs
Appendix 3. Monitoring Well Construction Reports
Appendix 4. Laboratory Analytical Reports
Appendix 5. ProUCL EPC Calculations
Appendix 6. RAIS Documentation
6-1. RAIS Models
6-2. Input Parameters
6-3. Toxicity Indices
Appendix 7. Risk Calculation Sheets

EXECUTIVE SUMMARY

Introduction

Retained by Metal Management Midwest Inc. ("MMMI"), CPI Environmental Services Inc. ("CPI") has prepared a Baseline Human Health Risk Assessment report for polychlorinated biphenyls ("PCBs") at property located at 1509 Cortland Street in Chicago, Illinois ("subject property"). This property currently is owned and operated by MMMI as a scrap metal recycling facility.

CPI presents a risk-based option for remediation of polychlorinated biphenyls ("PCBs") at the subject property pursuant to 40 CFR §761.61(c) for approval by the United States Environmental Protection Agency ("USEPA"). Risk-based options are being pursued in lieu of self-implemented options as outlined in 40 CFR §761(a). This report includes information as described in the notification required by §761.61(a)(3) and has been prepared in general accordance with guidelines outlined in the *Interim Draft: PCB Risk Assessment Review Guidance Document* (Versar, 2000) using generally accepted USEPA risk assessment guidelines, techniques and reference materials.

Project Background

MMMI entered into the Illinois Environmental Protection Agency ("IEPA') Site Remediation Program ("SRP') on May 16, 2001. A *Remedial Action Plan* ("RAP") to address potential non-PCB chemicals of concern was approved by IEPA on February 20, 2002. Due to the concentration of PCBs detected in fill material at the subject property, IEPA requested that the PCBs be managed in accordance with 40 CFR 761 through the USEPA.

The IEPA-approved RAP consisted of soil removal and off-site disposal at three areas, and installing and maintaining an engineered barrier over the entire property to minimize exposure of

industrial workers to residual contaminants of concern, defined as lead, arsenic, and polyaromatic hydrocarbons. To date, soil removal and disposal has been completed, interim acceptance of remedial actions has been granted by IEPA, and installation of the engineered barrier is progressing in conjunction with site-wide operational improvements.

Project Objectives

Project objectives include evaluating the nature and extent of potential PCB-impacted media at the subject property and conducting a baseline risk assessment to evaluate potential risks associated with PCB concentrations in affected media.

Technical Approach

CPI implemented a comprehensive study that included sampling and analytical testing throughout identified areas of concern. PCB investigations were conducted in concordance with investigations to evaluate other non-PCB potential contaminants of concern ("COCs") associated with scrap metal recycling operations, including volatile organic compounds ("VOCs"), semi-volatile organic compounds ("SVOCs"), and metals. Evaluation and remedial alternatives of non-PCB COCs are being addressed through the Illinois Environmental Protection Agency's (IEPA) Site Remediation Program (SRP) pursuant to Title 35 Illinois Administrative Code (IAC) Part 740. *Part A: Site Characterization* provides further details regarding characterization activities.

An evaluation of risk, as detailed in Part B, was conducted in accordance with EPA risk assessment guidance and *Interim Draft: PCB Risk Assessment Review Guidance Document* (Versar, 2000). Through use of statistical methods, exposure algorithms, and risk calculations, the exposure and risk assessment involved quantifying the potential carcinogenic and non-carcinogenic effects on potential receptor populations from PCBs present within scrap yard fill material within the defined Exposure Area ("EA").

Summary of Nature and Extent of Contamination

Historical industrial use of the subject property has resulted in PCB impact to fill material within the footprint of historical scrap metal handling areas at the subject property. Site investigations have adequately defined the extent and severity of PCB-impact at the subject property in potential media of concern, including fill material, underlying silty clay, groundwater, sediments, and surface water. Characterization has demonstrated that PCBs are confined to scrap yard fill material with no adverse impact to other media. PCBs detected at the subject property include Aroclor 1242, Aroclor 1254, and Aroclor 1260. proof?

Summary of Risk Assessment

A risk assessment was performed to quantify risks associated with PCBs present in scrap yard fill material within the EA. The assessment included determination of the potential carcinogenic and noncarcinogenic risks to potential receptor populations, defined as outdoor industrial workers and construction workers, through potential exposure to PCBs in fill material. Average (central estimate) and Reasonable Maximum ("RM", upper bound estimate) exposure scenarios for total PCB concentrations were considered. Exposure routes included in the determination were ingestion, inhalation, and dermal contact; no additional exposure pathways were deemed complete. justification

Risk calculations demonstrate that PCBs present in fill material within the Exposure Area likely do not pose unacceptable risk to human health. Projected cumulative excess cancer risks are within or below the USEPA acceptable risk range of 10^{-4} to 10^{-6} for each potential receptor population for both central and upper bound estimates. In addition, cumulative noncarcinogenic hazard quotients are less than one, which indicates that adverse systemic effects to potential receptor populations from the residual PCBs are not likely. The cumulative effect of the uncertainties and assumptions relied upon in this assessment likely is overestimation, as opposed to underestimation, of the true potential exposure to PCBs at the subject property and associated

risk to human health. Based on this, the presence of PCBs in fill material at the subject property poses no unacceptable risk to human health.

PART A: SITE CHARACTERIZATION

The following sections provide a narrative description of the subject property and assessment activities conducted to define the nature and extent of the PCB-impacted media at the subject property. Section A1.0 provides the location and physical description of the subject property and surrounding area, along with a summary of historical usage and occupants at the subject property. Section A2.0 discusses the sampling plan employed to delineate and define the nature and extent of potential PCB-impact at the subject property. A summary of investigative results and findings is presented in Section A3.0, and a determination of media of concern and area of impact is presented in Section A4.0.

PART A: SITE CHARACTERIZATION

A1.0 INTRODUCTION

A1.1 Subject Property Location & Description

The subject property is located at 1509 West Cortland Street, in Chicago, Illinois, Section 32, Township 40 North, Range 14 East of the third Principal Meridian, in Cook County. A topographic map showing the location of the subject property is provided as Figure 1, and a property features map is provided as Figure 2.

The property index number is 14-32-302-005-0000. The legal description for the property is as follows:

PARCEL 1: SUB-LOT 1 OF ORIGINAL LOT 1, EXTENDING TO THE THREAD OF THE CHICAGO RIVER, IN BLOCK 17 OF SHEFFIELD'S ADDITION TO CHICAGO IN THE SOUTHWEST ¼ OF SECTION 32, TOWNSHIP 40 NORTH, RANGE 14 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN COOK COUNTY, ILLINOIS

PARCEL 2: LOTS 2, 3, 4 AND 5, EXTENDING TO THE THREAD OF THE CHICAGO RIVER, IN BLOCK 17 OF SHEFFIELD'S ADDITION TO CHICAGO IN THE SOUTHWEST ¼ OF SECTION 32, TOWNSHIP 40 NORTH, RANGE 14 EAST OF THE THIRD PRINCIPAL MERIDIAN, EXCEPTING THEREFROM THAT PART OF LOT 5, AFORESAID, CONVEYED TO JOHN M. WHITMAN, RECEIVER OF THE CHICAGO AND PACIFIC RAILROAD COMPANY, AND TO THE CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY COMPANY BY DEEDS RECORDED BY DOCUMENT NOS. 227959 AND 2798073 IN BOOKS 891 AND 6590, PAGES 226 AND 348, RESPECTIVELY, AND EXCEPTING THEREFROM THE WEST 116.00 FEET OF SAIL LOTS 2 AND 3 AND THE WEST 116.00 FEET OF THE NORTH 107.75 FEET OF SAIL LOT 4, ALL IN COOK COUNTY, ILLINOIS

LOT 3: THE WEST 116.00 FEET OF LOTS 2 AND 3 AND THE WEST 116.00 FEET OF THE NORTH 62.00 FEET OF LOT 4 IN BLOCK 17 OF SHEFFIELD'S ADDITION TO CHICAGO IN THE SOUTHWEST ¼ OF SECTION 32, TOWNSHIP 40 NORTH, RANGE 14 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN COOK COUNTY, ILLINOIS

Currently, the subject property is utilized as a scrap metal recycling facility. The facility serves primarily as a feeder yard to other MMMI facilities located in Chicago. Loading, unloading, and

PART A: SITE CHARACTERIZATION

storage of scrap metal materials are the primary activities with processing limited to torch cutting of large ferrous materials. Ferrous materials at the facility include cast iron, white goods, and unprepared ferrous. Scrap metal materials arrive from peddlers, industrial accounts, and a municipal collection account. Cast iron is transported directly to mills, while white goods, unprepared ferrous, and nonferrous materials are transported to other MMMI processing facilities via truck or barge. Historical processing activities included baling; this operation was discontinued and the baler was removed in 2005.

The subject property is comprised of approximately four acres of land within an industrial corridor of an urban setting containing a mixture of commercial and industrial properties that are supplied with municipal water and a combined sewer system. The subject property is situated on the south side of West Cortland Street and bordered on the west by commercial and industrial properties along North Elston Avenue; east by the North Branch of the Chicago River; and south by a railroad easement and a gas cylinder manufacturing company. North of West Cortland Street are commercial and light industrial properties and east of the Chicago River are industrial properties.

Buildings currently present on the property include the office building and locker room (built prior to 1914), the maintenance and welding shop (built between 1914 and 1950) (built between 1914 and 1950), and the nonferrous warehouse (built in 1976). In addition to the buildings, other significant features include a truck scale, inactive and active rail lines, chain-linked fencing along the northern and western boundaries, and a barge-loading dock along the eastern side. Subject property features are illustrated on Figure 2.

PART A: SITE CHARACTERIZATION

A1.2 Historical Usage of Subject Property

From pre-1914 to pre-1950, Eureka Coal and Dock Company, including a blacksmith operation, occupied the premises. From pre-1950 to post-1975, Roth Adams Fuel Company stored coal at the property and an auto repair shop occupied the Welding Shop building. From 1975 to the present, the subject property has been utilized as a scrap metal processing facility and has been operated by the following: Scrap Corporation of America, Cometco Corp., Cozzi Iron and Metal, and Metal Management Midwest, Inc.

PART A: SITE CHARACTERIZATION

A2.0 SAMPLING STRATEGY

Sampling was performed to evaluate the nature and extent of potential PCB contamination in onsite media, including soil, sediments, surface water, and groundwater. The following subsections summarize site-specific procedures and sampling methods utilized during investigations performed by CPI in March 2000, in August through October 2000, and November 2006. Sampling strategies from previous PCB investigations conducted in 1998 by Ecology & Environment (E & E) for the USEPA are summarized in the attached report included as Appendix 1.

Property-wide PCB characterization to delineate potential "hot spots" and concentration trends of PCBs was performed in 2000 by CPI. Subsequent investigations performed in 2006 were conducted to delineate the lateral and vertical extent of soil with PCBs in excess of 50 mg/kg for purposes of off-site disposal; however, based on results, disposal actions were not deemed warranted.

A2.1 Property-Wide Characterization

A2.1.2 Summary of Sampling Events

A random, authoritative sampling approach was utilized during the 2000 sampling events to delineate potential "hot spots" and concentration trends of PCBs in fill material (i.e., suspected source media) and to determine whether PCBs have migrated or affected other media, such as underlying silty clay, surface water, and groundwater. Due to the build up of imported fill with scrap metal over time, sampling was focused below the surface, since the greatest concentrations

PART A: SITE CHARACTERIZATION

of PCBs are likely attributed to historical scrap metal storage operations rather than recent operations[1].

Sample locations were concentrated within the primary scrap metal storage and processing areas as depicted on Figure 2, and were selected at approximate 50-foot intervals as site conditions allowed access. Samples were collected from horizons showing visual or olfactory evidence of impact from scrap yard operations, such as presence of metal, debris, odors, or staining. Sampling locations are identified on Figure 3.

The March 2000 sampling event consisted of excavating thirty-five test pits (TP-101 through TP-135) to identify thickness and composition of fill material, to identify potential sources of contamination, and to establish the presence of PCB-impacted areas. In general, two soil samples were collected from each test pit. One sample was obtained from fill material at horizons showing evidence of impact and a second sample was obtained from native soil at depth to characterize the vertical extent of potential impact. Test pit excavation, sample collection, field documentation, and chain-of-custody procedures were performed as outlined in Section A2.2.3.

The August-October 2000 sampling event consisted of excavating an additional thirteen test pits and advancing forty-three borings. Additional test pit excavations to observe subsurface soil conditions and/or to collect soil samples from fill material were performed at locations TP-301 through TP-313 on October 16 and 17, 2000. Soil samples were collected using a Geoprobe® at borehole locations B-201 through B-211 on October 11, 2000 and at borehole locations B-314

[1] Current operations include implementation of inbound material acceptance procedures designed to prevent potential PCB source materials, such as capacitors, ballasts, and transformers, from entering the facility.

PART A: SITE CHARACTERIZATION

through B-340 on October 24 to October 25, 2000. A Deidrich D-120 drilling rig was used to collect samples from borings B-212 through B-216 on October 12, 2000. Test pit excavation, sample collection, field documentation, and chain-of-custody procedures were performed as outlined in the site-specific sampling plan presented in Section A2.2.3.

A2.1.2 Soil Sample Collection Methodology

Test pits were excavated and soil borings were advanced to depths ranging from 1.5 to 12 feet below ground surface. Test pits were excavated using a track-mounted CAT 215B operated by B-Hough Construction Corporation of Griffith, Indiana, under the supervision of CPI personnel or a Bobcat 320 excavator equipped with a 20-inch toothed bucket operated by CPI personnel. A Geoprobe Advanced 66T operated by Rock & Soil Drilling under CPI personnel supervision was used to collect soil samples at five-foot intervals using dedicated acetate sleeves to variable depths based on observed soil conditions in the area. Soil borings also were advanced with a Diedrich D-120 truck-mounted rotary drill rig advancing 4.25-inch inner diameter hollow stem augers. Where possible, soil borings were continuously sampled to the depth of each boring terminus, using two-inch split-spoon samplers.

During test pit excavations and boring advancement, CPI personnel prepared logs describing the materials encountered. Logs are provided in Appendix 2. Upon noting soil conditions on logs, samples for PCB analysis were collected, where possible, from the greatest impacted zone as determined through visual and olfactory observations. A new pair of latex or nitrile disposable gloves was donned prior to collecting each soil and water sample. Soil samples were collected by hand directly from excavation walls, split spoon samplers, or Geoprobe sleeves, placing an appropriate volume of a representative portion of soil into laboratory-approved jars.

PART A: SITE CHARACTERIZATION

Samples collected and selected for laboratory chemical analysis were delivered to First Environmental Laboratories, Inc. in Naperville, Illinois and analyzed in accordance with U.S. EPA methodologies as outlined in Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, USEPA SW-846. In accordance with 40 CFR §761.272, Method 3500B/3540C was utilized for chemical extraction and Method 8082 was utilized to analyze these extracts for PCBs.

A2.2 Groundwater Characterization

On April 24 and 25, 2002, five boreholes were drilled with a CME 45C drill rig equipped with hollow stem augers and two-foot split spoon samplers. Boreholes were continuously sampled to termination depth of 20 to 28 feet below ground surface. An Illinois certified geologist classified subsurface lithologies in accordance with Unified Soil Classification. Soil boring logs are included in Appendix 2. Soil borings were converted to two-inch diameter PVC monitoring wells. Monitoring well locations are shown on Figure 3. These monitoring wells were screened in the water-bearing gray clay unit underlying the brown-gray, silty clay unit. Total well depth ranged from 20 to 28 feet below ground surface. Filter sand was placed in the annular space to approximately two feet above the screened interval. The remainder of the annular space was sealed with bentonite chips, hydrated in six-inch lifts, and topped off with concrete slurry mix to ground surface in case of stick-up wells or to approximately 0.5 feet below the top of the casing in cases of flush-mount wells. Monitoring well construction reports are included in Appendix 3.

Prior to groundwater sampling, groundwater-monitoring wells were developed by surging for approximately 15 minutes and removing approximately five well volumes of water with a dedicated, disposable bailer. Groundwater samples were collected from monitoring wells using a dedicated, disposable bailer and submitted for laboratory analysis.

PART A: SITE CHARACTERIZATION

Groundwater samples were transferred into the appropriate laboratory containers, preserved, and stored in a cooler with ice prior to shipment to First Environmental Laboratories in Naperville, Illinois. Appropriate quality assurance/quality control (QA/QC) procedures and chain-of-custody protocols were followed. For QA/QC purposes, a laboratory-prepared trip blank sample and a duplicate groundwater sample were submitted for analysis.

A2.3 Area A and Area B Delineation

A systematic sampling approach was used to delineate the extent of PCBs at locations where previous sampling events indicated PCBs may be present in excess of 50 mg/kg. A sampling grid with 20-foot centers was established and centered on TP-302 (defined as "Area A") and TP-310 (defined as "Area B"), and extended to existing sampling points showing PCBs less than 50 mg/kg. Six sampling grids were delineated in Area A and nine in Area B, as depicted on Figure 3.

Samples were obtained from the center (or adjusted to avoid obstructions) of each grid using a truck-mounted Geoprobe. Soil was continuously sampled to four to six feet using four-foot long, SS two-inch diameter samplers lined with new acetate sleeves. Termination depth of borings was upon encountering silty clay. Upon logging soil conditions, samples were collected from each visual "horizon" of fill. If no visual horizons were apparent or if horizons were less than one-foot thick, samples were collected at one-foot intervals. Equal aliquots of each interval or horizon sample were then composited if more than two samples were collected from fill at a location. The composite sample was analyzed in lieu of the interval or horizon samples, which

PART A: SITE CHARACTERIZATION

were retained for possible additional analysis if visual observations indicated PCB impact was not likely[2].

Samples collected and selected for laboratory chemical analysis were delivered to Prairie Analytical Laboratories in Springfield, Illinois and analyzed in accordance with U.S. EPA methodologies as outlined in Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, USEPA SW-846. In accordance with 40 CFR §761.272, Method 3500B/3540C was utilized for chemical extraction and Method 8082 was utilized to analyze these extracts for PCBs.

[2] Results from composite samples were subject to a screening criterion of 50 mg/kg divided by the number of "interval" samples. For example, if a composite made up of four interval samples had a PCB result greater than 12.5 mg/kg (50/4), then each of the four fill interval samples was to be analyzed for PCBs to delineate the interval(s) with PCBs potentially greater than 50 mg/kg. Although this approach has the potential to produce "false positives," it also has the potential to greatly reduce the number of samples to be analyzed if the area is determined to be limited in extent.

PART A: SITE CHARACTERIZATION

A3.0 DISCUSSION OF FINDINGS

The following subsections summarize findings of comprehensive investigations and laboratory analytical results.

A3.1 Observed Conditions

A bituminous pavement with crushed stone base covers the western portion of the subject property. The extent of this pavement is depicted on Figure 3. During subsurface investigations, remnants of buried concrete structures and/or pads were encountered in various locations throughout the property including northwest of the former stormwater basin, in the central portion of the property in area of B-331 and TP-311, and east of the south end of the warehouse in the area of TP-108 and B-315. Decayed wooden plank surfaces also were encountered at two feet to five feet below ground surface in discrete areas in the central portion of the property; and likely were related to historical pre-scrap yard operations. Tie rods for the dock wall extend approximately 40 feet into clayey fill present in the eastern portion of the property along the river.

Underlying existing improved surfaces is urban fill material consistent with that found throughout the City of Chicago. The fill material is characterized as black and/or brown sand and gravel with variable amounts of debris including wood, glass, brick, cinders and concrete. Fill material was noted to range in thickness from one foot to 13 feet.

Consistent with historical operations at the subject property, metal and coal are found within the urban fill material. Discrete coal-laden horizons and metal-laden horizons (i.e., scrap yard fill) are present at former coal storage areas and scrap metal processing and storage areas. Scrap yard fill (i.e., urban fill observed to contain scrap metal and other debris consistent with scrap operations) is present throughout the primary scrap handling area, as depicted on Figure 2. In

PART A: SITE CHARACTERIZATION

general, metal fragments are abundant in the upper fill layers, whereas coal fragments are abundant in lower fill layers. Variable amounts of coal are present in the areas of test pits TP-107, TP-112, TP-113, TP-114, and TP-305. The most significant amount (greater than two feet) of coal was encountered in test pit TP-112. In addition, fill consisting primarily of crushed stone is present overlying clayey fill in the southeast portion of the property, extending south of the former baler to north of the former stormwater basin. This stone likely was placed in this area to facilitate drainage away from the dock to the former stormwater basin.

Underlying urban and scrap yard fill material is *in situ* and disturbed dry, brown-gray, mottled, silty clay extending to a maximum depth of 21 feet. Visual impact to the silty clay was noted only at select locations, and was noted to be confined to the top one to two inches of the silty clay. The exception was at B-328, where oil staining was observed within discrete vertical fissures in the top two feet of silty clay.

A glacial till unit consisting of gray clay underlies the upper silty clay-confining unit. Wet to saturated intervals were encountered in the gray clay unit; therefore, monitoring wells were screened in this unit with well depth ranging from 20 to 28 feet below ground surface. Based on the potentiometric surface map (Figure 4), groundwater at the subject property flows to the northeast toward the North Branch of Chicago River, under an average hydraulic gradient of 0.026 feet/feet.

Cross-sections depicting the relationship of various soil types are presented on Figure 5.

A3.2 Laboratory Analytical Results

Laboratory Analytical Reports are included as Appendix 3. To follow is a summary of analytical results for various media investigated.

PART A: SITE CHARACTERIZATION

A3.2.1 Fill Material

Ninety-nine (99) samples collected from fill material were analyzed from 83 sampling locations. Detected PCBs included Aroclors 1242, 1254, and 1260 with total PCB concentrations ranging from 0.046 mg/kg to 214.8 mg/kg. A summary of PCB analytical results from fill material is presented in Table 1 and Figure 3.

Detected concentrations were focused within the primary scrap handling area, particularly north and west of the former baler, in the central portion of the property, and in the southwest corner of the property. With the exception of B-202, no PCBs were detected outside the primary scrap handling area. At B-202, PCBs were detected at a concentration of 1.65 mg/kg in sandy fill underlying a one-foot thick concrete slab of the maintenance building[3].

PCBs were reported in excess of 50 mg/kg in fill material at two locations and further sampling was performed in these areas in November 2006 to delineate the extent of PCBs potentially present at concentrations exceeding 50 mg/kg. At TP-302, PCBs were reported present at 76.9 mg/kg in brown gravelly fill with scrap metal (i.e., scrap yard fill) that extended from the surface to 0.5 feet below ground surface. A 20-foot sampling grid was imposed on the area, referred to as Area A, and samples were collected from the fill, including one collected immediately north of the original sample location at the equivalent sampling interval as TP-302. Results ranged from non-detect to 0.521 mg/kg, with the greatest concentration detected at A2-1, the sample collected immediately adjacent to TP-302 at the equivalent sampling interval. Similar results were

[3] According to Sanborn fire insurance maps, the maintenance building was constructed prior to 1950. Due to the integrity and thickness of the concrete floor slab of the building, it is unlikely that PCBs migrated through the concrete after building construction. With this, the PCBs detected at this location likely are inherent to the fill underlying the building, and therefore, represent a pre-1978 release. In addition, since present underlying concrete, no exposure potential exists, and therefore, represents minimal risk to human health.

obtained at Area B, where PCBs were previously reported at 214.8 mg/kg at TP-310. Grid sampling in 2006 around TP-310 showed PCBs to be non-detect at equivalent sampling intervals. This subsequent sampling suggests that either the PCBs greater than 50 mg/kg is very limited in extent or data quality issues exist.

Although Prairie Analytical noted no data quality issues, to verify data validity, split samples of A-A2-1, B-B2-1, and B-B2-2 were sent to Test America in Nashville, TN to verify results through duplicate analysis (Table 2). Results of split samples were comparable, and therefore, data were determined to be reliable. Test America reports are provided in Appendix 3.

Although First Environmental Laboratories reported no QA/QC issues in 2000 during the initial sampling period, CPI requested Level 4 QA/QC documentation for data validation. Prairie Analytical, who concluded that the quality of the data is satisfactory, performed validation. Based on this, it is concluded that the data are valid, and that the extent of PCBs greater than 50 mg/kg is very limited.

A3.2.2 Native Soil

Nineteen (19) samples were analyzed from 19 sampling locations to assess silty clay underlying the fill material. No PCBs were detected in excess of reporting limits. A summary of results is presented in Table 3.

A3.2.3 Surface Water & Sediment

Surface drainage from scrap handling areas historically was to the southeast to a stormwater retention basin formerly present in the southeast corner of the property (see Figure 3). E & E analyzed two samples of surface water for PCBs, one from surface runoff along the eastern property boundary (Sample ID W1) and one from accumulated stormwater within the stormwater retention basin (Sample ID W2), and one sample of sediment collected from the bottom of the

PART A: SITE CHARACTERIZATION

stormwater retention basin (Sample ID S6). PCBs were not detected at concentrations in excess of reporting limits. Refer to the E & E report provided in Appendix 1.

A3.2.4 Groundwater

No PCBs were reported in excess of reporting limits within groundwater. Laboratory reports are provided in Appendix 4.

PART A: SITE CHARACTERIZATION

A4.0 MEDIA OF CONCERN AND AREA OF PCB IMPACT

Potentially affected media assessed during site characterization activities included the following:

- Fill material,
- Silty clay underlying the fill material,
- Surface water run-off,
- Sediments within the former stormwater retention pond, and
- Groundwater.

Site characterization activities demonstrate that PCBs are confined to scrap yard fill material within the primary operational area where scrap metal was historically stored, handled, and processed. The area of PCB-impacted fill is depicted on Figure 2. No evidence of PCB impact or migration to underlying silty clay, groundwater, sediments, and storm water run-off is noted.

PART B: RISK ASSESSMENT

The following sections assess potential human health risks associated with the presence of PCBs in fill at the subject property. Section B1.0 outlines the conceptual model developed for the risk assessment. Section B2.0 and Section B3.0 provide discussions of the rationale and methods employed in quantifying exposure and risk, respectively. Section B4.0 presents conclusions regarding the projected potential carcinogenic and noncarcinogenic risks. Section B5.0 presents an analysis of assumptions and uncertainties associated with the assessment.

PART B: RISK ASSESSMENT

B1.0 CONCEPTUAL SITE MODEL

The following subsections discuss the rationale used to generate the conceptual site model used for the exposure assessment. A summary of the conceptual site model is presented in Table 4.

B1.1 Anticipated Future Land Use & Development

The subject property currently is classified as industrial-commercial, and this designation is presumed to not change based on its location in an industrial corridor and current zoning. Necessary deed restrictions to limit the use of the property to industrial-commercial will be implemented in conjunction with remedial activities being performed under IEPA's SRP program for other contaminants of concern present at the subject property.

The subject property is slated to continue to operate as a scrap metal recycling facility with no proposed plans to change its intended use. MMMI has performed numerous site improvements over the past six years with the intentions of continuing to operate at the property, including the construction of a busheling containment pad and removal of the baler. Additional improvements currently being undertaken include construction of a new scale office and above-grade scale and completion of a site-wide engineered barrier as part of the remedial action strategy approved by the IEPA under the SRP.

B1.2 Potential Receptor Populations

The potentially exposed receptor populations are based on present and anticipated future land use of the subject property. Industrial and construction workers are potentially exposed receptor populations to media of concern (i.e., fill material). In addition, customers delivering scrap metal have access to the area of concern; however, length of exposure is minimal and is limited to the time needed to unload a truck. Based on this, customer exposure would be expected to be less

PART B: RISK ASSESSMENT

than the exposure by a full-time on-site worker; therefore, customer exposure is included with industrial worker exposure considered herein.

Based on surrounding land usage in an industrial-commercial corridor, no potential on-site residential receptors are anticipated, and future occurrence of residential receptors is unlikely. Due to confinement of the impact to onsite fill material with no PCBs detected in fill material near property boundaries abutting adjoining commercial properties, no off-site human exposure is identified. In addition, the subject property is generally secured from trespassers (fenced and gated), with additional security planned for along the railroad tracks. No additional highly exposed, sensitive, or special population (i.e., sport fisherman, recreational users, subsistence fisherman) utilize the property.

B1.3 Contaminant Fate and Transport of Media of Concern

Characterization has shown PCBs to be confined to fill material, and no evidence indicating migration has occurred from fill material to outside the defined area of impact or to other media, including underlying silty clay, groundwater, or surface water. Transport of PCBs from fill material to receptor populations likely would occur either through direct contact with the affected fill material or through air transport mechanisms (wind distribution of PCB-affected soil particles and evaporation of PCBs from exposed soil).

B1.4 Exposure Pathway Completeness Evaluation

Pathways were examined for each potentially exposed receptor population (i.e., on-site industrial workers and construction workers). Further assessment of risk associated with media of concern (i.e., scrap yard fill material) was completed for those pathways determined to be complete. Pathways evaluated included ingestion, inhalation of vapors, inhalation of dust, and absorption through dermal contact. A summary of the pathway completeness determination is presented in Table 5.

PART B: RISK ASSESSMENT

Potential human receptor populations absorb PCBs from ingestion, inhalation, and dermal exposure (ATSDR, 2000). Residual PCBs may be ingested through incidental ingestion of fugitive dust and/or hand-to-mouth transfer; through inhalation of fugitive dust and/or vapors; and/or through dermal absorption when exposed to skin surfaces. Since no agricultural lands or recreational fishing areas reside near the subject property, ingestion of fish, beef or other food items contaminated with PCBs from the subject property is not a concern; therefore, these pathways are not further evaluated.

Future construction workers have potential to be exposed to PCB-impacted fill material while performing subsurface work. Construction workers may be exposed to PCBs in the excavation area through ingestion, inhalation of fugitive dust or vapors, and dermal contact. Since these pathways cannot be excluded for the construction worker population, further evaluation of risk is warranted.

B1.5 Exposure Area Determination

Outdoor workers present at the property are not confined to one area, and if working outside an enclosed vehicle (e.g., crane, loader, truck, etc.), would be transient throughout the property. With this, the Exposure Area (EA) for industrial workers has been defined as the primary scrap metal handling area excluding outlier areas where PCBs were not detected. The PCB EA is depicted on Figure 3. Although asphalt and concrete surfaces overlay PCB-impacted fill in select areas, no consideration of existing engineered barriers is made during this assessment. Not considering existing engineered barriers and excluding select areas where no PCBs were detected would be expected to bias the estimated exposure high as compared to actual exposure, and therefore offers a more health-protective assessment.

PART B: RISK ASSESSMENT

B2.0 QUANTIFICATION OF EXPOSURE

This section describes how the quantitative exposure estimates were obtained for complete exposure pathways. Section B2.1 describes how the exposure point concentrations ("EPC") used in the exposure assessment calculations were selected or derived. Section B2.2 describes the contaminant migration models/equations that were used to estimate exposure from complete exposure pathways.

B2.1 Determination of Exposure Point Concentrations

The dataset for which EPCs were calculated is presented on Table 6. Exposure point concentrations for each potential receptor population are summarized on Table 7. The following subsections discuss how EPCs were calculated for each receptor population.

B2.1.1 Industrial-Commercial Workers

It is assumed that outdoor scrap yard workers are not stationary and would perform work duties throughout the EA; therefore, this population would be exposed to conditions present throughout the EA and are no more likely to be present in one area over another. With this, the average (central estimate) EPC term is calculated as an arithmetic mean of the dataset, and the Reasonable Maximum ("RM", upper bound estimate) EPC is calculated as the 95-percent upper confidence limit of the arithmetic mean.

The industrial worker EPC is calculated from a data set that includes 40 samples collected from fill material within the defined exposure area (see Figure 3). The following conditions were used in preparing the data set for calculating the EPC:

- Total PCB concentrations were used in calculating the EPC. Total PCBs concentrations were obtained by summing concentrations of the three Aroclors (i.e., 1242, 1254, and

PART B: RISK ASSESSMENT

1260) detected in fill material at the subject property. One-half the reported sample quantification limits ("SQLs") was used for Aroclors that were reported below the SQL.

- Only samples obtained from fill material within the EA were used.
- At locations where more than one sample from fill material was analyzed for PCBs, the greater reported concentration was used. This represents a more conservative approach than using an arithmetic mean to represent the single-point EPC at the location.
- Since outside the EA, PCB results from B-202 were not included in the dataset. However, since the concentration detected at B-202 (1.65 mg/kg) is more than three times lower than the calculated arithmetic mean and 95-percent UCL within the EA, it is assumed that risk conclusions at the EA would be protective of health in the area of B-202.
- So as not to bias the dataset, an arithmetic mean of results from Area A and Area B was calculated for use within the EPC dataset. Samples collected within Area A and Area B had a smaller area of inference (that is, greater sample density representing an area), and therefore, inclusion of all data points within Area A and Area B would bias the EPC term low by introducing samples with nominal or non-detect concentrations concentrated within one area of the EA. In addition, this approach allows integration of the outliers, TP-302 and TP-310, where results were shown in subsequent sampling to either represent a nominal exposure area (see Section A3.2.1). This represents a more conservative approach than exclusion of the outlier results, and is valid since a worker is unlikely to be exposed solely to the concentrations displayed in one single-point sample within Area A or Area B.

The arithmetic means of results from Area A and Area B were calculated from data obtained from fill within three feet of the ground surface within the grid areas depicted on Figure 1. The dataset used is presented in Table 6. Samples obtained from native clay or

fill deeper than three feet were excluded, unless the sample was a composite of fill that extended deeper than three feet. Excluding results obtained deeper than three feet biased the mean high since it eliminated non-detects from the dataset.

ProUCL Version 3.0 was used to compute the mean and upper confidence limit of the mean of the prepared dataset. This statistical software was developed by the EPA Technical Support Center in Las Vegas to support risk assessment and cleanup decisions. ProUCL Version 3.0 consists of all parametric and non-parametric UCL computation methods as described in EPA's *Guidance Document to Calculate the Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites* (Dec. 2002, OSWER 9285.670).

The data were determined to follow approximate gamma distribution at the five percent significance level, and therefore, ProUCL recommended the use of the adjusted Gamma UCL. Results of ProUCL computations, including the gamma Q-Q plot using Kolmogorov-Smirnov test and gamma statistics summary, are provided in Appendix 5. A summary of calculated EPC results is presented in Table 7.

B2.1.2 Construction Workers

It is assumed that a construction work may be localized to one area, and therefore, construction workers may be exposed to higher concentrations for shorter durations than industrial workers. With this, for construction workers, the EPC term is calculated using the maximum detected concentration of 41.4 mg/kg of total PCBs detected at location TP-312. The average of Area A and Area B were used when making the EPC term determination (see Section B2.1.1). Only the RM EPC term was calculated for construction workers; no average was calculated. check

B2.2 Exposure Estimation Methods

Exposure estimations were performed for the following scenarios:

PART B: RISK ASSESSMENT

- Industrial worker working outside within the exposure area; and,
- A construction worker performing intrusive tasks, such as trenching, in fill material within the exposure area.

B2.2.1 Exposure Algorithms

The U.S. Department of Energy (DOE), Office of Environmental Management, Oak Ridge Operations (ORO) Office's *Risk Assessment Information System* Human Health Risk Exposure Models was used to estimate exposure risk (http://rais.ornl.gov/). This risk assessment tool calculates doses and risks from exposure concentrations. The dose equations utilized by this tool are based on guidance in *Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual (Part A - Baseline Risk Assessment)* (RAGS, Part A), *Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual (Part B - Development of Risk-based Preliminary Remediation Goals)* (RAGS, Part B), and are consistent with models presented in Versar, 2000. These models are presented in Appendix 6.

The following models and exposure to soil pathways were utilized:

Scenario Model	Exposure to Soil Pathways
On-site construction worker / excavation scenario	Ingestion Inhalation Dermal Contact
On-site outdoor industrial worker exposure scenario	

B2.2.2 Exposure Parameters

In general, RAIS default exposure parameters were used in the models, which are based on EPA and other standard risk assessment guidance documents, when consistent with Versar (2000) and site-specific conditions. A summary of RAIS exposure parameters, along with reference, is provided in Appendix 6. Versar (2000) recommended exposure factors, which are recommended

PART B: RISK ASSESSMENT

for use in risk assessments conducted under 40 CFR 761.61, were used in lieu of defaults if the confidence rating presented within Table 7 of Versar (2000) was "high." Versar recommended exposure factors used in lieu of RAIS defaults included adult body weight of 71.8 kg, adult inhalation rate of 15.2 mg^3/day, and exposure duration (i.e., adult industrial occupational tenure) of 6.6 years Site-specific values, such as climatic zone (Chicago, IL) and surface area of Exposure Area (2 acres), also were used. With the exception of EPCs, the same exposure parameters were used to estimate the central-bound (average) and RM exposure. Input parameters are depicted on the calculation sheets provided in Appendix 7.

B2.3.3 Exposure Estimates

The exposure estimates from the equations described above are given as chronic daily intakes ("CDIs") for each soil pathway. Calculated exposure estimates expressed as CDIs for each exposure route, receptor population, and RPC are presented in the calculation sheets contained in Appendix 7.

PART B: RISK ASSESSMENT

B3.0 TOXICITY ASSESSMENT

PCBs are classified as a possible human carcinogen, and toxic effects have been observed from acute and chronic exposure to PCB mixtures (USEPA, 1996). Therefore, both toxic effects and cancer risks are considered in this toxicity assessment.

Although PCB exposures are often characterized in terms of Aroclors, this can be imprecise and inappropriate, and therefore, total PCB analyses are recommended (USEPA, 1996). Based on this and due to characteristics of the dataset, total PCBs are evaluated in this assessment as opposed to the individual Aroclors.

Quantitative indices were obtained from the *Risk Assessment Information System* (RAIS) database of chemical-specific toxicity values. This database contains the human health toxicological information needed to perform risk evaluations and assessments. This database contains information taken from the United States Environmental Protection Agency's (EPA's) Integrated Risk Information System (IRIS), the *Health Effects Assessment Summary Tables* (HEAST), EPA Provisional Peer Reviewed Toxicity Values (PPRTVs) Database, and other information sources. Refer to RAIS documentation included in Appendix 6 for a summary of toxicity indices used in this evaluation.

When evaluating total PCBs, RAIS uses the High Risk and Persistence Tier upper-bound slope factor of 2 per mg/kg-day and does not compute a hazard index, as opposed to using a total toxicity factor of 4 per mg/kg-day to calculate the risk from both cancer and non-cancer endpoints. Based on this, toxicity factors for Aroclor 1254 were used to calculate the risk from total PCBs; that is, the PCB mixture within the EA was assumed to be in the form of Aroclor 1254. The basis for this rationale is as follows:

PART B: RISK ASSESSMENT

- Of the three Aroclors detected, toxicity values for non-cancer endpoints have only been published for Aroclor 1254.
- Aroclors detected within the EA included Aroclor 1242, Aroclor 1254, and Aroclor 1260. The most prevalent in occurrence, concentration and distribution is Aroclor 1242, which is less toxic than Aroclor 1254 and 1260. Aroclors 1254 and 1260 display similar characteristics of toxicity, and tend to be more potent than Aroclor 1242. Therefore, assuming PCBs present within the EA are in the form of Aroclor 1254 is a conservative approach, since it likely overestimates the risk of the PCB mixtures present.

B3.1 Quantitative Indices of Cancer Potency

The cancer potency of PCB mixtures was determined using the three-tiered approach (USEPA, 1996). The same slope factors (SF) were applied to estimate cancer risk for both industrial and construction workers. The High Risk and Persistence Tier, which includes upper-bound and central-estimate slope factors, was selected since it includes sediment and soil ingestion; dust or aerosol inhalation; and dermal exposure if an absorption factor has been applied. Table 8 presents a summary and explanation of slope factors used.

B3.2 Quantitative Indices of Toxicity

Table 8 presents a summary and explanation of reference doses used.

PART B: RISK ASSESSMENT

B4.0 RISK CHARACTERIZATION

This part combines the information developed in the exposure (Section 2) and toxicity assessment (Section 3) to obtain estimates of the risks that may be posed to human health by PCBs in fill material within the Exposure Area.

B4.1 Risk Calculation Methodology

Risk calculations were performed using RAIS. Since RAIS does not allow for adjustment of toxicity indices for which to calculate central-estimates, RAIS output tables were modified to incorporate central-estimate risk calculations. The resulting Site-Specific Risk Calculation Sheets are provided in Appendix 7. To follow is further detail regarding models used by RAIS to calculate risk.

B4.1.1 Cancer Risk Calculations

Upper-Bound

Multiplying the upper-bound CDI derived from the RM EPC, as determined in Section B2.1, by the cancer slope value applicable to the population and exposure scenario was used to assess lifetime excess cancer risks for total PCBs present in the EA; thus:

$$\text{Cancer risk} = \text{Carcinogenic CDI} * \text{slope factor}$$

The resulting cancer risk from each exposure route is then summed, resulting in a total soil risk. The resulting cancer risk is expressed as the probability of that exposure resulting in an excess incidence of cancer (i.e., more cancers than would normally be expected in that population).

PART B: RISK ASSESSMENT

Central-Estimates

Since RAIS does not accommodate central-estimate slope factors, central estimates were derived by using RAIS to calculate the central estimate CDI using average EPCs then multiplying the CDI by central-estimate slope factors. The resulting cancer risk from each exposure route is then summed, resulting in a total soil risk.

B4.1.2 Hazard Index (Noncarcinogenic) Calculations

A comparison of the chronic daily intake (CDI) for each exposure pathway to chronic or subchronic reference doses (RfD) was utilized to assess adverse effects resulting from exposure to noncarcinogens. This comparison was performed by calculating the ratio of the estimated CDI to the corresponding RfD, resulting in the hazard quotient, or hazard index:

$$\text{Hazard index} = \text{Noncarcinogenic CDI/RfD}$$

The resulting HI for each exposure route is then summed.

B4.1 Projected Carcinogenic Risks

Potential carcinogenic risks are expressed as the probability of that exposure resulting in an excess incidence of cancer (i.e., more cancers than would normally be expected in that population). Risk ranges of 10^{-4} to 10^{-6} are considered acceptable (USEPA, 1990). This equates to excess lifetime cancer cases between one out of 10,000 persons to one out of 1,000,000 persons.

For outdoor industrial workers, the excess lifetime cancer risks for average (central-estimate) and reasonable maximum (upper bound estimate) are 7.69E-07 to 2.42E-06, respectively. For construction workers, the excess lifetime cancer risk for reasonable maximum (upper bound

PART B: RISK ASSESSMENT

estimate) is 4.55E-07. Calculations indicate that PCBs in fill are not likely to pose unacceptable risk to industrial and construction workers.

B4.2 Projected Noncarcinogenic Effects

Potential adverse effects resulting from cumulative exposure to noncarcinogens are expressed as a hazard quotient, or hazard index. If the hazard index is greater than one, an adverse effect may occur to the population. If the hazard index is less than one, no adverse effects are expected to occur to the population.

For outdoor industrial workers, the hazard index for average (central estimate) and reasonable maximum (upper bound estimate) are calculated as 0.357 to 0.563, respectively. For construction workers, the hazard index for reasonable maximum exposure (upper bound estimate) is calculated as 0.305. Calculations indicate that no adverse noncarcinogenic effects would be expected to occur due to the presence PCBs in fill.

PART B: RISK ASSESSMENT

B5.0 UNCERTAINTY ANALYSIS

B5.1 Environmental Sampling

To follow is a summary of uncertainties associated with environmental sampling:

- A biased sampling approach was utilized in characterizing the property, that is, samples were collected from the most likely impacted horizon based on visual and olfactory evidence, and homogeneous vertical distribution was assumed. Biased sampling approaches may overestimate the EPCs by biasing the dataset to higher concentrations.

- Forty data points representative of fill material within the exposure area were used to determine EPCs used in the exposure estimates. This represents a sampling density of approximately 17 samples per acre, or an approximate 50-foot sampling span. To compensate for inherent uncertainty in environmental sampling, methods that may lead to overestimation of exposure values was used to derive exposure point concentrations for the upper bound estimates. These include using the 95-percent UCL of the mean to represent the industrial-commercial worker RM EPC and using concentrations from a single-sampling location that displays the greatest potential risk to represent the construction worker RM EPC.

- Re-sampling was performed in 2006 at TP-302 and TP-310, where PCBs were reported in 2000 to be greater than 50 mg/kg, to verify the results and to delineate the extent of PCBs in the area. The area with PCBs greater than 50 mg/kg was shown to be very limited in extent, and the resulting data set included a high density of nominal or non-detect concentrations within a small area of the EA. To accommodate the smaller area of

sample inference of results obtained from TP-302 and TP-310, and since the exposure potential is minimal within the EA, the arithmetic mean of results within these areas was calculated so as not to bias the dataset with outliers or a high density of non-detect values when calculating the EPC. This represents a more conservative approach than exclusion of the outlier results, and is valid since a worker is unlikely to be exposed solely to the concentrations displayed in one single-point sample within Area A or Area B.

B5.2 Exposure Estimation Calculations

To follow is a summary of uncertainties regarding the estimation of exposure of PCBs:

- The primary uncertainty regarding the exposure estimation calculations is associated with the selection of appropriate parameter values. In general, default values were used, which tend to be highly conservative values used for screening purposes. Where default values were not used, recommended exposure factors for use in PCB risk assessments were used if assigned a confidence rating of "high." In addition, these conservative values were used to estimate both the central bound and upper bound exposures. Based on this, parameters used would tend to overestimate the central and upper bound exposure estimates.

- Although asphalt and concrete surfaces overlay PCB-impacted fill in select areas, no consideration of existing engineered barriers is made during this assessment. In addition, certain areas where no PCBs were detected were excluded from the EA. Not considering existing engineered barriers and excluding areas where no PCBs were detected would tend to overestimate the central and upper bound exposure estimates.

- Uncertainty arises from the likelihood that the postulated exposure scenarios actually occur, and that land use will remain industrial-commercial. If land use was to be other than industrial, the exposure estimate may be underestimated. Due to its setting within an industrial corridor of Chicago, it is unlikely that land use will be other than industrial, thereby minimizing uncertainty in future land use. To minimize this uncertainty, land-use restrictions will be established in conjunction with IEPA SRP activities.

- The use of analytical data reported below sample quantification limits (SQLs) may reduce the level of confidence in the estimates of exposure point concentrations. The use of elevated SQLs may overestimate or underestimate the true exposure potential. Some samples had SQLs elevated many times higher than the standard SQLs because of necessary dilutions made in the analysis of the sample or because of matrix interference effects. A chemical may not be detected at an elevated SQL, but may in fact be present at levels that present a potential health risk. To accommodate this uncertainty, one-half the SQL was used in calculating exposure point concentrations.

- Since outside the EA, PCB results from B-202 were not included in the dataset. However, since the concentration detected at B-202 (1.65 mg/kg) is more than three times lower than the calculated arithmetic mean (5.45 mg/kg) and 95-percent UCL (8.59 mg/kg) within the EA, it is assumed that risk conclusions at the EA would be protective of health in the area of B-202.

B5.3 Contaminant Migration Modeling

To follow is a summary of uncertainties regarding the modeling of PCB migration:

PART B: RISK ASSESSMENT

- Uncertainties concerning the reliability of modeling predictions arise from the validity and accuracy of the model. Models selected to estimate exposure are synonymous with models used by IEPA, USEPA, and those presented in Versar, 2000. Assumptions used to generate these models tend towards conservatism. In general, models used to estimate exposure effects likely are reliable.

- Exposure estimates assume that the concentrations of PCBs in the fill material are at a steady state and will remain constant for the duration of the exposure period. This steady-state assumption would overestimate the central and upper bound exposure estimates and is conservative (health-protective), since it assumes no biodegradation or other natural PCB reduction mechanisms are occurring.

- Calculations for inhalation of vapor exposure take into account chemical-specific physical and chemical properties. Mixtures of commercial PCBs vary from lot to lot and no two mixtures of commercial PCBs are identical (ATSDR, 2000). Selected chemical-specific parameters are based on averages from commercial mixtures, and specific Aroclor mixtures onsite may vary from these averages. These variations may underestimate or overestimate exposure from the inhalation route; however, these variations of chemical specific properties have nominal impact on the final risk calculations.

B5.4 Toxicity Uncertainties

Uncertainties underlying the toxicity assessment include:

- Although Aroclors detected within the EA included Aroclor 1242, Aroclor 1254, and Aroclor 1260, the PCBs were assumed to be in the form of Aroclor 1254 since toxicity values are most reliable for this Aroclor. The most prevalent in occurrence,

concentration and distribution is Aroclor 1242, which is the least toxic of the Aroclors present. The other Aroclors, 1254 and 1260, were less prevalent in occurrence, concentration and distribution. Aroclor 1254 and 1260 display similar characteristics of toxicity, and are reported to be more potent than Aroclor 1242. Therefore, assuming PCBs present within the EA are in the form of Aroclor 1254 is a conservative approach, since it likely overestimates the risk of the PCB mixtures present.

- Many uncertainty factors and modifying factors are used by USEPA in developing toxicity indices. These factors tend to be conservative (i.e., health protective) in nature and overestimate the potential for effects occurring at a given exposure level.
- Uncertainties are involved in extrapolating from the underlying scientific studies to the exposure situation being evaluated, including variable responses to chemical exposures within human and animal populations, between species, and between routes of exposure. The toxicity assessment process compensates for these basic uncertainties through the following:
  - The use of more conservative (i.e., protective) upper-bound slope factors for the High Risk and Persistence Tier as opposed to the central-estimate slope factors;
  - The use of safety factors (uncertainty factors) and modifying factors when assessing noncarcinogens, and
  - The use of 95-percent confidence limits from the linearized multistage model for the slope factor when assessing carcinogens.

The use of upper-bound slope factors, safety factors and the upper 95-percent confidence limits ensures that the toxicity values used in the risk estimation process are very unlikely to underestimate the true toxicity of the Aroclor.

PART B: RISK ASSESSMENT

- Since no inhalation reference concentration is available for PCBs, noncarcinogenic effects from the inhalation exposure route were not evaluated quantitatively, and omission of these pathways presumably leads to some degree of underestimation of total risk. Inhaled PCBs can be rapidly absorbed, and although rates have not been quantified, this rapid absorption suggests potency by inhalation is comparable to potency by ingestion (USEPA, 1996). Considering the upper bound risk estimate for an outdoor industrial worker, the hazard index imposed by the inhalation route would have to exceed 0.437, or be approximately 2.4 times more potent than the ingestion route, for a cumulative hazard index of 1. In addition, assuming the potency of inhaled PCBs is comparable to ingestion and the calculated inhaled dose was ingested, the following hazard indices would be estimated:

Receptor	Dose / Oral RfD	Hazard Index for Inhalation Route
Industrial Worker (Central Estimate)	3.49E-06 / 2.00E-05	0.17
Industrial Worker (Upper Bound)	5.50E-06 / 2.00E-05	0.275
Construction Worker (Upper Bound)	2.35E-06 / 5.00E-05	0.047

Based on this, although not evaluating the inhalation route for noncarcinogenic effects may underestimate the risk, it is unlikely that potential risks imposed by this exposure route would pose unacceptable risk levels.

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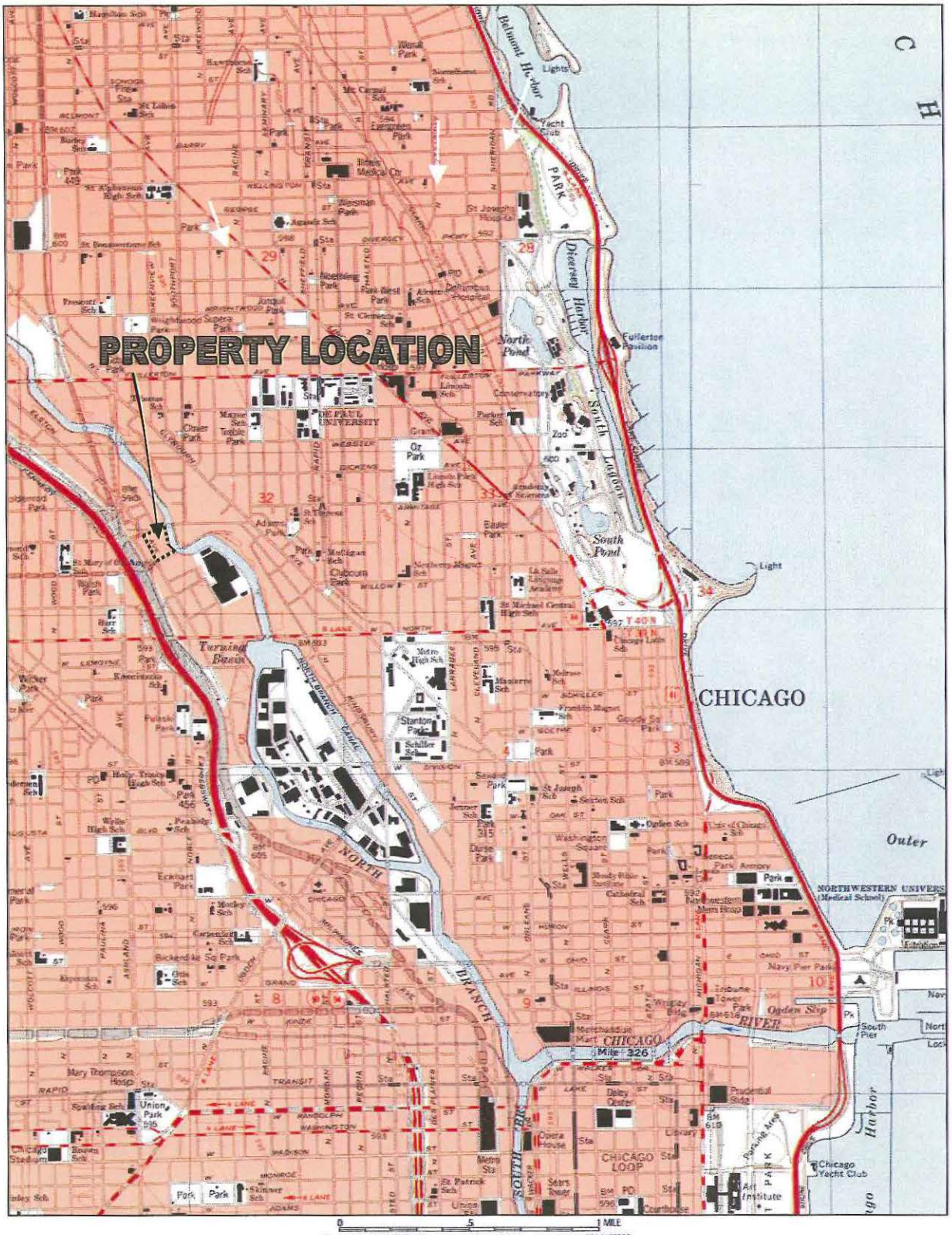
FIGURES

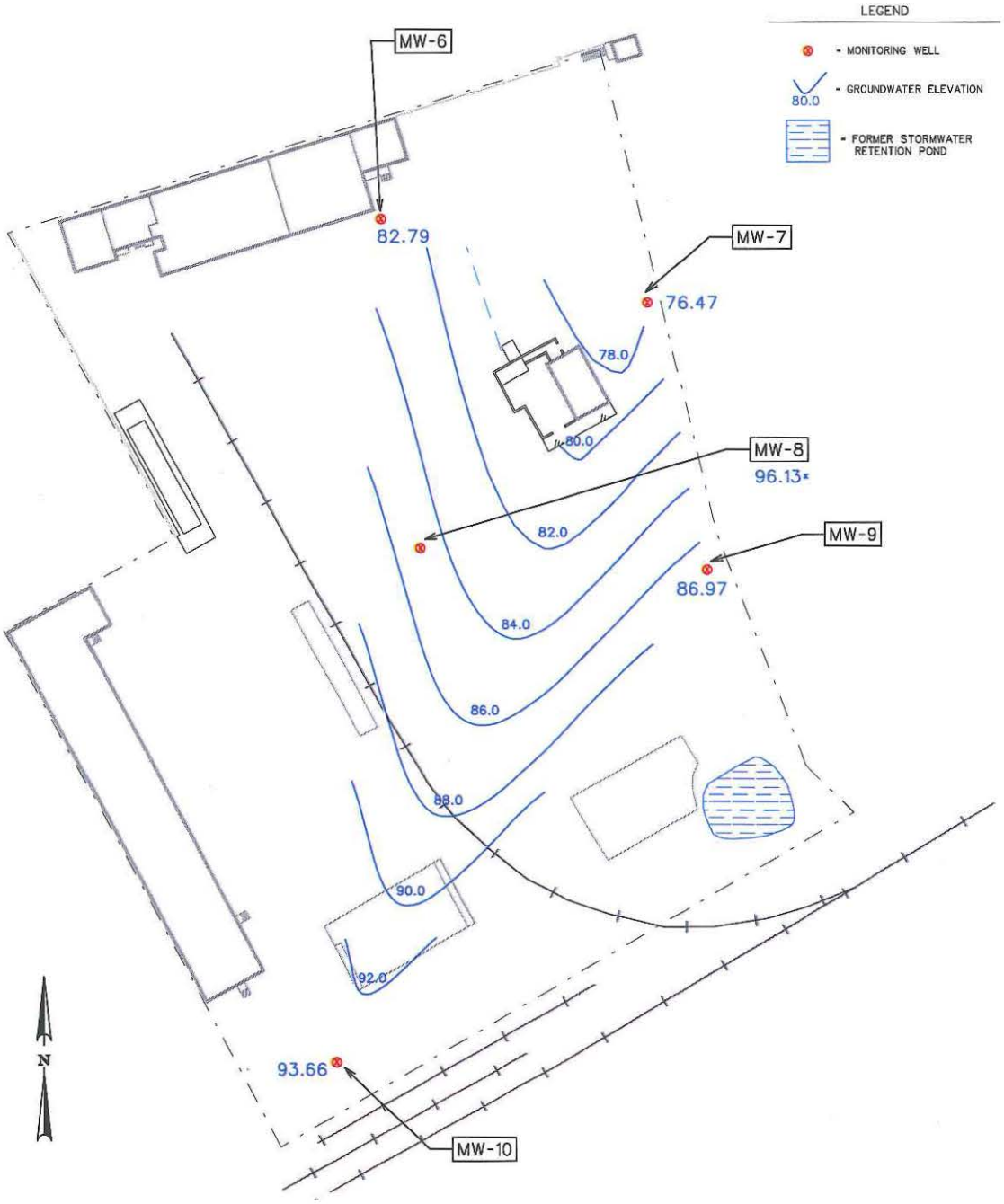
FIGURES

Figure 1. Property Location Map
Figure 2. Property Features Map
Figure 3. Sample Locations and PCB Results
Figure 4. Potentiometric Surface Map
Figure 5. Cross Section of A-A' and B-B'

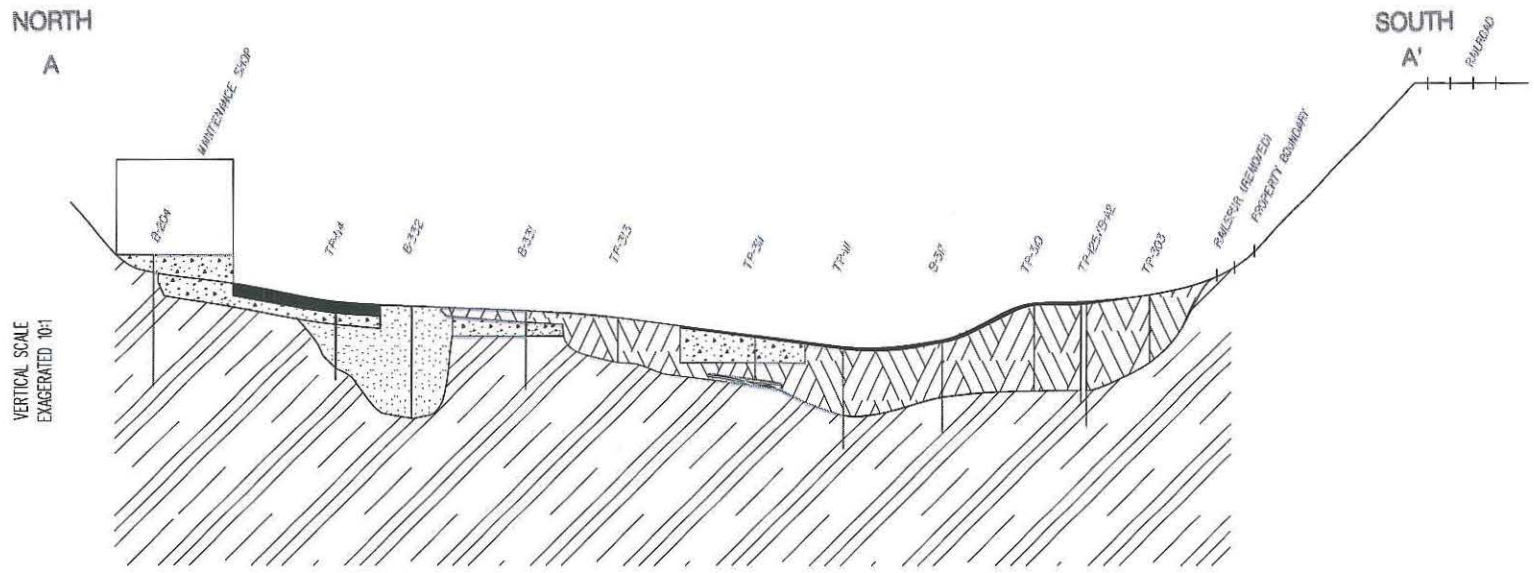


***CPI* Environmental Services, Inc.** 1123 Wheaton Oaks Court Wheaton, Illinois 60187 (630) 407-0800	N W E S	Date: 1/30/2006 Project No. E-05-74-25-591	FIGURE 1: PROPERTY LOCATION MAP Metal Management Midwest, Inc. – Cometco 1509 W. Cortland St., Chicago, IL

***CPI* Environmental Services, Inc.** 1123 Wheaton Oaks Court Wheaton, Illinois 60187 (630) 407-0800		Date: 1/30/2006 Project No. E-05-74-25-591	FIGURE 2: PROPERTY FEATURES MAP Metal Management Midwest, Inc. – Cometco 1509 W. Cortland St., Chicago, IL



F: 630-469-6470 P: 630-469-6340 CPI Environmental Services, Inc. 799 ROOSEVELT ROAD, BLDG.6, STE.110 GLEN ELLYN, ILLIOIS 60137	GRAPHIC SCALE 0 25 50 100 200 FEET	LOCATION METAL MANAGEMENT MIDWEST, INC. COMETCO CORP. 1509 CORTLAND STREET CHICAGO, ILLINOIS
NOTES GROUNDWATER LEVELS COLLECTED ON 4/30/2002. *ANOMALOUS GROUNDWATER ELEVATION - NOT INCLUDED IN GROUNDWATER FLOW DIRECTION DETERMINATION.	DATE 11/30/2001 DRAWN SAS/BLF PROJ. NO. E05-74-06-249 POTENTIOMETRIC.DGN APVD NAB	TITLE FIGURE 4. POTENTIOMETRIC SURFACE MAP



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NOTES

SEE FIGURE 2 FOR CROSS SECTION LINE LOCATIONS

KEY MAP

- SCRAP YARD FILL MATERIAL
- URBAN FILL MATERIAL
- CONCRETE
- CLAY FILL
- TILL (SILTS AND CLAYS)
- WOOD
- ASPHALT PAVING
- SUB-BASE (GRAVEL)

VERTICAL SCALE EXAGERATED 10:1 — 0, 1, 2 FEET

HORIZONTAL SCALE — 0, 15, 30, 60 FEET

CREATED 01/12/2007	DRAWN DPC	APVD SAS

REVISIONS

LEVELS

FILE NAME

FRAME 11X17 FRAME | PROJ. NO. E05-74-25-591

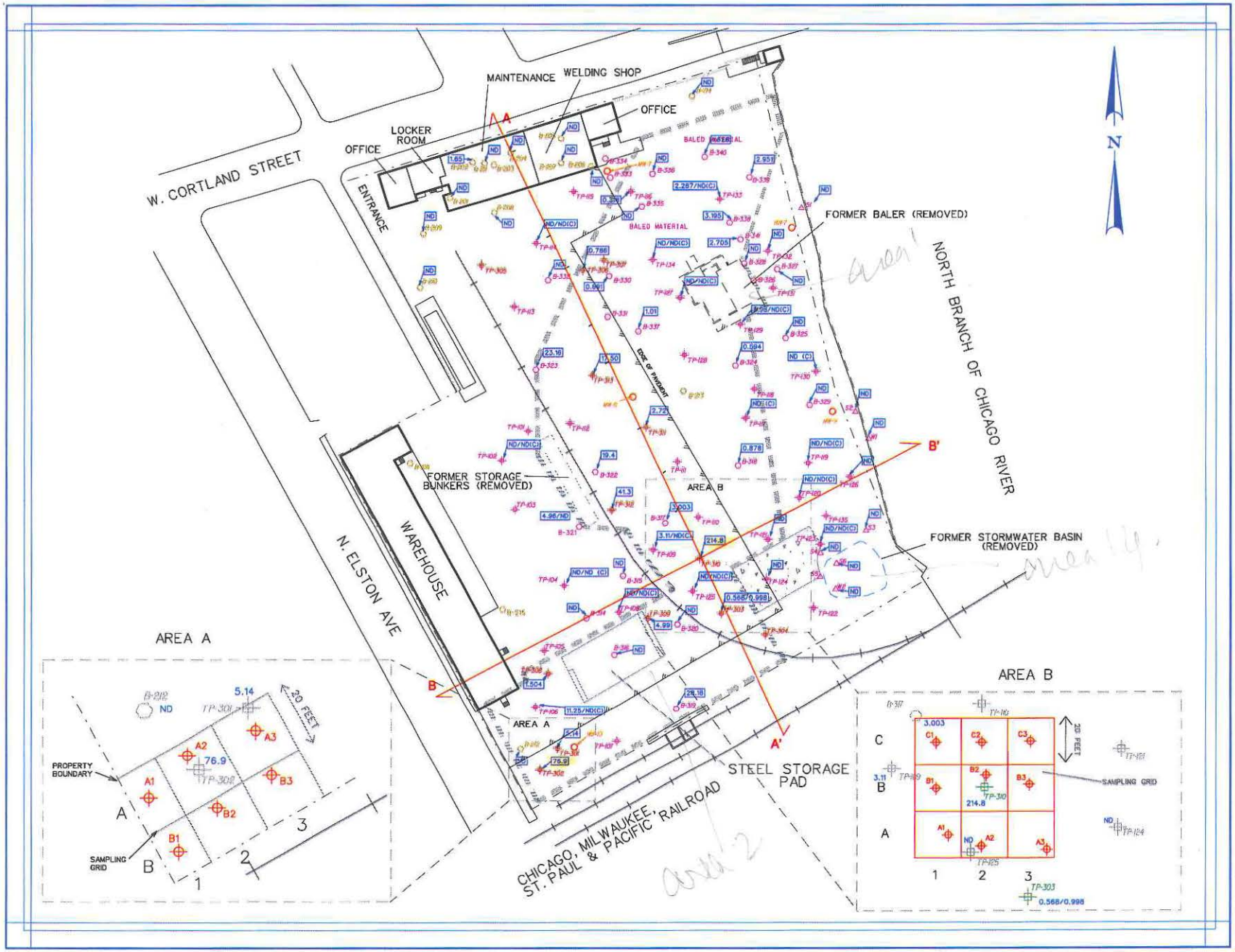
LOCATION

COMETCO CORPORATION
1509 WEST CORTLAND STREET
CHICAGO, ILLINOIS

TITLE

FIGURE 5

CROSS SECTION A-A' AND B-B'



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NOTES

BASE MAP BASED ON CHICAGO GUARANTEE SURVEY COMPANY TOPOGRAPHIC SURVEY MAP DATED JULY 1, 1991

KEY MAP

- 0.568/0.998 - ANALYTICAL RESULTS OBTAINED FROM 2 SAMPLES WITHIN FILL MATERIAL COLLECTED FROM DIFFERENT DEPTHS: FIRST NUMBER REPRESENTS SHALLOWER DEPTH SAMPLE; SEE ANALYTICAL TABLES FOR CORRESPONDING DEPTHS
- ND - NOT DETECTED
- (C) - SILTY CLAY RESULTS TOTAL PCB
- 1.00 - DETECTED CONCENTRATION (MG/KG)
- STORMWATER RETENTION POND
- PCB EXPOSURE AREA
- TP-118 - TEST PIT SAMPLE LOCATION (8/31/2000)
- B-307 - BOREHOLE SAMPLE LOCATION (10/11/2000)
- TP-512 - TEST PIT SAMPLE LOCATION (10/17/2000)
- B-341 - BOREHOLE SAMPLE LOCATION (10/24/2000)
- S3 - E & E SAMPLE LOCATION (1/20/1999)
- C3 - BOREHOLE SAMPLE LOCATION (11/21/2006) (SEE TABLE 1 FOR RESULTS)
- MW-9 - GROUNDWATER MONITORING WELL
- CONCRETE PAD
- CROSS SECTION LINE LOCATIONS

0 40 80 120
FEET

CREATED 01/12/2007	DRAWN DPC	APVD SAS
REVISIONS		
LEVELS		
FILE NAME		
FRAME 11X17 FRAME	PROJ. NO. E05-74-25-591	

LOCATION

COMETCO CORPORATION
1509 WEST CORTLAND STREET
CHICAGO, ILLINOIS

TITLE

FIGURE 3
PCB RESULTS

TABLES

TABLES

Table 1. PCB Results in Fill
Table 2. Area A and Area B QA/QC Sample Results
Table 3. PCB Results in Clay
Table 4. Conceptual Site Model
Table 5. Exposure Pathway Completeness Determination
Table 6. Single-Point Exposure Point Concentrations within Exposure Area
Table 7. Summary of Average and RM EPCs
Table 8. Summary of Toxicity Indices
Table 9. Summary of Total PCB Risk Results

TABLE 1. PCB RESULTS IN FILL

ID	Location	Sample Date	Analytical Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
E & E S-1	E & E S-1	11/13/1998	11/20/1998	<0.575	<0.575	<0.575	<0.575	<0.575	<0.575	<0.575	ND
E & E S-2	E & E S-2	11/13/1998	11/20/1998	<0.556	<0.556	<0.556	<0.556	<0.556	<0.556	<0.556	ND
E & E S-3	E & E S-3	11/13/1998	11/20/1998	<0.746	<0.746	<0.746	<0.746	<0.746	<0.746	<0.746	ND
E & E S-4	E & E S-4	11/13/1998	11/20/1998	<5.32	<5.32	<5.32	<5.32	<5.32	<5.32	<5.32	ND
E & E S-5	E & E S-5	11/13/1998	11/20/1998	<6.49	<6.49	<6.49	<6.49	<6.49	<6.49	<6.49	ND
S-101	TP-102	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-103	TP-104	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-105	TP-106	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	2.28	<0.25	<0.25	8.97	11.25
S-107	TP-108	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-109	TP-109	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	3.11	<0.25	<0.25	<0.25	3.11
S-111	TP-114	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-113	TP-116	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.318	0.318
S-116	TP-119	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-118	TP-120	9/1/2000	9/12/2000	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND
S-120	TP-121	9/1/2000	9/11/2000	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND
S-121	TP-123	9/1/2000	9/12/2000	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND
S-123	TP-124	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-124	TP-125	9/1/2000	9/11/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-127	TP-127	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-129	TP-129	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	4.3	<0.25	1.68	<0.25	5.98
S-132	TP-132	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-133	TP-133	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	0.307	<0.25	1.98	<0.25	2.287
S-135	TP-134	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
B-201	B-201	10/11/2000	10/17/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-202	B-202	10/11/2000	10/17/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	1.65	1.65
B-204	B-204	10/11/2000	10/18/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-205	B-205	10/11/2000	10/18/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-206	B-206	10/11/2000	10/18/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-207	B-207	10/11/2000	10/18/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-208	B-208	10/11/2000	10/18/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-209	B-209	10/11/2000	10/18/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-210	B-210	10/11/2000	10/18/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-211	B-211	10/11/2000	10/18/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	< 0.16	ND
B-212	B-212	10/12/2000	10/17/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-214	B-214	10/12/2000	11/2/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
TP-301	TP-301	10/17/2000	10/24/2000	<0.08	<0.08	<0.08	3.12	<0.08	<0.16	2.02	5.14
TP-302	TP-302	10/17/2000	10/24/2000	<0.08	<0.08	<0.08	<0.08	<0.08	76.9	<0.16	76.9
TP-303	TP-303	10/17/2000	10/24/2000	<0.08	<0.08	<0.08	0.998	<0.08	<0.16	<0.16	0.998
TP-303S	TP-303	10/17/2000	10/24/2000	<0.08	<0.08	<0.08	0.568	<0.08	<0.16	<0.16	0.568
TP-306S	TP-306	10/17/2000	10/24/2000	<0.08	<0.08	<0.08	0.786	<0.08	<0.16	<0.16	0.786
TP-308	TP-308	10/18/2000	10/24/2000	<0.08	<0.08	<0.08	0.896	<0.08	0.608	<0.16	1.504
TP-309	TP-309	10/18/2000	10/24/2000	<0.08	<0.08	<0.08	4.99	<0.08	<0.16	<0.16	4.99
TP-310	TP-310	10/18/2000	10/24/2000	<0.08	<0.08	<0.08	198	<0.08	<0.16	16.8	214.8
TP-311	TP-311	10/18/2000	10/24/2000	<0.08	<0.08	<0.08	2.19	<0.08	0.527	<0.16	2.717
TP-312S	TP-312	10/18/2000	10/24/2000	<0.08	<0.08	<0.08	18.3	<0.08	23	<0.16	41.3
TP-313	TP-313	10/18/2000	10/25/2000	<0.08	<0.08	<0.08	16	<0.08	<0.16	1.5	17.5
B-314	B-314	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-315	B-315	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-316	B-316	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-317	B-317	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	0.613	<0.08	2.39	<0.16	3.003
B-318	B-318	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	0.878	<0.08	<0.16	<0.16	0.878
B-319	B-319	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	26.9	<0.08	1.28	<0.16	28.18
B-320	B-320	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-321	B-321(0.5')	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	3.79	<0.08	1.17	<0.16	4.96
B-321	B-321(2.5')	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-322	B-322	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	19.4	<0.08	<0.16	<0.16	19.4
B-323	B-323	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	21.2	<0.08	1.96	<0.16	23.16
B-324	B-324	10/24/2000	11/2/2000	<0.08	<0.08	<0.08	0.594	<0.08	<0.16	<0.16	0.594
B-325	B-325	10/24/2000	11/2/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-327	B-327	10/24/2000	11/2/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-328	B-328	10/24/2000	11/2/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-329	B-329	10/24/2000	11/1/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-330	B-330	10/25/2000	11/1/2000	<0.08	<0.08	<0.08	0.49	<0.08	<0.16	0.201	0.691
B-332	B-332	10/25/2000	11/1/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-335	B-335	10/25/2000	11/1/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-336	B-336	10/25/2000	11/1/2000	<0.08	<0.08	<0.08	<0.08	<0.08	<0.16	<0.16	ND
B-337	B-337	10/25/2000	11/1/2000	<0.08	<0.08	<0.08	1.01	<0.08	<0.16	<0.16	1.01
B-338	B-338	10/25/2000	11/1/2000	<0.08	<0.08	<0.08	2.39	<0.08	<0.16	0.805	3.195
B-339	B-339	10/25/2000	11/1/2000	<0.08	<0.08	<0.08	1.96	<0.08	<0.16	0.991	2.951
B-340	B-340	10/25/2000	11/1/2000	<0.08	<0.08	<0.08	0.935	<0.08	<0.16	0.691	1.626
B-341	B-341	10/25/2000	11/1/2000	<0.08	<0.08	<0.08	2.3	<0.08	<0.16	0.405	2.705
A-A1-1	Area A	11/22/2006	11/28/2006	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.447	0.447
A-A1-2	Area A	11/22/2006	11/29/2006	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	0.185	0.185
A-A2-1	Area A	11/22/2006	11/28/2006	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	0.521	0.521
A-A2-2	Area A	11/22/2006	11/28/2006	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	0.071	0.071
A-A2-3	Area A	11/22/2006	11/28/2006	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	ND
A-A2-4	Area A	11/22/2006	11/28/2006	<0.048	<0.048	<0.048	<0.048	<0.048	<0.048	<0.048	ND
A-A2-5	Area A	11/22/2006	11/28/2006	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	0.109	0.109
A-A3-COMP	Area A	11/22/2006	11/28/2006	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	0.104	0.104
A-B1-1	Area A	11/22/2006	11/29/2006	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	0.074	0.074
A-B1-2	Area A	11/22/2006	11/29/2006	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	ND
A-B2-COMP	Area A	11/22/2006	11/29/2006	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	ND
A-B3-1	Area A	11/22/2006	11/29/2006	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	0.065	0.065
A-B3-2	Area A	11/22/2006	11/29/2006	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	ND
B-A1-1	Area B	11/22/2006	12/1/2006	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	ND
B-A1-2	Area B	11/22/2006	12/1/2006	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	ND
B-A2-1	Area B	11/22/2006	12/1/2006	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	ND
B-A2-2	Area B	11/22/2006	12/1/2006	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	ND
B-A3-1	Area B	11/22/2006	12/1/2006	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	ND
B-A3-2	Area B	11/22/2006	12/1/2006	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	ND
B-B1-1	Area B	11/22/2006	12/1/2006	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	ND
B-B1-2	Area B	11/22/2006	12/1/2006	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	ND
B-B2-1	Area B	11/22/2006	12/2/2006	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	ND
B-B2-2	Area B	11/22/2006	12/1/2006	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	ND
B-C1-1	Area B	11/22/2006	12/1/2006	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	ND
B-C1-2	Area B	11/22/2006	12/2/2006	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	ND
B-C2-1	Area B	11/22/2006	12/2/2006	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	ND
B-C2-2	Area B	11/22/2006	12/2/2006	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	ND
B-C3-1	Area B	11/22/2006	12/1/2006	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	ND
B-C3-2	Area B	11/22/2006	12/1/2006	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	ND

NOTES:
Results reported in mg/kg
E&E = Results obtained from E & E (1999) Study
S = Surface sample
< = Not detected exceeding reported detection limit
ND = Not detected exceeding detection limits

TABLE 2. AREA A AND AREA B QA/QC SAMPLE RESULTS

ID	QA Sample Type	Soil Type	Sample Date	Analytical Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
A-A2-1	Result	Fill 0-1'	11/22/2006	11/28/2006	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	0.521	0.521
A-A2-1	Lab Split	Fill 0-1'	11/22/2006	12/7/2006	<0.0324	<0.0324	<0.0324	<0.0324	<0.0324	<0.0324	0.198	0.198
A-A2-2	Result	Fill 1-2'	11/22/2006	11/28/2006	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	0.071	0.071
A-A2-2	Lab Split	Fill 1-2'	11/22/2006	12/7/2006	<0.0325	<0.0325	<0.0325	<0.0325	<0.0325	<0.0325	0.0460	0.0460
A-B2-COMP	Result	Fill 0-5.5'	11/22/2006	11/29/2006	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	ND
A-COMP-DUP	Field Dup	Fill 0-5.5'	11/22/2006	11/29/2006	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	ND
B-B2-1	Result	Fill 0-1.5'	11/22/2006	12/2/2006	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	ND
B-B2-1	Lab Split	Fill 0-1.5'	11/22/2006	12/7/2006	<0.0326	<0.0326	<0.0326	<0.0326	<0.0326	<0.0326	<0.0326	ND
B-B2-2	Result	Fill 1.5-3'	11/22/2006	12/1/2006	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	ND
B-B2-DUP	Field Dup	Fill 1.5-3'	11/22/2006	12/1/2006	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	ND
B-B2-2	Lab Split	Fill 1.5-3'	11/22/2006	12/7/2006	<0.662	<0.662	<0.662	<0.662	<0.662	<0.662	<0.662	ND
A-A2-1	Area A A2	Fill 0-1'	11/22/2006	11/28/2006	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	0.521	0.521
A-A2-2	Area A A2	Fill 1-2'	11/22/2006	11/28/2006	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	0.071	0.071
A-A2-3	Area A A2	Fill 2-3'	11/22/2006	11/28/2006	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	ND
A-A2-4	Area A A2	Fill 3-4'	11/22/2006	11/28/2006	<0.048	<0.048	<0.048	<0.048	<0.048	<0.048	<0.048	ND
A-A2-5	Area A A2	Fill 4-5'	11/22/2006	11/28/2006	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	0.109	0.109
A-A2-COMP	Area A A2 COMP	Fill 0-5'	11/22/2006	11/28/2006	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	0.065	0.065
B-C2-1	Area B C2	Fill 0-1.5'	11/22/2006	12/2/2006	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	ND
B-C2-2	Area B C2	Fill 1.5-3'	11/22/2006	12/2/2006	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	ND
B-C2-COMP	Area B C2 COMP	Fill 0-3'	11/22/2006	12/2/2006	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	ND

NOTES:
Results reported in mg/kg
< = Not detected exceeding reported detection limit
ND = Not detected exceeding detection limits

TABLE 3. PCB RESULTS IN CLAY

Sample ID	Location	Sample Date	Analytical Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
S-102	TP-102	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-104	TP-104	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-106	TP-106	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-108	TP-108	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-110	TP-109	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-112	TP-114	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-114	TP-117	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-117	TP-119	8/31/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-119	TP-120	9/1/2000	9/11/2000	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	ND
S-122	TP-123	9/1/2000	9/11/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-125	TP-125	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-126	TP-126	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-128	TP-127	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-130	TP-129	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-131	TP-130	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-134	TP-133	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
S-136	TP-134	9/1/2000	9/12/2000	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	ND
A-A2-N	A2	11/22/2006	11/28/2006	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	ND
B-B2-N	B2	11/22/2006	12/1/2006	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	ND

NOTES:
Results reported in mg/kg
< = Not detected exceeding reported SQL
ND = Not detected exceeding SQL

TABLE 4. CONCEPTUAL SITE MODEL

Media	Pathways	Receptor Populations	Potential Exposure Risk
Fill Material	Inhalation	Industrial /Commercial Worker	Inhalation of Fugitive Dust
			Inhalation of Vapor Emissions
		Construction Worker	Inhalation of Fugitive Dust
			Inhalation of Vapor Emissions
	Ingestion	Industrial /Commercial Worker	Incidental Ingestion
		Construction Worker	Incidental Ingestion
	Absorption	Industrial /Commercial Worker	Dermal Contact
		Construction Worker	Dermal Contact

TABLE 5. EXPOSURE PATHWAY COMPLETENESS DETERMINATION

Pathway	Media	Completeness Determination	Complete?
Ingestion	Soil	Potential incidental ingestion of affected soil by potentially exposed populations through airborne particulates entering the mouth or hand-to-mouth contact	**YES**
	Groundwater	No PCBs were detected in groundwater, and due to the presence of clay confining units between impacted fill and occurrence of groundwater, PCBs would not be expected to migrate to groundwater. In addition, groundwater usage restrictions are imposed within the City of Chicago; therefore, no ingestion of groundwater by potentially exposed populations would be expected[1]	NO
	Sediments	No PCBs were detected in bottom sediments within the former stormwater retention pond, indicating PCBs did not migrate with run-off from affected fill to stormwater collection areas.	NO
	Surface Water	No PCBs were detected in surface water run-off indicating PCBs are not being transported from impacted fill by surface water run-off.	NO
	Fish, Beef, and other Food Items	No consumable fish sources, livestock, or potential game or crops are present on or near the subject property; therefore, no potential consumption by potentially exposed populations	NO
Inhalation—Vapors	Soil	Potential inhalation of vapors from affected soil by potentially exposed populations	**YES**
	Groundwater Sediments Surface Water	(See Ingestion Pathway explanation above)	NO NO NO
Inhalation—Dust	Soil	Potential inhalation of airborne fugitive dust from affected soil by potentially exposed populations	**YES**
Dermal Contact	Soil	Potential dermal contact of affected soil with potentially exposed populations through adhesion of airborne particulates or soil with skin surfaces	**YES**
	Groundwater Sediments Surface Water	(See Ingestion Pathway explanation above)	NO NO NO

[1] Cook County and the City of Chicago have a groundwater ordinance that prohibits the use of potable water supply wells. The ordinance was completed May 14, 1997 and the memorandum of understanding was completed in July 3, 1997. A review of private and public water well records identified no water wells on or adjacent to the subject property.

TABLE 6. SINGLE-POINT EXPOSURE POINT CONCENTRATIONS WITHIN EXPOSURE AREA

SAMPLE ID	SAMPLE LOCATION	Aroclor 1242 (mg/kg)	Aroclor 1254 (mg/kg)	Aroclor 1260 (mg/kg)	Total PCBs (mg/kg)
S-105	TP-106	2.28	0.0125	8.97	11.26
S-120	TP-121	0.1	0.1	0.1	0.30
S-123	TP-124	0.0125	0.0125	0.0125	0.04
S-109	TP-109	3.11	0.0125	0.0125	3.14
S-113	TP-116	0.0125	0.0125	0.318	0.34
S-120	TP-121	0.1	0.1	0.1	0.30
S-124	TP-125	0.0125	0.0125	0.0125	0.04
S-127	TP-127	0.0125	0.0125	0.0125	0.04
S-129	TP-129	4.3	1.68	0.0125	5.99
S-133	TP-133	0.307	1.98	0.0125	2.30
S-135	TP-134	0.0125	0.0125	0.0125	0.04
B-204	B-204	0.04	0.08	0.08	0.20
B-212	B-212	0.04	0.08	0.08	0.20
TP-301	TP-301	3.12	0.08	2.02	5.22
AVERAGE [1]	AREA A	0.02	9.63	0.17	9.82
TP-303	TP-303	0.998	0.08	0.08	1.16
TP-306S	TP-306	0.786	0.08	0.08	0.95
TP-308	TP-308	0.896	0.608	0.08	1.58
TP-309	TP-309	4.99	0.08	0.08	5.15
AVERAGE [2]	AREA B	12.4	0.02	1.07	13.48
TP-311	TP-311	2.19	0.527	0.08	2.80
TP-312S	TP-312	18.3	23	0.08	41.38
TP-313	TP-313	16	0.08	1.5	17.58
B-316	B-316	0.04	0.08	0.08	0.20
B-317	B-317	0.613	2.39	0.08	3.08
B-318	B-318	0.878	0.08	0.08	1.04
B-319	B-319	26.9	1.28	0.08	28.26
B-320	B-320	0.04	0.08	0.08	0.20
B-321	B-321(0.5')	3.79	1.17	0.08	5.04
B-322	B-322	19.4	0.08	0.08	19.56
B-323	B-323	21.2	1.96	0.08	23.24
B-324	B-324	0.594	0.08	0.08	0.75
B-330	B-330	0.49	0.08	0.201	0.77
B-335	B-335	0.04	0.08	0.08	0.20
B-336	B-336	0.04	0.08	0.08	0.20
B-337	B-337	1.01	0.08	0.08	1.17
B-338	B-338	2.39	0.08	0.805	3.28
B-339	B-339	1.96	0.08	0.991	3.03
B-340	B-340	0.935	0.08	0.691	1.71
B-341	B-341	2.3	0.08	0.405	2.79

NOTES:
If not detected in excess of SQL, 1/2 reported detection limit is shown
If more than one data point within fill, the greatest concentration is used; average concentration at Area A and Area B used
Total PCBs are sum of Aroclor-1242, Aroclor-1254, and Aroclor-1260 including 1/2 reported detection limit
Includes data dervied from fill only

[1] AREA A AVERAGE CALCULATIONS

Sample ID	Grid Location	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total PCBs
TP-302	A2	0.04	76.9	0.08	77.02
A-A1-1	A1	0.02	0.02	0.447	0.487
A-A2-1	A2	0.0175	0.0175	0.521	0.556
A-A2-2	A2	0.0195	0.0195	0.071	0.11
A-A3-COMP	A3	0.0205	0.0205	0.104	0.145
A-B1-1	B1	0.0215	0.0215	0.074	0.117
A-B2-COMP	B2	0.0205	0.0205	0.0205	0.0615
A-B3-1	B3	0.019	0.019	0.065	0.103
	AVE. CONC. =	**0.02**	**9.63**	**0.17**	**9.82**

[2] AREA B AVERAGE CALCULATIONS

ID	Grid Location	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total PCBs
TP-310	B2	198	0.08	16.8	214.9
B-A1-1	A1	0.0185	0.0185	0.0185	0.056
B-A1-2	A1	0.0215	0.0215	0.0215	0.065
B-A2-1	A2	0.017	0.017	0.017	0.051
B-A2-2	A2	0.022	0.022	0.022	0.066
B-A3-1	A3	0.019	0.019	0.019	0.057
B-A3-2	A3	0.023	0.023	0.023	0.069
B-B1-1	B1	0.0165	0.0165	0.0165	0.050
B-B1-2	B1	0.019	0.019	0.019	0.057
B-B2-1	B2	0.0185	0.0185	0.0185	0.056
B-B2-2	B2	0.019	0.019	0.019	0.057
B-C1-1	C1	0.019	0.019	0.019	0.057
B-C1-2	C1	0.0215	0.0215	0.0215	0.065
B-C2-COMP	C2	0.018	0.018	0.018	0.054
B-C3-1	C3	0.0185	0.0185	0.0185	0.056
B-C3-2	C3	0.018	0.018	0.018	0.054
	AVE. CONC. =	**12.39**	**0.02**	**1.07**	**13.48**

TABLE 7. SUMMARY OF AVERAGE AND RM EPCS

EPC Term	Method	Result
Industrial Worker		
Average (Central Estimate)	Arithmetic Mean	5.45 mg/kg
Reasonable Maximum (Upper Bound)	95% Gamma UCL	8.59 mg/kg
Construction Worker		
Reasonable Maximum (Upper Bound)[1]	Maximum Detected Concentration[2]	41.3 mg/kg

See Appendix 5 for Pro UCL Calculations

[1] No Central Estimate calculated for this receptor population
[2] Arithmetic mean applied at Area A and Area B

TABLE 8. SUMMARY OF TOXICITY INDICES

			INDUSTRIAL WORKER (UPPER BOUND)			INDUSTRIAL WORKER (CENTRAL ESTIMATE)			CONSTRUCTION WORKER (UPPER BOUND)		
Toxicity Index	**Description**	**Unit**	**Value**	**Source**	**Rationale**	**Value**	**Source**	**Rationale**	**Value**	**Source**	**Rationale**
INGESTION EXPOSURE											
SF_0	Oral Slope Factor	$(mg/kg\text{-}day)^{-1}$	2.0	USEPA, 1996	The upper-bound slope factor for the High Risk and Persistence Tier	1.0	USEPA, 1996	The central estimate slope factor for the High Risk and Persistence Tier	2.0	USEPA, 1996	The upper-bound slope factor for the High Risk and Persistence Tier
RfD	Oral Reference Dose	mg/kg-day	2.0E-05	RAIS, 2001	RfD_o (Chronic) for Aroclor 1254	2.0E-05	RAIS, 2001	RfD_o (Chronic) for Aroclor 1254	*5.0E-05*	Subchronic Oral Reference Dose	Subchronic RfD_o of Aroclor 1254
DERMAL CONTACT EXPOSURE											
SF_d	Dermal Slope Factor	$(mg/kg\text{-}day)^{-1}$	*2.22*	RAIS, 2001	The upper-bound oral slope factor for the High Risk and Persistence Tier / Absorption Factor (0.9)	*1.11*	RAIS, 2001	The central estimate oral slope factor for the High Risk and Persistence Tier / Absorption Factor (0.9)	2.22	RAIS, 2001	The upper-bound oral slope factor for the High Risk and Persistence Tier / Absorption Factor (0.9)
RfD_d	Chronic Dermal Reference Dose	mg/kg-day	*1.8E-05*	RAIS, 2001	Oral chronic RfD for Aroclor 1254 * Absorption Factor (0.9)	*1.8E-05*	RAIS, 2001	Oral chronic RfD * Absorption Factor (0.9)	*4.5E-05*	--	Subchronic RfD_d for Aroclor 1254
INHALATION EXPOSURE											
IUR	Inhalation Unit Risk	$(mg/m^3)^{-1}$	0.57	USEPA, 1995	Upper bound oral slope * 20 m^3/day / 70 kg	0.29	USEPA, 1995	Central estimate oral slope * 20 m^3/day / 70 kg	0.57	USEPA, 1995	Upper bound oral slope * 20 m^3/day / 70 kg
Inhalation RfC	Inhalation Reference Concentration	(mg/m^3)	--	--	--	--	--	--	--	--	--

Notes:

No published inhalation RfC available

TABLE 9. SUMMARY OF TOTAL PCB RISK RESULTS

EPC Term	Hazard Index (Noncarcinogenic)	Risk (Carcinogenic)
Industrial Worker		
Central Estimate	0.357	7.69E-07
Upper Bound	0.563	2.42E-06
Construction Worker		
Upper Bound[1]	0.305	4.55E-07

[1] No Central Estimate calculated for this receptor population

APPENDICES

APPENDIX

Appendix 1. E & E Letter Report
Appendix 2. Test Pit and Boring Logs
Appendix 3. Monitoring Well Construction Reports
Appendix 4. Laboratory Analytical Reports
Appendix 5. ProUCL EPC Calculations
Appendix 6. RAIS Documentation
- 6-1. RAIS Models
- 6-2. Input Parameters
- 6-3. Toxicity Indices

Appendix 7. Risk Calculation Sheets

APPENDIX 1

Appendix 1. E & E Letter Report

LETTER REPORT
FOR
COMETCO OIL FACILITY
CHICAGO, COOK COUNTY, ILLINOIS
TDD: S05-9811-002
PAN: 8B0201SIXX

January 20, 1999

Prepared for:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Emergency and Enforcement Response Branch
77 West Jackson Boulevard
Chicago, Illinois 60604

Prepared by: _____ Date: 1/20/99
for Megan Fedders, START Project Manager

Reviewed by: _____ Date: 1/20/99
Mary Jane Ripp, START Assistant Program Manager

Approved by: _____ Date: 1/20/99
Thomas Kouris, START Program Manger

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January 20, 1999

Ms. Gail Nabasny, START Project Officer
Emergency Support Section
United States Environmental Protection Agency
77 West Jackson Boulevard - HSE-5J
Chicago, Illinois 60604

Re: Cometco Oil Facility
Chicago, Cook County, Illinois
TDD: S05-9811-002
PAN: 8B0201SIXX

Dear Ms. Nabasny:

The Ecology and Environment, Inc. (E & E), Superfund Technical Assessment and Response Team (START), was tasked by the Emergency Response Branch of the United States Environmental Protection Agency (U.S. EPA), under the Technical Direction Document (TDD) number S05-9811-002, to conduct a site assessment for the Cometco Oil Facility (Cometco), located in Chicago, Cook County, Illinois (Attachment A, Figure 1). START was tasked to prepare and implement a health and safety plan; compile and review background information; subcontract analytical services; document site condition; perform multi-media sampling; evaluate threats to human health and the environment; and make recommendations to U.S. EPA as to the potential need for a removal action, further investigation, referral to other government agencies or U.S. EPA programs, or other actions which may be prudent. The site assessment was performed in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), following 40 Code of Federal Regulations (CFR) Section 300.415, paragraph (b)(2), to evaluate on-site conditions and potential threats to human health and the environment. The site assessment was conducted on November 10, 1998, under the authority of U.S. EPA On-Scene Coordinator (OSC) Paul Steadman. This report provides background information about the Cometco site and summarizes the START site assessment activities.

The Cometco facility is located at 1509 W. Cortland Street, Chicago, Cook County, Illinois. The geographic coordinates of the facility are latitude 87°39'53.7" W and longitude 41°54'56.5' N. The facility is one of seven scrap metal facilities operated by Cozzi Iron and Metal, Inc. (Cozzi), in Chicago. Cometco currently operates as a scrap metal storage and separating facility for Cozzi's four shredding facilities in the area. The primary activities conducted at the Cometco facility include the separation of ferrous from nonferrous metal scraps and bailing of scrap for transport. The site occupies approximately 0.75 acre and is bordered by the Chicago River to the east, commercial property to the west (along Elston Avenue), W. Cortland Street to the north, and railroad tracks to the south

recycled paper

(Attachment A, Figure 2). The area immediately surrounding the site is predominantly commercial. An apartment above a commercial property borders the site to the west on West Cortland Street, and is the only residential property bordering the site.

Cometco site features include an office building, a garage/machine shop, a pump house, and several large scrap metal piles (Attachment A, Figure 2). The scrap piles range in area from approximately 2,500 square feet to 5,000 square feet, with maximum heights of approximately 30 feet. Drainage from the scrap piles is directed into a 25-foot-diameter settling pond at the southeast corner of the site. Overflow from the settling pond is discharged periodically into the Chicago River via a 1-foot-diameter pipe. The site topography is flat with a small embankment along the length of the river bank. The Chicago River is banked with metal shoring for the entire length of the site, with an approximate 10-foot drop in elevation from the site to the river surface.

Seven Cozzi facilities have been under investigation by U.S. EPA for possible noncompliance with the Resource Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA). Previous investigations by U.S. EPA at three Cozzi facilities revealed no visible contamination at two facilities, while polychlorinated biphenyl (PCB) contamination in excess of 50 milligrams per kilogram (mg/kg) was noted at a third. A second round of sampling at three additional Cozzi facilities, including the Cometco facility, was initiated jointly by the RCRA and TSCA Branches within the Waste, Toxics, and Pesticides Division of Region 5 U.S. EPA during the summer of 1998. The seventh Cozzi facility is an office which is not expected to be impacted by any industrial processes.

The U.S. EPA Oil Planning and Response Section was contacted by representatives of the RCRA and TSCA programs in order to address potential threats which might warrant a response under either the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the Oil Pollution Act (OPA). U.S. EPA OSC Paul Steadman met with representatives of the Office of Regional Counsel (ORC), TSCA, RCRA, and the Clean Water Division of U.S. EPA regarding a multi-media/program approach to investigating potential environmental threats posed by the Cometco facility. It was determined that a joint investigation between the Superfund Division and the RCRA and TSCA programs would be conducted. Contractors to the RCRA program, as well as START, were tasked to provide technical assistance to U.S. EPA in conducting multi-media sampling at the Cometco facility.

START attended a meeting with U.S. EPA representatives on November 6, 1998. The following individuals were present at the meeting: START members Megan Fedders and Chad Gibson, OSC Steadman, U.S. EPA TSCA representative Ken Zolnierczyk, Illinois Environmental Protection Agency (IEPA) representative Gino Bruni, and Tech-Law representatives John Koehnen and Terry Uecker (RCRA contractors). It was determined that sampling of soil, sediment, and water from several locations on site would be performed and that samples would be analyzed for PCBs, Target Compound List metals (total metals), volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). Sampling locations were planned to assess the potential for impact to the Chicago River and included soil samples from the river bank area and areas surrounding the settling pond; sediment and surface water samples from the pond; and sediment samples from the river, if easily accessible. START was subsequently tasked to procure a laboratory for analysis of the samples.

START members Fedders and Gibson arrived at the Cometco facility at 0845 hours on November 10, 1998, and accompanied OSC Steadman on site. START and U.S. EPA were met by

Cometco representatives Mark LeRose and Debra Levin. At 0930, IEPA RCRA program representative Gino Bruni and U.S. EPA TSCA representative Ken Zolnierczyk arrived and met with U.S. EPA, START, and Cometco representatives. At 1010 hours, a site reconnaissance was initiated in order to determine sampling locations, which were then marked with survey flags. In addition, OSC Steadman entered the pump house with Cometco representatives to evaluate the potential need for a Spill Prevention, Control, and Countermeasures (SPCC) plan at the facility.

Drainage from the scrap piles was observed along the southeastern edge of the site. This water, which had a visible sheen, entered the settling pond at its northern edge. The settling pond had a brown, oily layer across part of the surface, and dark staining was visible on vegetation surrounding the pond (Attachment B). Cometco personnel explained that the drainage system for the pond was gravity activated, allowing overflow of the lower layers of the pond into the drainage pipe, and subsequently into the river during high water. No drainage into the river was visible at the time of the site visit despite recent heavy rain. Cometco personnel also indicated that a liner was thought to be present on the bottom of the pond. The composition, date of installation, and condition of the liner were unknown by LeRose and Levin.

At 1055 hours, U.S. EPA water program representative Howard Duckman arrived at the site via boat with representatives of the Water Reclamation District of Chicago. Duckman accompanied the aforementioned personnel for all subsequent site activities. START and U.S. EPA personnel viewed the site from the boat and observed runoff from the site flowing through the metal shoring at several points along the river bank.

During the reconnaissance, five soil sample locations were chosen: two along the river bank; one along the drainage pathway from the easternmost scrap pile into the settling pond; and two from the northern edge of the pond (Attachment A, Figure 2). A sediment sample and surface water sample were planned to be collected from the settling pond. In addition, a water sample of runoff from the embankment into the river was planned to be collected.

Sampling activities were initiated at 1125 hours. START collected additional volumes of each sample to provide split samples for Cometco personnel. At each soil sample location, START collected samples for VOC analysis; using dedicated stainless steel spoons, the sample was placed directly into 4-ounce jars. Additional soils were collected and placed in four 8-ounce jars after being homogenized in dedicated aluminum pie pans or stainless steel bowls. Surficial soil samples S1 through S4 represented the top 0 to 6 inches of material. Soil sample S5 was collected with a hand auger to a depth of approximately 1 foot. Sediment sample S6 was collected from the sediment surface at the western edge of the pond. At the request of U.S. EPA representative Zolnierczyk, toxicity characteristic leaching procedure (TCLP) metals were added to the analytical parameter list for samples S3 through S6. Soil sampling activities were concluded at 1300 hours, at which time custody of the soil split samples for Cometco personnel was relinquished to LeRose.

Surface water sampling commenced at 1315 hours. The surface water sample from the embankment runoff (W1) was collected directly into sample containers for analysis of VOCs, SVOCs, PCBs, and total metals. Sample W2 was collected from the western edge of the settling pond and included some of the top layer visible on the pond. Water sampling activities were concluded at 1430 hours, at which time custody of the water split samples was relinquished to Cometco representative LeRose. At 1500 hours, U.S. EPA, IEPA, START, and Cometco personnel met to discuss the

investigation. START departed Cometco at 1600 hours.

Samples were shipped to ATAS, Inc., in St. Louis, Missouri, for analysis of total metals, TCLP metals (S3 through S6 only), VOCs, SVOCs, and PCBs. Preliminary analytical data was received by START on December 9, 1998, with a final analytical package arriving on December 15, 1998 (Attachment C). The validated analytical data package is provided as Attachment C. Analytical results are summarized in Tables 1 through 5. Where applicable, U.S. EPA Region 3 Risk-Based Screening Concentrations (RBCs) for industrial soil have been indicated in tables for comparison to site data. U.S. EPA Maximum Contaminant Levels (MCLs) for drinking water have also been listed for reference.

Analytical results for VOCs are summarized in Attachment D, Table 1. Analytical results indicated low levels of VOCs in most soil and sediment samples. The most frequently encountered compounds were acetone and methylene chloride, which are common laboratory contaminants. RBCs for VOCs were not exceeded in any sample. Sample W1 contained acetone at 46 micrograms per liter (μg/L), while no VOCs were detected above sample quantitation limits in sample W2.

Analytical results for SVOCs are summarized in Attachment D, Table 2. Chemical analysis revealed low levels of SVOCs in all soil and sediment samples. Although no RBCs were exceeded for SVOCs, several carcinogenic polynuclear aromatic hydrocarbons, including benzo(a)anthracene, chrysene, and ideo(1,2,3-c,d)pyrene, were detected in three of the five soil samples. Sample W1 contained phenol at 13 μg/L and 4-chloro-3-methylphenol at 32 μg/L. Sample W2 contained several SVOCs, including phenol at 160 μg/L, benzoic acid at 190 μg/L, 4-chloro-3-methylphenol at 260 μg/L, and phenanthrene at 74 μg/L.

In Attachment D, Table 3 summarizes the analytical results for PCB analysis. No PCBs were detected in any soil sample, with quantitation limits ranging from 0.5 to 6.5 mg/kg. PCBs were not detected in either water sample. Quantitation limits for the water samples were 10 μg/L for W1 and 100 μg/L for W2.

Analytical results for total metals and TCLP metals are presented in Attachment D, Tables 4 and 5, respectively. Analysis of soil and sediment samples for total metals revealed arsenic concentrations in five soil samples exceeding the RBC of 3.8 mg/kg. No other RBCs for metallic parameters were exceeded. The metals concentrations observed are consistent with the current use of the property. TCLP metals results revealed leachable cadmium present in samples S3, S4, S5, and S6; however, the cadmium levels were significantly below the RCRA regulatory limit.

The preparation of this Letter Report serves as the final deliverable under this TDD. Please contact this office should any additional information on this site be needed.

Sincerely,

Brendan P. McLennan

for Megan F. Fedders
START Project Manager

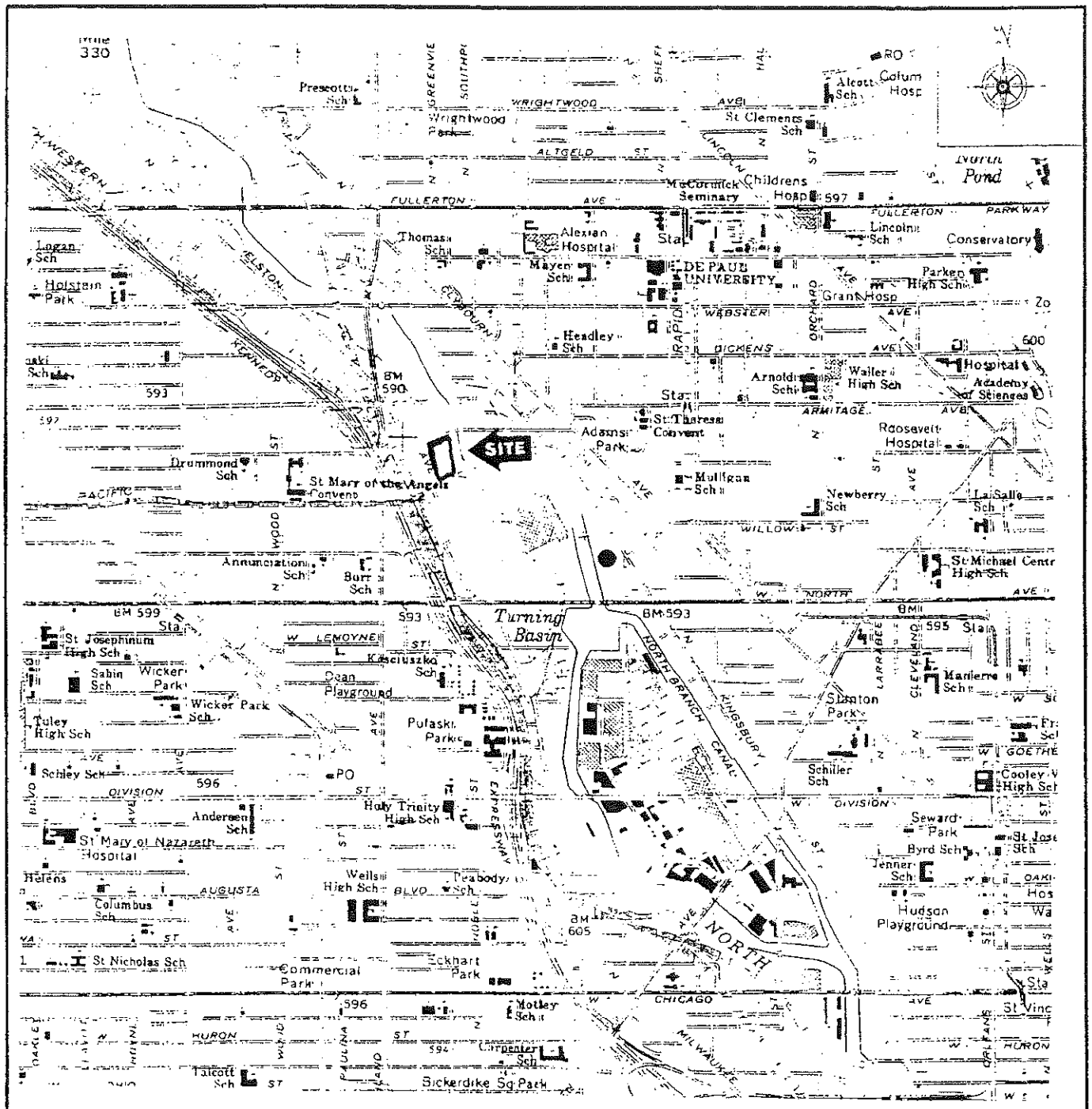
Thomas Kouris
START Program Manager

Attachments: A: Figures
B: Photodocumentation
C: Validated Analytical Data Package
D: Tables

cc: Paul Steadman, U.S. EPA OSC
START TDD site file

Attachment A

Figures

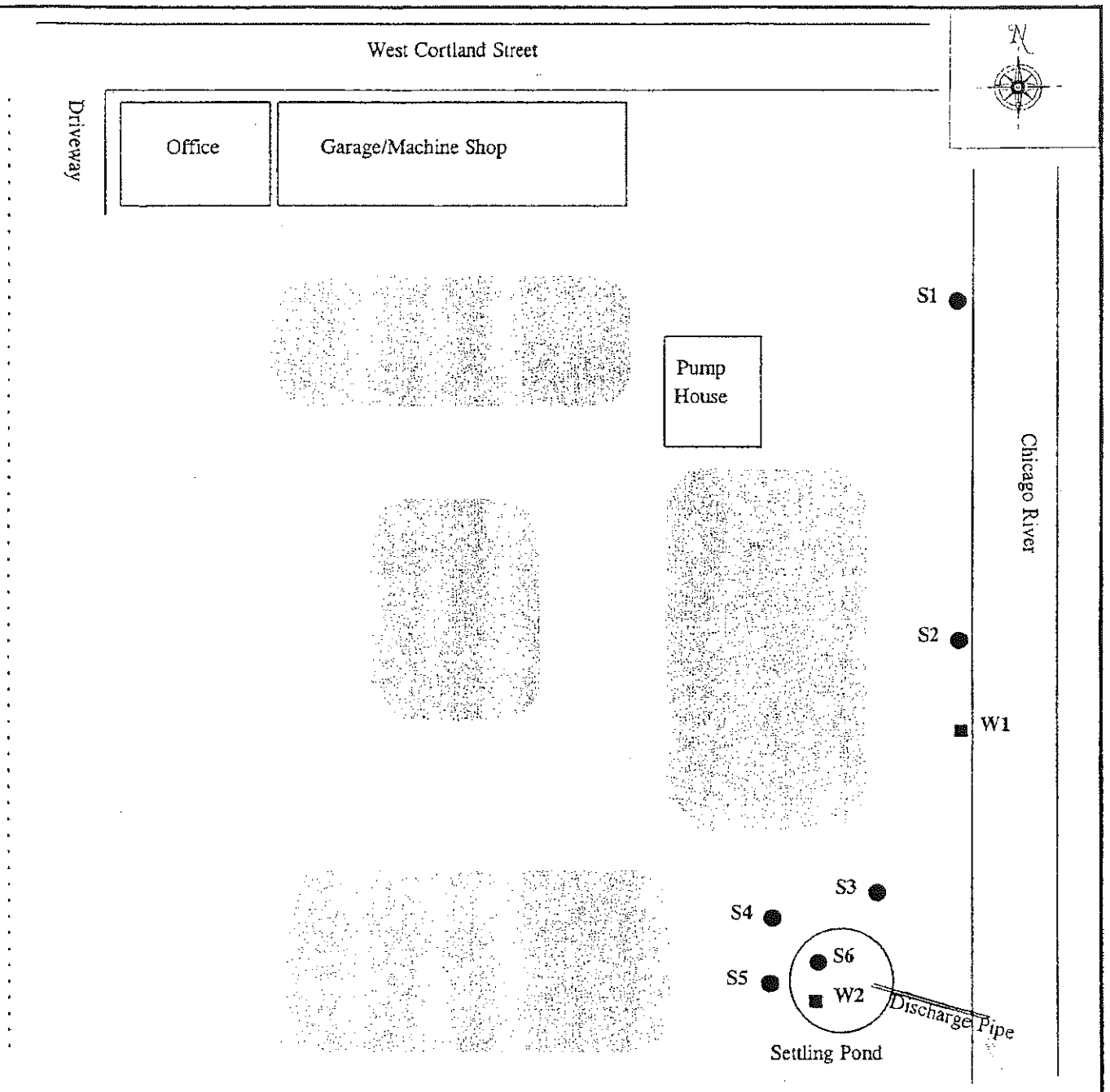


Quadrangle Location

ecology and environment, inc.

Region 5 - Superfund Technical Assessment And Response Team
33 North Dearborn Street, Chicago, Illinois 60602

TITLE	Site Location Map	FIGURE	1
SITE	Cometco Oil Facility	SCALE	1:24,000
CITY	Chicago, Cook County	STATE Illinois	TDD S05-9811-002
SOURCE	U.S.G.S. Topographic Map 7.5 minute series Chicago Loop Quadrangle	DATE	1963
		REVISED	1972



Legend

- Scrap Pile
- Railroad Tracks
- Fence
- Soil/Sediment Sample Location
- Surface Water Sample Location

ecology and environment, inc.

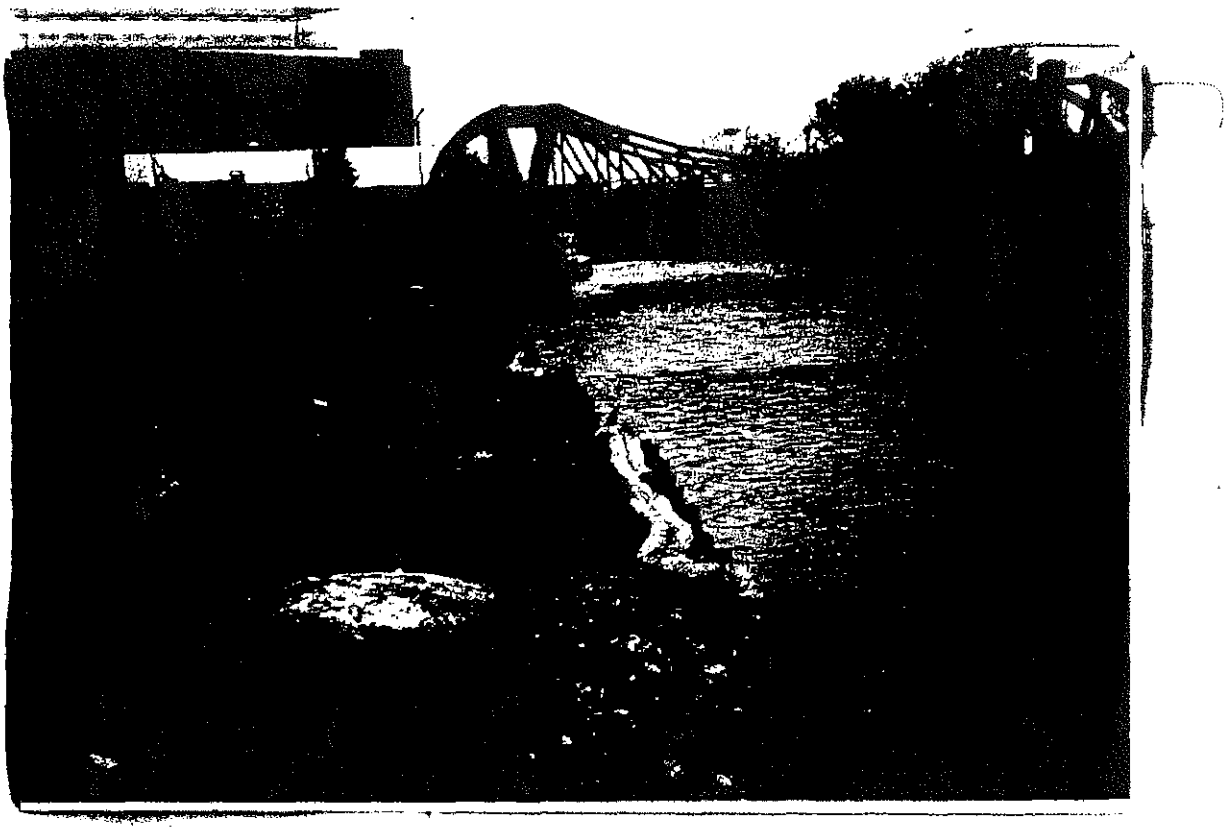
Region 5 - Superfund Technical Assessment And Response Team
33 North Dearborn Street, Chicago, Illinois 60602

TITLE	Site Features/Sample Location Map	FIGURE	2
SITE	Cometco Facility	SCALE	Not to Scale
CITY	Chicago	STATE Illinois	TDD S05-9811-002
SOURCE	Ecology and Environment, Inc.	DATE	November 1998

Attachment B

Photodocumentation

SITE: Cometco DATE: November 10, 1998 TIME: 1021 ROLL/FRAME: 1/1
LOCATION: Chicago, Illinois DIRECTION: North PHOTOGRAPHER: C. Gibson
SUBJECT: Sample location S2 (pink flag) and sorbent boom along Chicago River bank.

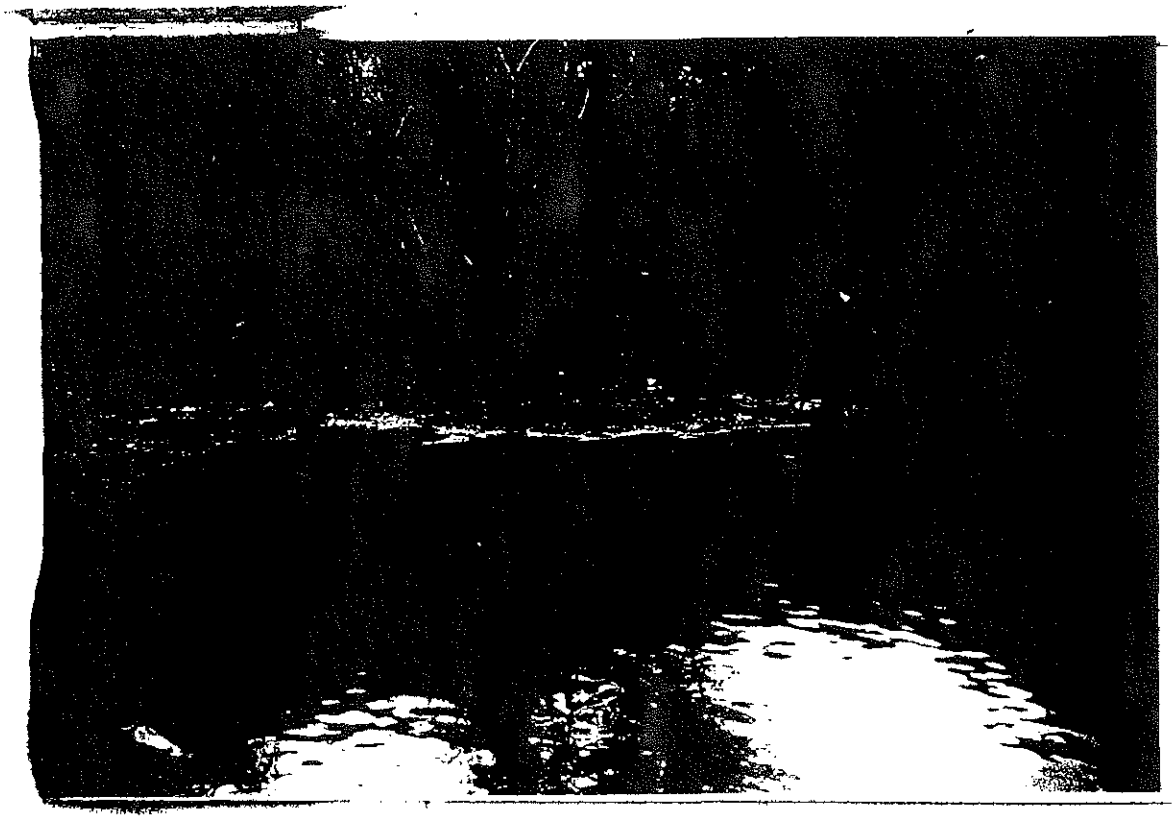


SITE: Cometco DATE: November 10, 1998 TIME: 1024 ROLL/FRAME: 1/2
LOCATION: Chicago, Illinois DIRECTION: South PHOTOGRAPHER: C. Gibson
SUBJECT: Drainage into settling pond from scrap metal pile at southeast corner of site.

SITE: Cometco DATE: November 10, 1998 TIME: 1025 ROLL/FRAME: 1/3
LOCATION: Chicago, Illinois DIRECTION: North PHOTOGRAPHER: C. Gibson
SUBJECT: Ponded runoff from scrap metal pile with drainage pathway to settling pond.

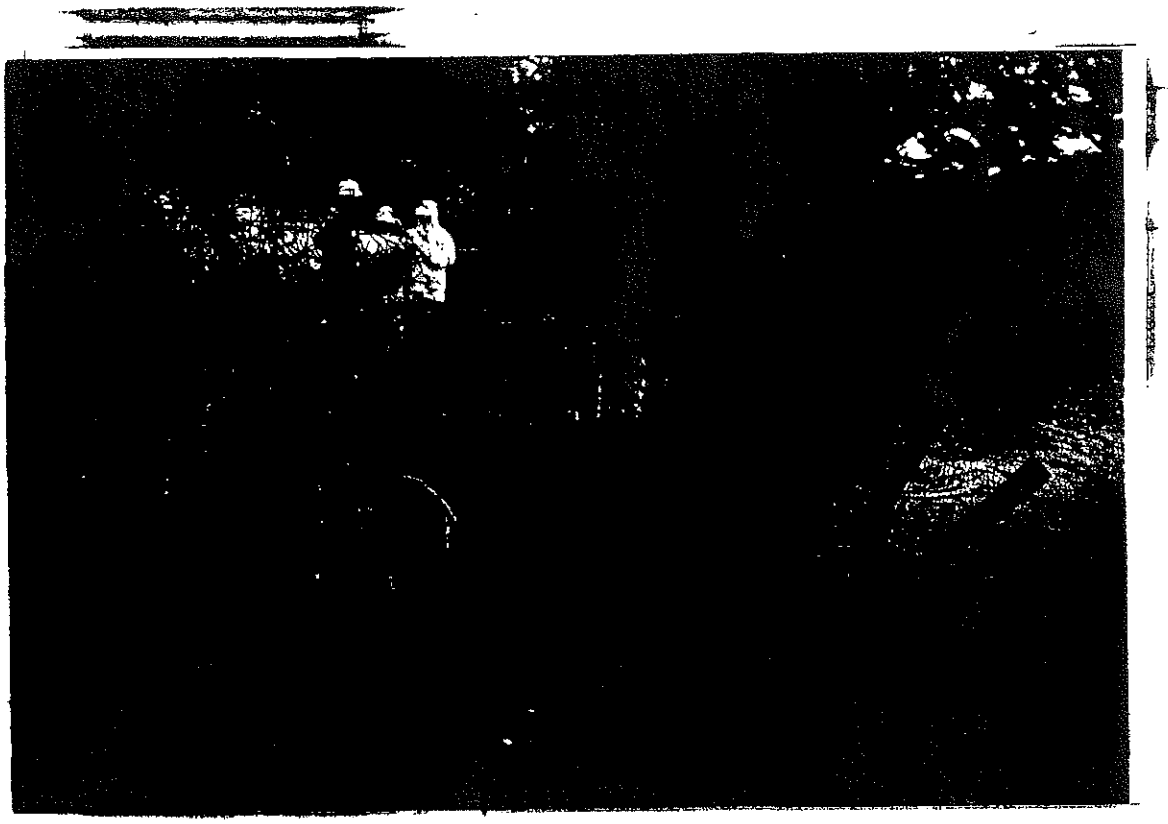
SITE: Cometco DATE: November 10, 1998 TIME: 1030 ROLL/FRAME: 1/4
LOCATION: Chicago, Illinois DIRECTION: South PHOTOGRAPHER: C. Gibson
SUBJECT: Panoramic of settling pond at southeast corner of site.

SITE: Cometco DATE: November 10, 1998 TIME: 1030 ROLL/FRAME: 1/5
LOCATION: Chicago, Illinois DIRECTION: Southwest PHOTOGRAPHER: C. Gibson
SUBJECT: Panoramic of settling pond at southeast corner of site.

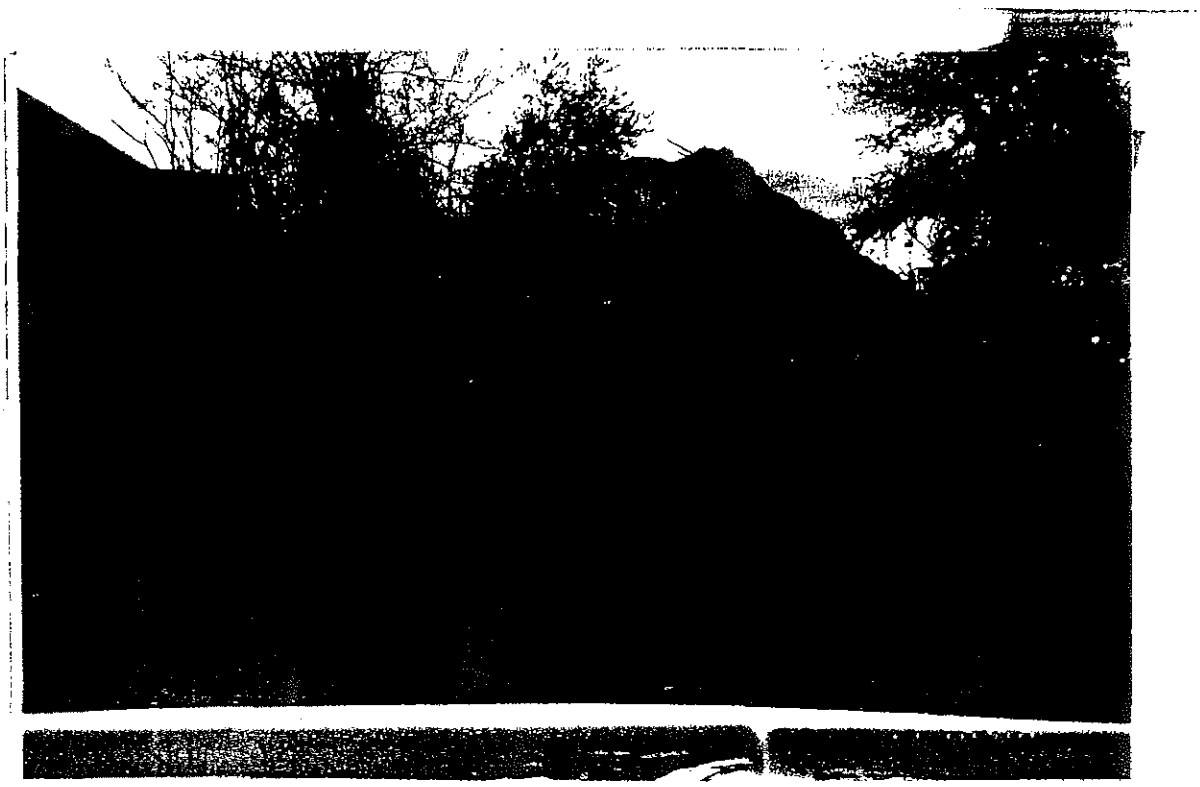


SITE: Cometco DATE: November 10, 1998 TIME: 1030 ROLL/FRAME: 1/6
LOCATION: Chicago, Illinois DIRECTION: Southwest PHOTOGRAPHER: C. Gibson
SUBJECT: View of settling pond at southeast corner of site.

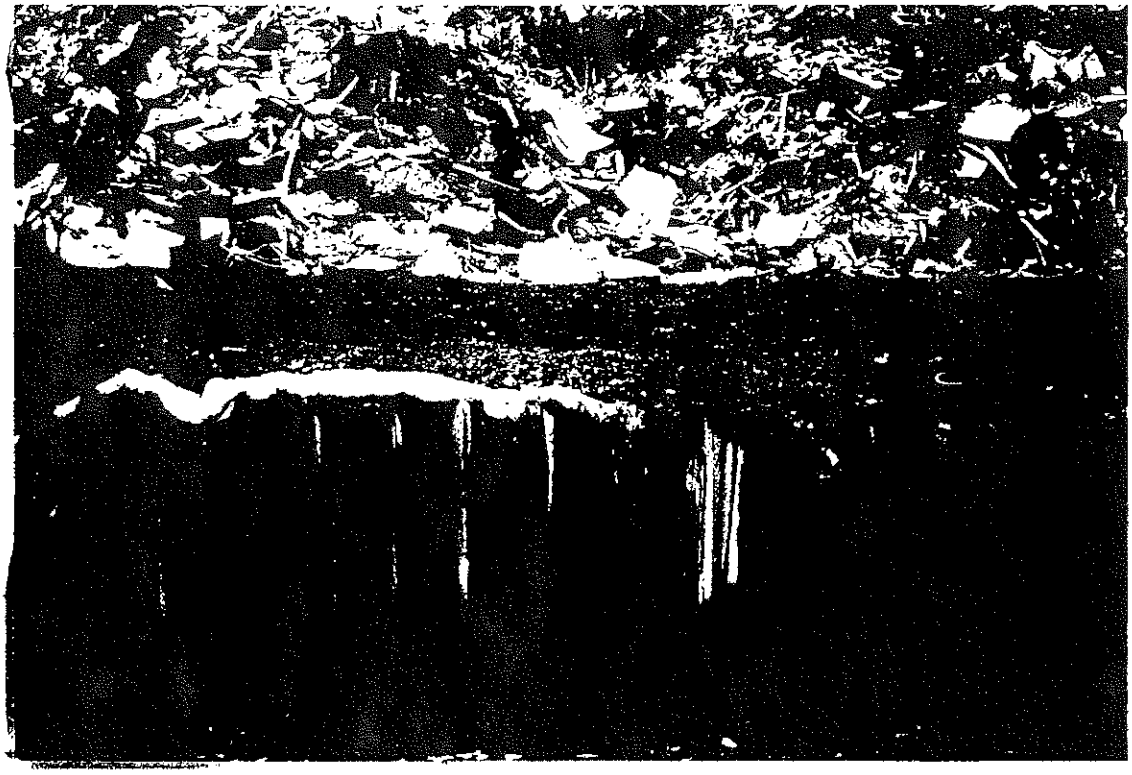
SITE: Cometco DATE: November 10, 1998 TIME: 1040 ROLL/FRAME: 1/8
LOCATION: Chicago, Illinois DIRECTION: Northwest PHOTOGRAPHER: C. Gibson
SUBJECT: Location of outfall from settling pond drainage pipe (under outcropping).



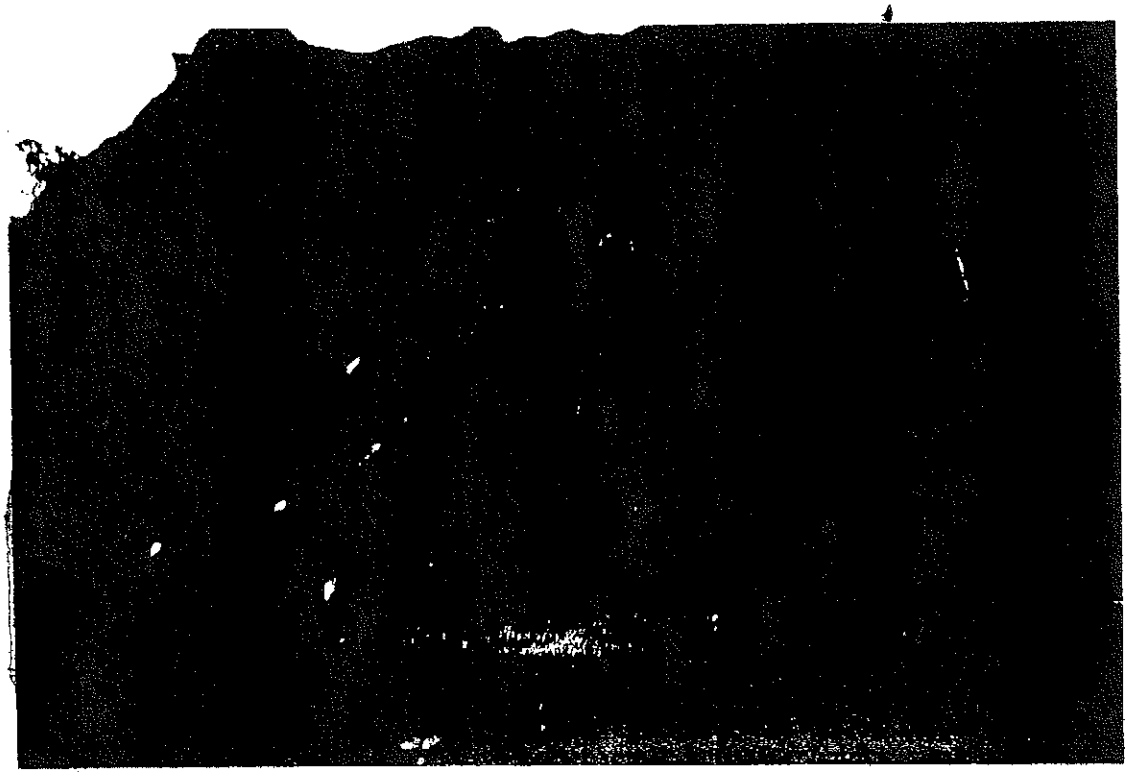
SITE: Cometco DATE: November 10, 1998 TIME: 1100 ROLL/FRAME: 1/10
LOCATION: Chicago, Illinois DIRECTION: West PHOTOGRAPHER: M. Fedders
SUBJECT: Outfall area viewed from Chicago River with scrap metal pile in background.



SITE: Cometco DATE: November 10, 1998 TIME: 1105 ROLL/FRAME: 1/11
LOCATION: Chicago, Illinois DIRECTION: West PHOTOGRAPHER: M. Fedders
SUBJECT: Metal shoring along Chicago River with runoff flowing over shoring from site.



SITE: Cometco DATE: November 10, 1998 TIME: 1021 ROLL/FRAME: 1/14
LOCATION: Chicago, Illinois DIRECTION: South PHOTOGRAPHER: C. Gibson
SUBJECT: Scrap metal pile at south end of site, just west of settling pond.



Attachment C

Validated Analytical Data Package

ecology and environment, inc.
International Specialists in the Environment

33 North Dearborn Street
Chicago, Illinois 60602
Tel. 312/578-9243, Fax: 312/578-9345

MEMORANDUM

DATE: December 14, 1998

TO: File

FROM: Megan Fedders, START Chemist, E & E, Chicago, Illinois

THROUGH: Dave Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

SUBJECT: Data Quality Review for Target Analyte List (TAL) Metals and Toxicity Characteristic Leaching Procedure (TCLP) Metals, Cometco Oil Facility Site, Chicago, Illinois

REFERENCE: Project TDD S05-9811-002 Analytical TDD S05-9811-801
Project PAN 8B0201SIXX Analytical PAN 8BAA01TAXX

The data quality assurance (QA) review of six soil/sediment and two water samples collected from the Cometco Oil Facility site is complete. The samples were collected on November 10, 1998, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology & Environment, Inc. (E & E). The samples were submitted to ATAS, Inc., St. Louis, Missouri, for analysis. The laboratory analyses were performed according to United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 1311 for TCLP extraction, 7471A for mercury, and 6010A for all other metals.

Sample Identification

START Identification	Laboratory Identification
S1	24507.01
S2	24507.02
S3	24507.03
S4	24507.04
S5	24507.05
S6	24507.06
W1	24507.07
W2	24507.08

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Data Qualifications:

I Sample Holding Time: Acceptable

The samples were collected on November 10, 1998. Mercury samples were extracted and analyzed on November 18, 1998, within the 28-day holding time limit. All other metals samples were extracted and analyzed between November 25, 1998, and December 1, 1998, within the 6-month holding time limit. TCLP extractions were performed on November 16, 1998.

II Blanks: Acceptable

Two method blanks for total metals (one soil and one water) were analyzed with the samples. No target compounds were detected above the method quantitation limit in either method blank. Silver was detected in the TCLP method blank at a level of 0.033 mg/L. Silver TCLP results less than five times the blank value were qualified as non-detected.

III Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 3.0, Metallic Inorganic Parameters. Based upon the information provided, the data are acceptable for use with the qualifications noted above.

ecology and environment, inc.
International Specialists in the Environment

33 North Dearborn Street
Chicago, Illinois 60602
Tel. 312/578-9243, Fax: 312/578-9345

MEMORANDUM

DATE:	December 14, 1998
TO:	File
FROM:	Megan Fedders, START Chemist, E & E, Chicago, Illinois
THROUGH:	Dave Hendren, START Analytical Services Manager, E & E, Chicago, Illinois
SUBJECT:	Data Quality Review for Target Compound List (TCL) Volatile Organic Compounds (VOCs), Cometco Oil Facility Site, Chicago, Illinois
REFERENCE:	Project TDD S05-9811-002 — Analytical TDD S05-9811-801 Project PAN 8B0201SIXX — Analytical PAN 8BAA01TAXX

The data quality assurance (QA) review of six soil/sediment and two water samples collected from the Cometco Oil Facility site is complete. The samples were collected on November 10, 1998, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology & Environment, Inc. (E & E). The samples were submitted to ATAS, Inc., St. Louis, Missouri, for analysis. The laboratory analyses were performed according to United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8260.

Sample Identification

START Identification	Laboratory Identification
S1	24507.01
S2	24507.02
S3	24507.03
S4	24507.04
S5	24507.05
S6	24507.06
W1	24507.07
W2	24507.08

Data Qualifications:

I Sample Holding Time: Acceptable

The samples were collected on November 10, 1998, and analyzed between November 18 and 23, 1998. This is within the 14-day holding time limit.

II Blanks: Acceptable

Three method blanks (two soil and one water) were analyzed with the samples. Methylene chloride was detected in both of the soil blanks at levels of 6 and 7 micrograms per kilogram (μg/kg). Soil sample results for methylene chloride were qualified as non-detected (NDB) if the sample result was less than 10 times the associated blank value.

III Additional QC Checks: Acceptable

The recoveries of surrogates used in the samples and blanks were within acceptable limits in most cases. One surrogate was out of laboratory-established control limits for samples S1, S2, S5, and S6. No data were qualified as a result of surrogate recoveries.

One matrix spike/matrix spike duplicate (MS/MSD) pair and one laboratory control sample (LCS) were analyzed for each matrix. Percent recoveries for MS/MSD and LCS samples and relative percent difference values for MS/MSD samples were within laboratory-established control limits.

IV Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 5.0, VOAs by GC/MS Analysis. Based upon the information provided, the data are acceptable for use with the above stated qualifications.

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Chicago, Illinois 60602
Tel. 312/578-9243, Fax: 312/578-9345

MEMORANDUM

DATE: December 14, 1998

TO: File

FROM: Megan Fedders, START Chemist, E & E, Chicago, Illinois

THROUGH: Dave Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

SUBJECT: Data Quality Review for Target Compound List (TCL) Polychlorinated Biphenyls (PCBs), Cometco Oil Facility Site, Chicago, Illinois

REFERENCE: Project TDD S05-9811-002 Analytical TDD S05-9811-801
Project PAN 8B0201SIXX Analytical PAN 8BAA01TAXX

The data quality assurance (QA) review of six soil/sediment and two water samples collected from the Cometco Oil Facility site is complete. The samples were collected on November 10, 1998, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology & Environment, Inc. (E & E). The samples were submitted to ATAS, Inc., St. Louis, Missouri, for analysis. The laboratory analyses were performed according to United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8082.

Sample Identification

START Identification	Laboratory Identification
S1	24507.01
S2	24507.02
S3	24507.03
S4	24507.04
S5	24507.05
S6	24507.06
W1	24507.07
W2	24507.08

recycled paper

Data Qualifications:

I Sample Holding Time: Acceptable

The samples were collected on November 10, 1998. All samples were extracted and analyzed on November 20, 1998. This is within the 14-day holding time limit, from collection to extraction, and the 40-day limit from extraction to analysis.

II Blanks: Acceptable

Two method blanks (one soil and one water) were analyzed with the samples. No target compounds were detected above the method quantitation limit in either method blank.

III Additional QC Checks: Acceptable

The recoveries of surrogates used in the samples and blanks were within acceptable limits for all samples.

One matrix spike/matrix spike duplicate (MS/MSD) pair and one laboratory control sample (LCS) were analyzed for each matrix. Percent recoveries for MS/MSD and LCS samples and relative percent difference values for MS/MSD samples were within laboratory-established control limits.

IV Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 6.0, Pesticides/PCBs. Based upon the information provided, the data are acceptable for use.

ecology and environment, inc.
International Specialists in the Environment

33 North Dearborn Street
Chicago, Illinois 60602
Tel. 312/578-9243, Fax: 312/578-9345

MEMORANDUM

DATE: December 14, 1998

TO: File

FROM: Megan Fedders, START Chemist, E & E, Chicago, Illinois

THROUGH: Dave Hendren, START Analytical Services Manager, E & E, Chicago, Illinois

SUBJECT: Data Quality Review for Target Compound List (TCL) Semivolatile Organic Compounds (SVOCs), Cometco Oil Facility Site, Chicago, Illinois

REFERENCE: Project TDD S05-9811-002 Analytical TDD S05-9811-801
Project PAN 8B0201SIXX Analytical PAN 8BAA01TAXX

The data quality assurance (QA) review of six soil/sediment and two water samples collected from the Cometco Oil Facility site is complete. The samples were collected on November 10, 1998, by the Superfund Technical Assessment and Response Team (START) contractor, Ecology & Environment, Inc. (E & E). The samples were submitted to ATAS, Inc., St. Louis, Missouri, for analysis. The laboratory analyses were performed according to United States Environmental Protection Agency (U.S. EPA) Solid Waste 846 Method 8270.

Sample Identification

START Identification	Laboratory Identification
S1	24507.01
S2	24507.02
S3	24507.03
S4	24507.04
S5	24507.05
S6	24507.06
W1	24507.07
W2	24507.08

recycled paper

Data Qualifications:

I Sample Holding Time: Acceptable

The samples were collected on November 10, 1998, extracted between November 16 and 18, 1998, and analyzed between November 17 and 18, 1998. This is within the 14-day holding time limit, from collection to extraction, and the 40-day limit from extraction to analysis.

II Blanks: Acceptable

Two method blanks (one soil and one water) were analyzed with the samples. No target compounds were detected above the method quantitation limit in either method blank.

III Additional QC Checks: Acceptable

The recoveries of surrogates used in the samples and blanks were within acceptable limits in most cases. One surrogate was out of laboratory-established control limits for samples S4 and W2. No data were qualified as a result of surrogate recoveries.

One laboratory control sample (LCS) and LCS duplicate were analyzed for each matrix. Percent recoveries and relative percent difference values for LCS/LCSD samples were within laboratory-established control limits.

IV Overall Assessment of Data for Use: Acceptable

The overall usefulness of the data is based on criteria for QA Level II as outlined in the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01 (April 1990), Data Validation Procedures, Section 4.0, BNAs by GC/MS Analysis. Based upon the information provided, the data are acceptable for use.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.01
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-18-98
PROJECT # : 9811-801
SAMPLE ID : S1

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	5	ND	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
DICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
CHLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
BROMOMETHANE	10	ND	2-HEXANONE	10	ND
CHLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
TRICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
ACETONE	10	13	1,1,1,2-TETRACHLOROETHANE	5	ND
IODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
METHYLENE CHLORIDE	5	7 B	BROMOFORM	5	ND
' ıs-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
1,1-DICHLOROETHANE	5	ND	BROMOBENZENE	5	ND
VINYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
2,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	ND	2-CHLOROTOLUENE	5	ND
2-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
BROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	ND	TERT-BUTYLBENZENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND	1,2,4-TRIMETHYLBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
BENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
1,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
TRICHLOROETHENE	5	ND	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
DIBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
BROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
4-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
1,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 85% BROMOFLUOROBENZENE(74-121) 63% *
1,2-DICHLOROETHANE-D4(70-121) 112%

B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
RL = REPORTING LIMIT; DEFINED AS THE PRACTICAL QUANTITATION LIMIT PLUS ANY DILUTION, POSITI
VALUES BELOW THIS LIMIT WERE NOT REPORTED.
ND = NOT DETECTED ABOVE REPORTING LIMIT
* = VALUES OUTSIDE OF QC LIMITS ON BOTH ORIGINAL AND RERUN

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)
DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.02
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-20-98
PROJECT # : 9811-801
SAMPLE ID : S2

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	5	ND	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
DICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
CHLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
BROMOMETHANE	10	ND	2-HEXANONE	10	ND
CHLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
TRICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
ACETONE	10	ND	1,1,1,2-TETRACHLOROETHANE	5	ND
IODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
METHYLENE CHLORIDE	5	40 B	BROMOFORM	5	ND
trans-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
1,1-DICHLOROETHANE	5	ND	BROMOBENZENE	5	ND
VINYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
2,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	ND	2-CHLOROTOLUENE	5	ND
2-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
BROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	6	TERT-BUTYLBENZENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND	1,2,4-TRIMETHYLBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
BENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
1,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
TRICHLOROETHENE	5	ND	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
DIBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
BROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
4-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
1,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 78%* BROMOFLUOROBENZENE(74-121) 63%*
1,2-DICHLOROETHANE-D4(70-121) 135%*

B ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
RL = REPORTING LIMIT; DEFINED AS THE PRACTICAL QUANTITATION LIMIT PLUS ANY DILUTION, POSITIVE VALUES BELOW THIS LIMIT WERE NOT REPORTED.
ND = NOT DETECTED ABOVE REPORTING LIMIT
* = VALUES OUTSIDE OF QC LIMITS ON BOTH ORIGINAL AND RERUN

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.03
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-18-98
PROJECT # : 9811-801
SAMPLE ID : S3

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	5	ND	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
DICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
CHLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
BROMOMETHANE	10	ND	2-HEXANONE	10	ND
CHLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
TRICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
ACETONE	10	ND	1,1,1,2-TETRACHLOROETHANE	5	ND
IODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
METHYLENE CHLORIDE	5	ND	BROMOFORM	5	ND
cis-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
1,1-DICHLOROETHANE	5	ND	BROMOBENZENE	5	ND
VINYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
2,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	ND	2-CHLOROTOLUENE	5	ND
2-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
BROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	ND	TERT-BUTYLBENZENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND	1,2,4-TRIMETHYLBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
BENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
1,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
TRICHLOROETHENE	5	ND	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
DIBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
BROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
4-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
1,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 83% BROMOFLUOROBENZENE(74-121) 84%
1,2-DICHLOROETHANE-D4(70-121) 152% *

B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
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* = VALUES OUTSIDE OF QC LIMITS ON BOTH ORIGINAL AND RERUN

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.04
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-18-98
PROJECT # : 9811-801
SAMPLE ID : S4

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	450	ND	TOLUENE	450	580
XYLENE (TOTAL)	450	1100	trans-1,3-DICHLOROPROPENE	450	ND
DICHLORODIFLUOROMETHANE	900	ND	1,1,2-TRICHLOROETHANE	450	ND
CHLOROMETHANE	900	ND	TETRACHLOROETHENE	450	ND
VINYL CHLORIDE	900	ND	1,3-DICHLOROPROPANE	450	ND
BROMOMETHANE	900	ND	2-HEXANONE	900	ND
CHLOROETHANE	900	ND	DIBROMOCHLOROMETHANE	450	ND
TRICHLOROFLUOROMETHANE	900	ND	1,2-DIBROMOETHANE	450	ND
1,1-DICHLOROETHENE	450	ND	CHLOROBENZENE	450	ND
ACETONE	900	8500	1,1,1,2-TETRACHLOROETHANE	450	ND
IODOMETHANE	900	ND	ETHYLBENZENE	450	ND
CARBON DISULFIDE	450	ND	STYRENE	450	ND
METHYLENE CHLORIDE	450	980 B	BROMOFORM	450	ND
cis-1,2-DICHLOROETHENE	450	ND	ISOPROPYLBENZENE	450	ND
METHYL TERT-BUTYL ETHER	900	ND	1,1,2,2-TETRACHLOROETHANE	450	ND
1,1-DICHLOROETHANE	450	ND	BROMOBENZENE	450	ND
VINYL ACETATE	900	ND	1,2,3-TRICHLOROPROPANE	450	ND
2,2-DICHLOROPROPANE	450	ND	n-PROPYLBENZENE	450	1100
cis-1,2-DICHLOROETHENE	450	ND	2-CHLOROTOLUENE	450	ND
2-BUTANONE	900	ND	1,3,5-TRIMETHYLBENZENE	450	2800
BROMOCHLOROMETHANE	450	ND	4-CHLOROTOLUENE	450	ND
CHLOROFORM	450	ND	TERT-BUTYLBENZENE	450	ND
1,1,1-TRICHLOROETHANE	450	ND	1,2,4-TRIMETHYLBENZENE	450	9600
CARBON TETRACHLORIDE	450	ND	sec-BUTYLBENZENE	450	ND
1,1-DICHLOROPROPENE	450	ND	1,3-DICHLOROBENZENE	450	ND
BENZENE	450	ND	p-ISOPROPYLTOLUENE	450	ND
1,2-DICHLOROETHANE	450	ND	1,4-DICHLOROBENZENE	450	ND
TRICHLOROETHENE	450	610	n-BUTYLBENZENE	450	ND
1,2-DICHLOROPROPANE	450	ND	1,2-DICHLOROBENZENE	450	ND
DIBROMOMETHANE	450	ND	1,2-DIBROMO-3-CHLOROPROPANE	450	ND
BROMODICHLOROMETHANE	450	ND	1,2,4-TRICHLOROBENZENE	450	ND
cis-1,3-DICHLOROPROPENE	450	ND	HEXACHLOROBUTADIENE	450	ND
4-METHYL-2-PENTANONE	900	1400	NAPHTHALENE	450	ND
1,2,3-TRICHLOROBENZENE	450	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 94% BROMOFLUOROBENZENE(74-121) 90%
1,2-DICHLOROETHANE-D4(70-121) 107%

B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
J = ESTIMATED VALUE; BELOW REPORTING LIMIT
RL = REPORTING LIMIT; DEFINED AS THE PRACTICAL QUANTITATION LIMIT PLUS ANY DILUTION
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.05
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-20-98
PROJECT # : 9811-801
SAMPLE ID : S5

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	5	ND	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
DICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
CHLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
BROMOMETHANE	10	ND	2-HEXANONE	10	ND
CHLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
TRICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
ACETONE	10	ND	1,1,1,2-TETRACHLOROETHANE	5	ND
IODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
METHYLENE CHLORIDE	5	26 B	BROMOFORM	5	ND
trans-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
1,1-DICHLOROETHANE	5	ND	BROMOBENZENE	5	ND
VINYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
2,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	ND	2-CHLOROTOLUENE	5	ND
2-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
BROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	6	TERT-BUTYLBENZENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND	1,2,4-TRIMETHYLBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
BENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
1,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
TRICHLOROETHENE	5	ND	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
DIBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
BROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
4-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
1,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 77%* BROMOFLUOROBENZENE(74-121) 67%*
1,2-DICHLOROETHANE-D4(70-121) 132%*

B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
RL = REPORTING LIMIT; DEFINED AS THE PRACTICAL QUANTITATION LIMIT PLUS ANY DILUTION, POSITIVE VALUES BELOW THIS LIMIT WERE NOT REPORTED.
ND = NOT DETECTED ABOVE REPORTING LIMIT
* = VALUES OUTSIDE OF QC LIMITS ON BOTH ORIGINAL AND RERUN

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.06
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-20-98
PROJECT # : 9811-801
SAMPLE ID : S6

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	500	2900	TOLUENE	500	1600
XYLENE (TOTAL)	500	1300	trans-1,3-DICHLOROPROPENE	500	ND
DICHLORODIFLUOROMETHANE	1000	ND	1,1,2-TRICHLOROETHANE	500	ND
CHLOROMETHANE	1000	ND	TETRACHLOROETHENE	500	ND
VINYL CHLORIDE	1000	ND	1,3-DICHLOROPROPANE	500	ND
BROMOMETHANE	1000	ND	2-HEXANONE	1000	ND
CHLOROETHANE	1000	ND	DIBROMOCHLOROMETHANE	500	ND
TRICHLOROFLUOROMETHANE	1000	ND	1,2-DIBROMOETHANE	500	ND
1,1-DICHLOROETHENE	500	ND	CHLOROBENZENE	500	ND
ACETONE	1000	11000	1,1,1,2-TETRACHLOROETHANE	500	ND
IODOMETHANE	1000	ND	ETHYLBENZENE	500	ND
CARBON DISULFIDE	500	1200	STYRENE	500	ND
METHYLENE CHLORIDE	500	1800 B	BROMOFORM	500	ND
cis-1,2-DICHLOROETHENE	500	ND	ISOPROPYLBENZENE	500	ND
METHYL TERT-BUTYL ETHER	1000	ND	1,1,2,2-TETRACHLOROETHANE	500	ND
1,1-DICHLOROETHANE	500	ND	BROMOBENZENE	500	ND
VINYL ACETATE	1000	ND	1,2,3-TRICHLOROPROPANE	500	ND
2,2-DICHLOROPROPANE	500	ND	n-PROPYLBENZENE	500	ND
cis-1,2-DICHLOROETHENE	500	2900	2-CHLOROTOLUENE	500	ND
2-BUTANONE	1000	ND	1,3,5-TRIMETHYLBENZENE	500	ND
BROMOCHLOROMETHANE	500	ND	4-CHLOROTOLUENE	500	ND
CHLOROFORM	500	ND	TERT-BUTYLBENZENE	500	ND
1,1,1-TRICHLOROETHANE	500	ND	1,2,4-TRIMETHYLBENZENE	500	3900
CARBON TETRACHLORIDE	500	ND	sec-BUTYLBENZENE	500	ND
1,1-DICHLOROPROPENE	500	ND	1,3-DICHLOROBENZENE	500	ND
BENZENE	500	ND	p-ISOPROPYLTOLUENE	500	ND
1,2-DICHLOROETHANE	500	ND	1,4-DICHLOROBENZENE	500	ND
TRICHLOROETHENE	500	ND	n-BUTYLBENZENE	500	ND
1,2-DICHLOROPROPANE	500	ND	1,2-DICHLOROBENZENE	500	ND
DIBROMOMETHANE	500	ND	1,2-DIBROMO-3-CHLOROPROPANE	500	ND
BROMODICHLOROMETHANE	500	ND	1,2,4-TRICHLOROBENZENE	500	ND
cis-1,3-DICHLOROPROPENE	500	ND	HEXACHLOROBUTADIENE	500	ND
4-METHYL-2-PENTANONE	1000	6300	NAPHTHALENE	500	ND
1,2,3-TRICHLOROBENZENE	500	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 83% BROMOFLUOROBENZENE(74-121) 43% *
1,2-DICHLOROETHANE-D4(70-121) 93%

B ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
J = ESTIMATED VALUE; BELOW REPORTING LIMIT
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ND = NOT DETECTED ABOVE REPORTING LIMIT
* = VALUES OUTSIDE OF QC LIMITS ON BOTH ORIGINAL AND RERUN

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)

DATE : 12-08-98

SAMPLE MATRIX : WATER
ATAS # : 24507.07
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-23-98
PROJECT # : 9811-801
SAMPLE ID : W1

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	5	30	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
DICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
CHLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
BROMOMETHANE	10	ND	2-HEXANONE	10	ND
CHLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
TRICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
ACETONE	10	46	1,1,1,2-TETRACHLOROETHANE	5	ND
IODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
METHYLENE CHLORIDE	5	ND	BROMOFORM	5	ND
ns-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
1,1-DICHLOROETHANE	5	ND	BROMOBENZENE	5	ND
VINYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
2,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	30	2-CHLOROTOLUENE	5	ND
2-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
BROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	ND	TERT-BUTYLBENZENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND	1,2,4-TRIMETHYLBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
BENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
1,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
TRICHLOROETHENE	5	ND	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
DIBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
BROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
4-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
1,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(80-116) 99% BROMOFLUOROBENZENE(86-115) 93%
1,2-DICHLOROETHANE-D4(76-114) 92%

B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
RL = REPORTING LIMIT; DEFINED AS THE PRACTICAL QUANTITATION LIMIT PLUS ANY DILUTION, POSITIV
VALUES BELOW THIS LIMIT WERE NOT REPORTED.
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)

DATE : 12-08-98

SAMPLE MATRIX : WATER
ATAS # : 24507.08
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-23-98
PROJECT # : 9811-801
SAMPLE ID : W2

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	25	ND	TOLUENE	25	ND
XYLENE (TOTAL)	25	ND	trans-1,3-DICHLOROPROPENE	25	ND
DICHLORODIFLUOROMETHANE	50	ND	1,1,2-TRICHLOROETHANE	25	ND
CHLOROMETHANE	50	ND	TETRACHLOROETHENE	25	ND
VINYL CHLORIDE	50	ND	1,3-DICHLOROPROPANE	25	ND
BROMOMETHANE	50	ND	2-HEXANONE	50	ND
CHLOROETHANE	50	ND	DIBROMOCHLOROMETHANE	25	ND
TRICHLOROFLUOROMETHANE	50	ND	1,2-DIBROMOETHANE	25	ND
1,1-DICHLOROETHENE	25	ND	CHLOROBENZENE	25	ND
ACETONE	50	ND	1,1,1,2-TETRACHLOROETHANE	25	ND
IODOMETHANE	50	ND	ETHYLBENZENE	25	ND
CARBON DISULFIDE	25	ND	STYRENE	25	ND
METHYLENE CHLORIDE	25	ND	BROMOFORM	25	ND
trans-1,2-DICHLOROETHENE	25	ND	ISOPROPYLBENZENE	25	ND
METHYL TERT-BUTYL ETHER	50	ND	1,1,2,2-TETRACHLOROETHANE	25	ND
1,1-DICHLOROETHANE	25	ND	BROMOBENZENE	25	ND
VINYL ACETATE	50	ND	1,2,3-TRICHLOROPROPANE	25	ND
2,2-DICHLOROPROPANE	25	ND	n-PROPYLBENZENE	25	ND
cis-1,2-DICHLOROETHENE	25	ND	2-CHLOROTOLUENE	25	ND
2-BUTANONE	50	ND	1,3,5-TRIMETHYLBENZENE	25	ND
BROMOCHLOROMETHANE	25	ND	4-CHLOROTOLUENE	25	ND
CHLOROFORM	25	ND	TERT-BUTYLBENZENE	25	ND
1,1,1-TRICHLOROETHANE	25	ND	1,2,4-TRIMETHYLBENZENE	25	ND
CARBON TETRACHLORIDE	25	ND	sec-BUTYLBENZENE	25	ND
1,1-DICHLOROPROPENE	25	ND	1,3-DICHLOROBENZENE	25	ND
BENZENE	25	ND	p-ISOPROPYLTOLUENE	25	ND
1,2-DICHLOROETHANE	25	ND	1,4-DICHLOROBENZENE	25	ND
TRICHLOROETHENE	25	ND	n-BUTYLBENZENE	25	ND
1,2-DICHLOROPROPANE	25	ND	1,2-DICHLOROBENZENE	25	ND
DIBROMOMETHANE	25	ND	1,2-DIBROMO-3-CHLOROPROPANE	25	ND
BROMODICHLOROMETHANE	25	ND	1,2,4-TRICHLOROBENZENE	25	ND
cis-1,3-DICHLOROPROPENE	25	ND	HEXACHLOROBUTADIENE	25	ND
4-METHYL-2-PENTANONE	50	ND	NAPHTHALENE	25	ND
1,2,3-TRICHLOROBENZENE	25	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(80-116) 98% BROMOFLUOROBENZENE(86-115) 99%
1,2-DICHLOROETHANE-D4(76-114) 94%

B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
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ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : METHOD BLANK
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-18-98
PROJECT # : 9811-801
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	5	ND	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
DICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
CHLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
BROMOMETHANE	10	ND	2-HEXANONE	10	ND
CHLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
TRICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
ACETONE	10	ND	1,1,1,2-TETRACHLOROETHANE	5	ND
IODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
METHYLENE CHLORIDE	5	6	BROMOFORM	5	ND
cis-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
1,1-DICHLOROETHANE	5	ND	BROMOBENZENE	5	ND
VINYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
2,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	ND	2-CHLOROTOLUENE	5	ND
2-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
BROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	ND	TERT-BUTYLBENZENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND	1,2,4-TRIMETHYLBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
BENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
1,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
TRICHLOROETHENE	5	ND	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
DIBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
BROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
4-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
1,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 100% BROMOFLUOROBENZENE(74-121) 101%
1,2-DICHLOROETHANE-D4(70-121) 95%

B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
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ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

LABORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : SOIL
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

REPORT DATE: 12-08-98

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	24507.01 MS % REC.	24507.01 MSD % REC.	RPD	QC RPD	ADVISORY LIMITS
1,1-DICHLOROETHENE	71	70	1	28	54-152
CHLOROETHENE	77	73	5	7	60-128
BENZENE	92	89	3	12	68-130
TOLUENE	85	84	1	16	65-127
CHLOROBENZENE	96	90	6	7	81-113

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : METHOD BLANK
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-20-98
PROJECT # : 9811-801
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	5	ND	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
DICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
CHLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
BROMOMETHANE	10	ND	2-HEXANONE	10	ND
CHLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
TRICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
ACETONE	10	ND	1,1,1,2-TETRACHLOROETHANE	5	ND
IODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
METHYLENE CHLORIDE	5	7	BROMOFORM	5	ND
' ns-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
1,1-DICHLOROETHANE	5	ND	BROMOBENZENE	5	ND
VINYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
2,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	ND	2-CHLOROTOLUENE	5	ND
2-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
BROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	ND	TERT-BUTYLBENZENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND	1,2,4-TRIMETHYLBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
BENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
1,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
TRICHLOROETHENE	5	ND	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
DIBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
BROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
4-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
1,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(81-117) 95% BROMOFLUOROBENZENE(74-121) 91%
1,2-DICHLOROETHANE-D4(70-121) 89%

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VALUES BELOW THIS LIMIT WERE NOT REPORTED.
ND = NOT DETECTED ABOVE REPORTING LIMIT

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ORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : SOIL
DATE ANALYZED : 11-20-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

REPORT DATE: 12-08-98

LABORATORY CONTROL SAMPLE RECOVERY

COMPOUND	LCS % REC.
1,1-DICHLOROETHENE	68
TRICHLOROETHENE	88
ZENE	90
TOLUENE	92
CHLOROBENZENE	98

* = VALUES OUTSIDE OF ADVISORY LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701VO(705)
DATE : 12-08-98

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED: 11-13-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

DATE ANALYZED : 11-23-98
PROJECT # : 9811-801
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

VOLATILES	R.L.	RESULTS	VOLATILES	R.L.	RESULTS
TOTAL-1,2-DICHLOROETHENE	5	ND	TOLUENE	5	ND
XYLENE (TOTAL)	5	ND	trans-1,3-DICHLOROPROPENE	5	ND
DICHLORODIFLUOROMETHANE	10	ND	1,1,2-TRICHLOROETHANE	5	ND
CHLOROMETHANE	10	ND	TETRACHLOROETHENE	5	ND
VINYL CHLORIDE	10	ND	1,3-DICHLOROPROPANE	5	ND
BROMOMETHANE	10	ND	2-HEXANONE	10	ND
CHLOROETHANE	10	ND	DIBROMOCHLOROMETHANE	5	ND
TRICHLOROFLUOROMETHANE	10	ND	1,2-DIBROMOETHANE	5	ND
1,1-DICHLOROETHENE	5	ND	CHLOROBENZENE	5	ND
ACETONE	10	ND	1,1,1,2-TETRACHLOROETHANE	5	ND
IODOMETHANE	10	ND	ETHYLBENZENE	5	ND
CARBON DISULFIDE	5	ND	STYRENE	5	ND
METHYLENE CHLORIDE	5	ND	BROMOFORM	5	ND
ns-1,2-DICHLOROETHENE	5	ND	ISOPROPYLBENZENE	5	ND
METHYL TERT-BUTYL ETHER	10	ND	1,1,2,2-TETRACHLOROETHANE	5	ND
1,1-DICHLOROETHANE	5	ND	BROMOBENZENE	5	ND
VINYL ACETATE	10	ND	1,2,3-TRICHLOROPROPANE	5	ND
2,2-DICHLOROPROPANE	5	ND	n-PROPYLBENZENE	5	ND
cis-1,2-DICHLOROETHENE	5	ND	2-CHLOROTOLUENE	5	ND
2-BUTANONE	10	ND	1,3,5-TRIMETHYLBENZENE	5	ND
BROMOCHLOROMETHANE	5	ND	4-CHLOROTOLUENE	5	ND
CHLOROFORM	5	ND	TERT-BUTYLBENZENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND	1,2,4-TRIMETHYLBENZENE	5	ND
CARBON TETRACHLORIDE	5	ND	sec-BUTYLBENZENE	5	ND
1,1-DICHLOROPROPENE	5	ND	1,3-DICHLOROBENZENE	5	ND
BENZENE	5	ND	p-ISOPROPYLTOLUENE	5	ND
1,2-DICHLOROETHANE	5	ND	1,4-DICHLOROBENZENE	5	ND
TRICHLOROETHENE	5	ND	n-BUTYLBENZENE	5	ND
1,2-DICHLOROPROPANE	5	ND	1,2-DICHLOROBENZENE	5	ND
DIBROMOMETHANE	5	ND	1,2-DIBROMO-3-CHLOROPROPANE	5	ND
BROMODICHLOROMETHANE	5	ND	1,2,4-TRICHLOROBENZENE	5	ND
cis-1,3-DICHLOROPROPENE	5	ND	HEXACHLOROBUTADIENE	5	ND
4-METHYL-2-PENTANONE	10	ND	NAPHTHALENE	5	ND
1,2,3-TRICHLOROBENZENE	5	ND			

QA/QC SURROGATE RECOVERIES

TOLUENE-d8(80-116) 103% BROMOFLUOROBENZENE(86-115) 101%
1,2-DICHLOROETHANE-D4(76-114) 92%

B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
RL = REPORTING LIMIT; DEFINED AS THE PRACTICAL QUANTITATION LIMIT PLUS ANY DILUTION, POSITIVE VALUES BELOW THIS LIMIT WERE NOT REPORTED.
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

.ORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : WATER
DATE ANALYZED : 11-23-98
METHOD REF. : SW846-8260, EPA METHODOLOGY

REPORT DATE: 12-08-98

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	24476.01 MS % REC.	24476.01 MSD % REC.	RPD	QC RPD	ADVISORY LIMITS
1,1-DICHLOROETHENE	92	92	0	16	70-139
TRICHLOROETHENE	98	100	2	11	75-121
'ZENE	98	102	4	12	87-118
TOLUENE	102	106	4	10	78-127
CHLOROBENZENE	100	100	0	8	88-112

* = VALUES OUTSIDE OF ADVISORY LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)

DATE : 12-08-98

SAMPLE MATRIX: SOIL
ATAS # : 24507.01
PROJECT : #9811-801
SAMPLE ID : S1

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-17-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/Kg OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/Kg)	SEMIVOLATILE	RL	RESULTS (ug/Kg)
PHENOL	330	ND	3-NITROANILINE	830	ND
BIS(2-CHLOROETHYL)ETHER	330	ND	ACENAPHTHENE	330	ND
2-CHLOROPHENOL	330	ND	2,4-DINITROPHENOL	830	ND
1,3-DICHLOROBENZENE	330	ND	4-NITROPHENOL	830	ND
1,4-DICHLOROBENZENE	330	ND	2,4-DINITROTOLUENE	330	ND
BENZYL ALCOHOL	330	ND	DIBENZOFURAN	330	ND
1,2-DICHLOROBENZENE	330	ND	DIETHYLPHTHALATE	330	ND
2-METHYLPHENOL	330	ND	4-CHLOROPHENYL-PHENYLETHER	330	ND
BIS(2-CHLOROISOPROPYL)ETHER	330	ND	FLUORENE	330	ND
4-METHYLPHENOL	330	ND	4-NITROANILINE	830	ND
N-NITROSO-DI-n-PROPYLAMINE	330	ND	4,6-DINITRO-2-METHYLPHENOL	830	ND
HEXACHLOROETHANE	330	ND	N-NITROSODIPHENYLAMINE	330	ND
NITROBENZENE	330	ND	4-BROMOPHENYL-PHENYLETHER	330	ND
ISOPHORONE	330	ND	HEXACHLOROBENZENE	330	ND
2,4-DIMETHYLPHENOL	330	ND	PENTACHLOROPHENOL	830	ND
2-NITROPHENOL	330	ND	PHENANTHRENE	330	1000
BENZOIC ACID	1600	ND	ANTHRACENE	330	ND
BIS(2-CHLOROETHOXY)METHANE	330	ND	DI-N-BUTYLPHTHALATE	330	ND
2,4-DICHLOROPHENOL	330	ND	FLUORANTHENE	330	1300
1,2,4-TRICHLOROBENZENE	330	ND	PYRENE	330	1400
NAPHTHALENE	330	ND	BUTYLBENZYLPHTHALATE	330	ND
4-CHLOROANILINE	330	ND	BIS(2-ETHYLHEXYL)PHTHALATE	330	ND
HEXACHLOROBUTADIENE	330	ND	3,3'-DICHLOROBENZIDINE	330	ND
4-CHLORO-3-METHYLPHENOL	330	ND	BENZO(A)ANTHRACENE	330	650
2-METHYLNAPHTHALENE	330	ND	CHRYSENE	330	850
HEXACHLOROCYCLOPENTADIENE	330	ND	DI-N-OCTYLPHTHALATE	330	ND
2,4,6-TRICHLOROPHENOL	330	ND	BENZO(b)FLUORANTHENE	330	ND
2,4,5-TRICHLOROPHENOL	830	ND	BENZO(k)FLUORANTHENE	330	770
2-CHLORONAPHTHALENE	330	ND	BENZO(a)PYRENE	330	800
2-NITROANILINE	830	ND	DIBENZO(A,H)ANTHRACENE	330	ND
DIMETHYLPHTHALATE	330	ND	INDENO(1,2,3-CD)PYRENE	330	790
2,6-DINITROTOLUENE	330	ND	BENZO(G,H,I)PERYLENE	330	480
ACENAPHTHYLENE	330	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(23-120)	83 %	2-FLUOROBIPHENYL(30-115)	85 %
TERPHENYL-d14(18-137)	78 %	PHENOL-d5(24-113)	59 %
2-FLUOROPHENOL(25-121)	61 %	2,4,6-TRIBROMOPHENOL(19-122)	89 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

ENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)

DATE : 12-08-98

SAMPLE MATRIX: SOIL
ATAS # : 24507.02
PROJECT : #9811-801
SAMPLE ID : S2

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-17-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/Kg OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/Kg)	SEMIVOLATILE	RL	RESULTS (ug/Kg)
PHENOL	330	ND	3-NITROANILINE	830	ND
BIS(2-CHLOROETHYL)ETHER	330	ND	ACENAPHTHENE	330	ND
2-CHLOROPHENOL	330	ND	2,4-DINITROPHENOL	830	ND
1,3-DICHLOROBENZENE	330	ND	4-NITROPHENOL	830	ND
1,4-DICHLOROBENZENE	330	ND	2,4-DINITROTOLUENE	330	ND
BENZYL ALCOHOL	330	ND	DIBENZOFURAN	330	ND
1,2-DICHLOROBENZENE	330	ND	DIETHYLPHTHALATE	330	ND
2-METHYLPHENOL	330	ND	4-CHLOROPHENYL-PHENYLETHER	330	ND
BIS(2-CHLOROISOPROPYL)ETHER	330	ND	FLUORENE	330	ND
4-METHYLPHENOL	330	ND	4-NITROANILINE	830	ND
NITROSO-DI-n-PROPYLAMINE	330	ND	4,6-DINITRO-2-METHYLPHENOL	830	ND
CHLOROETHANE	330	ND	N-NITROSODIPHENYLAMINE	330	ND
OBENZENE	330	ND	4-BROMOPHENYL-PHENYLETHER	330	ND
ISOPHORONE	330	ND	HEXACHLOROBENZENE	330	ND
2,4-DIMETHYLPHENOL	330	ND	PENTACHLOROPHENOL	830	ND
2-NITROPHENOL	330	ND	PHENANTHRENE	330	ND
BENZOIC ACID	1600	ND	ANTHRACENE	330	ND
BIS(2-CHLOROETHOXY)METHANE	330	ND	DI-N-BUTYLPHTHALATE	330	ND
2,4-DICHLOROPHENOL	330	ND	FLUORANTHENE	330	350
1,2,4-TRICHLOROBENZENE	330	ND	PYRENE	330	370
NAPHTHALENE	330	ND	BUTYLBENZYLPHTHALATE	330	ND
4-CHLOROANILINE	330	ND	BIS(2-ETHYLHEXYL)PHTHALATE	330	ND
HEXACHLOROBUTADIENE	330	ND	3,3'-DICHLOROBENZIDINE	330	ND
4-CHLORO-3-METHYLPHENOL	330	ND	BENZO(A)ANTHRACENE	330	ND
2-METHYLNAPHTHALENE	330	ND	CHRYSENE	330	ND
HEXACHLOROCYCLOPENTADIENE	330	ND	DI-N-OCTYLPHTHALATE	330	ND
2,4,6-TRICHLOROPHENOL	330	ND	BENZO(b)FLUORANTHENE	330	ND
2,4,5-TRICHLOROPHENOL	830	ND	BENZO(k)FLUORANTHENE	330	ND
2-CHLORONAPHTHALENE	330	ND	BENZO(a)PYRENE	330	ND
2-NITROANILINE	830	ND	DIBENZO(A,H)ANTHRACENE	330	ND
DIMETHYLPHTHALATE	330	ND	INDENO(1,2,3-CD)PYRENE	330	ND
2,6-DINITROTOLUENE	330	ND	BENZO(G,H,I)PERYLENE	330	ND
ACENAPHTHYLENE	330	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(23-120)	47 %	2-FLUOROBIPHENYL(30-115)	50 %
TERPHENYL-d14(18-137)	52 %	PHENOL-d5(24-113)	39 %
2-FLUOROPHENOL(25-121)	40 %	2,4,6-TRIBROMOPHENOL(19-122)	44 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
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ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)
DATE : 12-08-98

SAMPLE MATRIX: SOIL
ATAS # : 24507.03
PROJECT : #9811-801
SAMPLE ID : S3

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-17-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/Kg OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/Kg)	SEMIVOLATILE	RL	RESULTS (ug/Kg)
PHENOL	330	ND	3-NITROANILINE	830	ND
BIS(2-CHLOROETHYL)ETHER	330	ND	ACENAPHTHENE	330	ND
2-CHLOROPHENOL	330	ND	2,4-DINITROPHENOL	830	ND
1,3-DICHLOROBENZENE	330	ND	4-NITROPHENOL	830	ND
1,4-DICHLOROBENZENE	330	ND	2,4-DINITROTOLUENE	330	ND
BENZYL ALCOHOL	330	ND	DIBENZOFURAN	330	ND
1,2-DICHLOROBENZENE	330	ND	DIETHYLPHTHALATE	330	ND
2-METHYLPHENOL	330	ND	4-CHLOROPHENYL-PHENYLETHER	330	ND
BIS(2-CHLOROISOPROPYL)ETHER	330	ND	FLUORENE	330	ND
4-METHYLPHENOL	330	ND	4-NITROANILINE	830	ND
N-NITROSO-DI-n-PROPYLAMINE	330	ND	4,6-DINITRO-2-METHYLPHENOL	830	ND
HEXACHLOROETHANE	330	ND	N-NITROSODIPHENYLAMINE	330	ND
NITROBENZENE	330	ND	4-BROMOPHENYL-PHENYLETHER	330	ND
ISOPHORONE	330	ND	HEXACHLOROBENZENE	330	ND
2,4-DIMETHYLPHENOL	330	ND	PENTACHLOROPHENOL	830	ND
2-NITROPHENOL	330	ND	PHENANTHRENE	330	620
BENZOIC ACID	1600	ND	ANTHRACENE	330	ND
BIS(2-CHLOROETHOXY)METHANE	330	ND	DI-N-BUTYLPHTHALATE	330	ND
2,4-DICHLOROPHENOL	330	ND	FLUORANTHENE	330	730
1,2,4-TRICHLOROBENZENE	330	ND	PYRENE	330	720
NAPHTHALENE	330	ND	BUTYLBENZYLPHTHALATE	330	ND
4-CHLOROANILINE	330	ND	BIS(2-ETHYLHEXYL)PHTHALATE	330	ND
HEXACHLOROBUTADIENE	330	ND	3,3'-DICHLOROBENZIDINE	330	ND
4-CHLORO-3-METHYLPHENOL	330	ND	BENZO(A)ANTHRACENE	330	370
2-METHYLNAPHTHALENE	330	ND	CHRYSENE	330	480
HEXACHLOROCYCLOPENTADIENE	330	ND	DI-N-OCTYLPHTHALATE	330	ND
2,4,6-TRICHLOROPHENOL	330	ND	BENZO(b)FLUORANTHENE	330	ND
2,4,5-TRICHLOROPHENOL	830	ND	BENZO(k)FLUORANTHENE	330	ND
2-CHLORONAPHTHALENE	330	ND	BENZO(a)PYRENE	330	ND
2-NITROANILINE	830	ND	DIBENZO(A,H)ANTHRACENE	330	ND
DIMETHYLPHTHALATE	330	ND	INDENO(1,2,3-CD)PYRENE	330	420
2,6-DINITROTOLUENE	330	ND	BENZO(G,H,I)PERYLENE	330	ND
ACENAPHTHYLENE	330	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(23-120)	80 %	2-FLUOROBIPHENYL(30-115)	79 %
TERPHENYL-d14(18-137)	82 %	PHENOL-d5(24-113)	56 %
2-FLUOROPHENOL(25-121)	62 %	2,4,6-TRIBROMOPHENOL(19-122)	93 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

ENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)

DATE : 12-08-98

SAMPLE MATRIX: SOIL
ATAS # : 24507.04
PROJECT : #9811-801
SAMPLE ID : S4

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-17-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/Kg OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/Kg)	SEMIVOLATILE	RL	RESULTS (ug/Kg)
PHENOL	1320	ND	3-NITROANILINE	3320	ND
BIS(2-CHLOROETHYL)ETHER	1320	ND	ACENAPHTHENE	1320	ND
2-CHLOROPHENOL	1320	ND	2,4-DINITROPHENOL	3320	ND
1,3-DICHLOROBENZENE	1320	ND	4-NITROPHENOL	3320	ND
1,4-DICHLOROBENZENE	1320	ND	2,4-DINITROTOLUENE	1320	ND
BENZYL ALCOHOL	1320	ND	DIBENZOFURAN	1320	ND
1,2-DICHLOROBENZENE	1320	ND	DIETHYLPHTHALATE	1320	ND
2-METHYLPHENOL	1320	ND	4-CHLOROPHENYL-PHENYLETHER	1320	ND
BIS(2-CHLOROISOPROPYL)ETHER	1320	ND	FLUORENE	1320	420 J
4-METHYLPHENOL	1320	ND	4-NITROANILINE	3320	ND
ITROSO-DI-n-PROPYLAMINE	1320	ND	4,6-DINITRO-2-METHYLPHENOL	3320	ND
CHLOROETHANE	1320	ND	N-NITROSODIPHENYLAMINE	1320	ND
OBENZENE	1320	ND	4-BROMOPHENYL-PHENYLETHER	1320	ND
ISOPHORONE	1320	ND	HEXACHLOROBENZENE	1320	ND
2,4-DIMETHYLPHENOL	1320	ND	PENTACHLOROPHENOL	3320	ND
2-NITROPHENOL	1320	ND	PHENANTHRENE	1320	1100 J
BENZOIC ACID	6400	ND	ANTHRACENE	1320	ND
BIS(2-CHLOROETHOXY)METHANE	1320	ND	DI-N-BUTYLPHTHALATE	1320	ND
2,4-DICHLOROPHENOL	1320	ND	FLUORANTHENE	1320	480 J
1,2,4-TRICHLOROBENZENE	1320	ND	PYRENE	1320	480 J
NAPHTHALENE	1320	ND	BUTYLBENZYLPHTHALATE	1320	ND
4-CHLOROANILINE	1320	ND	BIS(2-ETHYLHEXYL)PHTHALATE	1320	5000
HEXACHLOROBUTADIENE	1320	ND	3,3'-DICHLOROBENZIDINE	1320	ND
4-CHLORO-3-METHYLPHENOL	1320	4000	BENZO(A)ANTHRACENE	1320	ND
2-METHYLNAPHTHALENE	1320	880 J	CHRYSENE	1320	ND
HEXACHLOROCYCLOPENTADIENE	1320	ND	DI-N-OCTYLPHTHALATE	1320	ND
2,4,6-TRICHLOROPHENOL	1320	ND	BENZO(b)FLUORANTHENE	1320	ND
2,4,5-TRICHLOROPHENOL	3320	ND	BENZO(k)FLUORANTHENE	1320	ND
2-CHLORONAPHTHALENE	1320	ND	BENZO(a)PYRENE	1320	ND
2-NITROANILINE	3320	ND	DIBENZO(A,H)ANTHRACENE	1320	ND
DIMETHYLPHTHALATE	1320	ND	INDENO(1,2,3-CD)PYRENE	1320	ND
2,6-DINITROTOLUENE	1320	ND	BENZO(G,H,I)PERYLENE	1320	ND
ACENAPHTHYLENE	1320	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(23-120)	40 %	2-FLUOROBIPHENYL(30-115)	37 %
TERPHENYL-d14(18-137)	36 %	PHENOL-d5(24-113)	29 %
2-FLUOROPHENOL(25-121)	18 % *	2,4,6-TRIBROMOPHENOL(19-122)	50 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT
J = ESTIMATED VALUE; BELOW REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)

DATE : 12-08-98

SAMPLE MATRIX: SOIL
ATAS # : 24507.05
PROJECT : #9811-801
SAMPLE ID : SS

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-17-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/Kg OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/Kg)	SEMIVOLATILE	RL	RESULTS (ug/Kg)
PHENOL	330	ND	3-NITROANILINE	830	ND
BIS(2-CHLOROETHYL)ETHER	330	ND	ACENAPHTHENE	330	360
2-CHLOROPHENOL	330	ND	2,4-DINITROPHENOL	830	ND
1,3-DICHLOROBENZENE	330	ND	4-NITROPHENOL	830	ND
1,4-DICHLOROBENZENE	330	ND	2,4-DINITROTOLUENE	330	ND
BENZYL ALCOHOL	330	ND	DIBENZOFURAN	330	ND
1,2-DICHLOROBENZENE	330	ND	DIETHYLPHTHALATE	330	ND
2-METHYLPHENOL	330	ND	4-CHLOROPHENYL-PHENYLETHER	330	ND
BIS(2-CHLOROISOPROPYL)ETHER	330	ND	FLUORENE	330	370
4-METHYLPHENOL	330	ND	4-NITROANILINE	830	ND
N-NITROSO-DI-n-PROPYLAMINE	330	ND	4,6-DINITRO-2-METHYLPHENOL	830	ND
HEXACHLOROETHANE	330	ND	N-NITROSODIPHENYLAMINE	330	ND
NITROBENZENE	330	ND	4-BROMOPHENYL-PHENYLETHER	330	ND
ISOPHORONE	330	ND	HEXACHLOROBENZENE	330	ND
2,4-DIMETHYLPHENOL	330	ND	PENTACHLOROPHENOL	830	ND
2-NITROPHENOL	330	ND	PHENANTHRENE	330	2600
BENZOIC ACID	1600	ND	ANTHRACENE	330	690
BIS(2-CHLOROETHOXY)METHANE	330	ND	DI-N-BUTYLPHTHALATE	330	ND
2,4-DICHLOROPHENOL	330	ND	FLUORANTHENE	330	2800
1,2,4-TRICHLOROBENZENE	330	ND	PYRENE	330	1900
NAPHTHALENE	330	450	BUTYLBENZYLPHTHALATE	330	ND
4-CHLOROANILINE	330	ND	BIS(2-ETHYLHEXYL)PHTHALATE	330	ND
HEXACHLOROBUTADIENE	330	ND	3,3'-DICHLOROBENZIDINE	330	ND
4-CHLORO-3-METHYLPHENOL	330	ND	BENZO(A)ANTHRACENE	330	1400
2-METHYLNAPHTHALENE	330	ND	CHRYSENE	330	1500
HEXACHLOROCYCLOPENTADIENE	330	ND	DI-N-OCTYLPHTHALATE	330	ND
2,4,6-TRICHLOROPHENOL	330	ND	BENZO(b)FLUORANTHENE	330	1300
2,4,5-TRICHLOROPHENOL	830	ND	BENZO(k)FLUORANTHENE	330	1000
2-CHLORONAPHTHALENE	330	ND	BENZO(a)PYRENE	330	1400
2-NITROANILINE	830	ND	DIBENZO(A,H)ANTHRACENE	330	610
DIMETHYLPHTHALATE	330	ND	INDENO(1,2,3-CD)PYRENE	330	1200
2,6-DINITROTOLUENE	330	ND	BENZO(G,H,I)PERYLENE	330	690
ACENAPHTHYLENE	330	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(23-120)	73 %	2-FLUOROBIPHENYL(30-115)	85 %
TERPHENYL-d14(18-137)	61 %	PHENOL-d5(24-113)	57 %
2-FLUOROPHENOL(25-121)	58 %	2,4,6-TRIBROMOPHENOL(19-122)	116 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

ENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)

DATE : 12-08-98

SAMPLE MATRIX: SOIL
ATAS # : 24507.06
PROJECT : #9811-801
SAMPLE ID : S6

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-17-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/Kg OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/Kg)	SEMIVOLATILE	RL	RESULTS (ug/Kg)
PHENOL	330	ND	3-NITROANILINE	830	ND
BIS(2-CHLOROETHYL)ETHER	330	ND	ACENAPHTHENE	330	ND
2-CHLOROPHENOL	330	ND	2,4-DINITROPHENOL	830	ND
1,3-DICHLOROBENZENE	330	ND	4-NITROPHENOL	830	ND
1,4-DICHLOROBENZENE	330	ND	2,4-DINITROTOLUENE	330	ND
BENZYL ALCOHOL	330	ND	DIBENZOFURAN	330	ND
1,2-DICHLOROBENZENE	330	ND	DIETHYLPHTHALATE	330	ND
2-METHYLPHENOL	330	ND	4-CHLOROPHENYL-PHENYLETHER	330	ND
BIS(2-CHLOROISOPROPYL)ETHER	330	ND	FLUORENE	330	ND
4-METHYLPHENOL	330	ND	4-NITROANILINE	830	ND
N-NITROSO-DI-n-PROPYLAMINE	330	ND	4,6-DINITRO-2-METHYLPHENOL	830	ND
)ACHLOROETHANE	330	ND	N-NITROSODIPHENYLAMINE	330	ND
)BENZENE	330	ND	4-BROMOPHENYL-PHENYLETHER	330	ND
IS..HORONE	330	ND	HEXACHLOROBENZENE	330	ND
2,4-DIMETHYLPHENOL	330	ND	PENTACHLOROPHENOL	830	ND
2-NITROPHENOL	330	ND	PHENANTHRENE	330	ND
BENZOIC ACID	1600	ND	ANTHRACENE	330	ND
BIS(2-CHLOROETHOXY)METHANE	330	ND	DI-N-BUTYLPHTHALATE	330	ND
2,4-DICHLOROPHENOL	330	ND	FLUORANTHENE	330	ND
1,2,4-TRICHLOROBENZENE	330	ND	PYRENE	330	ND
NAPHTHALENE	330	ND	BUTYLBENZYLPHTHALATE	330	ND
4-CHLOROANILINE	330	ND	BIS(2-ETHYLHEXYL)PHTHALATE	330	ND
HEXACHLOROBUTADIENE	330	ND	3,3'-DICHLOROBENZIDINE	330	ND
4-CHLORO-3-METHYLPHENOL	330	330	BENZO(A)ANTHRACENE	330	ND
2-METHYLNAPHTHALENE	330	ND	CHRYSENE	330	ND
HEXACHLOROCYCLOPENTADIENE	330	ND	DI-N-OCTYLPHTHALATE	330	ND
2,4,6-TRICHLOROPHENOL	330	ND	BENZO(b)FLUORANTHENE	330	ND
2,4,5-TRICHLOROPHENOL	830	ND	BENZO(k)FLUORANTHENE	330	ND
2-CHLORONAPHTHALENE	330	ND	BENZO(a)PYRENE	330	ND
2-NITROANILINE	830	ND	DIBENZO(A,H)ANTHRACENE	330	ND
DIMETHYLPHTHALATE	330	ND	INDENO(1,2,3-CD)PYRENE	330	ND
2,6-DINITROTOLUENE	330	ND	BENZO(G,H,I)PERYLENE	330	ND
ACENAPHTHYLENE	330	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(23-120)	86 %	2-FLUOROBIPHENYL(30-115)	89 %
TERPHENYL-d14(18-137)	67 %	PHENOL-d5(24-113)	65 %
2-FLUOROPHENOL(25-121)	62 %	2,4,6-TRIBROMOPHENOL(19-122)	104 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
L = REPORTING LIMIT
= ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
- SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)

DATE : 12-08-98

SAMPLE MATRIX: WATER
ATAS # : 24507.07
PROJECT : #9811-801
SAMPLE ID : W1

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-16-98
DATE ANALYZED : 11-17-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/L)	SEMIVOLATILE	RL	RESULTS (ug/L)
PHENOL	20	13 J	3-NITROANILINE	50	ND
BIS(2-CHLOROETHYL)ETHER	20	ND	ACENAPHTHENE	20	ND
2-CHLOROPHENOL	20	ND	2,4-DINITROPHENOL	50	ND
1,3-DICHLOROBENZENE	20	ND	4-NITROPHENOL	50	ND
1,4-DICHLOROBENZENE	20	ND	2,4-DINITROTOLUENE	20	ND
BENZYL ALCOHOL	20	ND	DIBENZOFURAN	20	ND
1,2-DICHLOROBENZENE	20	ND	DIETHYLPHTHALATE	20	ND
2-METHYLPHENOL	20	ND	4-CHLOROPHENYL-PHENYLETHER	20	ND
BIS(2-CHLOROISOPROPYL)ETHER	20	ND	FLUORENE	20	ND
4-METHYLPHENOL	20	ND	4-NITROANILINE	50	ND
N-NITROSO-DI-n-PROPYLAMINE	20	ND	4,6-DINITRO-2-METHYLPHENOL	50	ND
[illegible]ACHLOROETHANE	20	ND	N-NITROSODIPHENYLAMINE	20	ND
[illegible]ROBENZENE	20	ND	4-BROMOPHENYL-PHENYLETHER	20	ND
ISOPHORONE	20	ND	HEXACHLOROBENZENE	20	ND
2,4-DIMETHYLPHENOL	20	ND	PENTACHLOROPHENOL	50	ND
2-NITROPHENOL	20	ND	PHENANTHRENE	20	ND
BENZOIC ACID	100	ND	ANTHRACENE	20	ND
BIS(2-CHLOROETHOXY)METHANE	20	ND	DI-N-BUTYLPHTHALATE	20	ND
2,4-DICHLOROPHENOL	20	ND	FLUORANTHENE	20	ND
1,2,4-TRICHLOROBENZENE	20	ND	PYRENE	20	ND
NAPHTHALENE	20	ND	BUTYLBENZYLPHTHALATE	20	ND
4-CHLOROANILINE	20	ND	BIS(2-ETHYLHEXYL)PHTHALATE	20	ND
HEXACHLOROBUTADIENE	20	ND	3,3-'DICHLOROBENZIDINE	20	ND
4-CHLORO-3-METHYLPHENOL	20	32	BENZO(A)ANTHRACENE	20	ND
2-METHYLNAPHTHALENE	20	ND	CHRYSENE	20	ND
HEXACHLOROCYCLOPENTADIENE	20	ND	DI-N-OCTYLPHTHALATE	20	ND
2,4,6-TRICHLOROPHENOL	20	ND	BENZO(b)FLUORANTHENE	20	ND
2,4,5-TRICHLOROPHENOL	50	ND	BENZO(k)FLUORANTHENE	20	ND
2-CHLORONAPHTHALENE	20	ND	BENZO(a)PYRENE	20	ND
2-NITROANILINE	50	ND	DIBENZO(A,H)ANTHRACENE	20	ND
DIMETHYLPHTHALATE	20	ND	INDENO(1,2,3-CD)PYRENE	20	ND
2,6-DINITROTOLUENE	20	ND	BENZO(G,H,I)PERYLENE	20	ND
ACENAPHTHYLENE	20	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(35-114)	82 %	2-FLUOROBIPHENYL(43-116)	85 %
TERPHENYL-d14(33-141)	87 %	PHENOL-d5(10-94)	27 %
2-FLUOROPHENOL(21-100)	38 %	2,4,6-TRIBROMOPHENOL(10-123)	101 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
RL = REPORTING LIMIT
J = ESTIMATED VALUE; BELOW REPORTING LIMIT
* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)

DATE : 12-08-98

SAMPLE MATRIX: WATER
ATAS # : 24507.08
PROJECT : #9811-801
SAMPLE ID : W2

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-16-98
DATE ANALYZED : 11-17-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/L)	SEMIVOLATILE	RL	RESULTS (ug/L)
PHENOL	100	160	3-NITROANILINE	250	ND
BIS(2-CHLOROETHYL)ETHER	100	ND	ACENAPHTHENE	100	ND
2-CHLOROPHENOL	100	ND	2,4-DINITROPHENOL	250	ND
1,3-DICHLOROBENZENE	100	ND	4-NITROPHENOL	250	ND
1,4-DICHLOROBENZENE	100	ND	2,4-DINITROTOLUENE	100	ND
BENZYL ALCOHOL	100	ND	DIBENZOFURAN	100	ND
1,2-DICHLOROBENZENE	100	ND	DIETHYLPHTHALATE	100	ND
2-METHYLPHENOL	100	ND	4-CHLOROPHENYL-PHENYLETHER	100	ND
BIS(2-CHLOROISOPROPYL)ETHER	100	ND	FLUORENE	100	ND
4-METHYLPHENOL	100	25 J	4-NITROANILINE	250	ND
N-NITROSO-DI-n-PROPYLAMINE	100	ND	4,6-DINITRO-2-METHYLPHENOL	250	ND
[illegible]ACHLOROETHANE	100	ND	N-NITROSODIPHENYLAMINE	100	ND
[illegible]OBENZENE	100	ND	4-BROMOPHENYL-PHENYLETHER	100	ND
I[illegible]HORONE	100	ND	HEXACHLOROBENZENE	100	ND
2,4-DIMETHYLPHENOL	100	ND	PENTACHLOROPHENOL	250	ND
2-NITROPHENOL	100	ND	PHENANTHRENE	100	74 J
BENZOIC ACID	500	190 J	ANTHRACENE	100	ND
BIS(2-CHLOROETHOXY)METHANE	100	ND	DI-N-BUTYLPHTHALATE	100	ND
2,4-DICHLOROPHENOL	100	ND	FLUORANTHENE	100	ND
1,2,4-TRICHLOROBENZENE	100	ND	PYRENE	100	ND
NAPHTHALENE	100	ND	BUTYLBENZYLPHTHALATE	100	ND
4-CHLOROANILINE	100	ND	BIS(2-ETHYLHEXYL)PHTHALATE	100	ND
HEXACHLOROBUTADIENE	100	ND	3,3-'DICHLOROBENZIDINE	100	ND
4-CHLORO-3-METHYLPHENOL	100	260	BENZO(A)ANTHRACENE	100	ND
2-METHYLNAPHTHALENE	100	18 J	CHRYSENE	100	ND
HEXACHLOROCYCLOPENTADIENE	100	ND	DI-N-OCTYLPHTHALATE	100	ND
2,4,6-TRICHLOROPHENOL	100	ND	BENZO(b)FLUORANTHENE	100	ND
2,4,5-TRICHLOROPHENOL	250	ND	BENZO(k)FLUORANTHENE	100	ND
2-CHLORONAPHTHALENE	100	ND	BENZO(a)PYRENE	100	ND
2-NITROANILINE	250	ND	DIBENZO(A,H)ANTHRACENE	100	ND
DIMETHYLPHTHALATE	100	ND	INDENO(1,2,3-CD)PYRENE	100	ND
2,6-DINITROTOLUENE	100	ND	BENZO(G,H,I)PERYLENE	100	ND
ACENAPHTHYLENE	100	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(35-114)	84 %	2-FLUOROBIPHENYL(43-116)	98 %
TERPHENYL-d14(33-141)	90 %	PHENOL-d5(10-94)	29 %
2-FLUOROPHENOL(21-100)	35 %	2,4,6-TRIBROMOPHENOL(10-123)	153 % *

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* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)

DATE : 12-08-98

SAMPLE MATRIX: SOIL
ATAS # : METHOD BLANK
PROJECT : #9811-801
SAMPLE ID : METHOD BLANK

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-17-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/Kg OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/Kg)	SEMIVOLATILE	RL	RESULTS (ug/Kg)
PHENOL	330	ND	3-NITROANILINE	830	ND
BIS(2-CHLOROETHYL)ETHER	330	ND	ACENAPHTHENE	330	ND
2-CHLOROPHENOL	330	ND	2,4-DINITROPHENOL	830	ND
1,3-DICHLOROBENZENE	330	ND	4-NITROPHENOL	830	ND
1,4-DICHLOROBENZENE	330	ND	2,4-DINITROTOLUENE	330	ND
BENZYL ALCOHOL	330	ND	DIBENZOFURAN	330	ND
1,2-DICHLOROBENZENE	330	ND	DIETHYLPHTHALATE	330	ND
2-METHYLPHENOL	330	ND	4-CHLOROPHENYL-PHENYLETHER	330	ND
BIS(2-CHLOROISOPROPYL)ETHER	330	ND	FLUORENE	330	ND
4-METHYLPHENOL	330	ND	4-NITROANILINE	830	ND
N-NITROSO-DI-n-PROPYLAMINE	330	ND	4,6-DINITRO-2-METHYLPHENOL	830	ND
HEXACHLOROETHANE	330	ND	N-NITROSODIPHENYLAMINE	330	ND
NITROBENZENE	330	ND	4-BROMOPHENYL-PHENYLETHER	330	ND
ISOPHORONE	330	ND	HEXACHLOROBENZENE	330	ND
2,4-DIMETHYLPHENOL	330	ND	PENTACHLOROPHENOL	830	ND
2-NITROPHENOL	330	ND	PHENANTHRENE	330	ND
BENZOIC ACID	1600	ND	ANTHRACENE	330	ND
BIS(2-CHLOROETHOXY)METHANE	330	ND	DI-N-BUTYLPHTHALATE	330	ND
2,4-DICHLOROPHENOL	330	ND	FLUORANTHENE	330	ND
1,2,4-TRICHLOROBENZENE	330	ND	PYRENE	330	ND
NAPHTHALENE	330	ND	BUTYLBENZYLPHTHALATE	330	ND
4-CHLOROANILINE	330	ND	BIS(2-ETHYLHEXYL)PHTHALATE	330	ND
HEXACHLOROBUTADIENE	330	ND	3,3'-DICHLOROBENZIDINE	330	ND
4-CHLORO-3-METHYLPHENOL	330	ND	BENZO(A)ANTHRACENE	330	ND
2-METHYLNAPHTHALENE	330	ND	CHRYSENE	330	ND
HEXACHLOROCYCLOPENTADIENE	330	ND	DI-N-OCTYLPHTHALATE	330	ND
2,4,6-TRICHLOROPHENOL	330	ND	BENZO(b)FLUORANTHENE	330	ND
2,4,5-TRICHLOROPHENOL	830	ND	BENZO(k)FLUORANTHENE	330	ND
2-CHLORONAPHTHALENE	330	ND	BENZO(a)PYRENE	330	ND
2-NITROANILINE	830	ND	DIBENZO(A,H)ANTHRACENE	330	ND
DIMETHYLPHTHALATE	330	ND	INDENO(1,2,3-CD)PYRENE	330	ND
2,6-DINITROTOLUENE	330	ND	BENZO(G,H,I)PERYLENE	330	ND
ACENAPHTHYLENE	330	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(23-120)	71 %	2-FLUOROBIPHENYL(30-115)	70 %
TERPHENYL-d14(18-137)	74 %	PHENOL-d5(24-113)	63 %
2-FLUOROPHENOL(25-121)	57 %	2,4,6-TRIBROMOPHENOL(19-122)	69 %

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RL = REPORTING LIMIT
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* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

BORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : SOIL
DATE EXTRACTED: 11-17-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8270, EPA METHODOLOGY

REPORT DATE: 12-08-98

LABORATORY CONTROL SAMPLE RECOVERY

COMPOUND	LCS % REC.
PHENOL	60
2-CHLOROPHENOL	63
1,4-DICHLOROBENZENE	66
N-NITROSO-DI-n-PROPYLAMINE	66
1,2,4-TRICHLOROBENZENE	72
CHLORO-3-METHYLPHENOL	66
NAPHTHENE	72
4 TROPHENOL	81
2,4-DINITROTOLUENE	78
PENTACHLOROPHENOL	84
PYRENE	59

* = VALUES OUTSIDE OF ADVISORY LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701SV(705)

DATE : 12-08-98

SAMPLE MATRIX: WATER
ATAS # : METHOD BLANK
PROJECT : #9811-801
SAMPLE ID : METHOD BLANK

DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-16-98
DATE ANALYZED : 11-17-98
METHOD REF. : SW846-8270

RESULTS REPORTED IN ug/L OR PARTS PER BILLION(PPB)

SEMIVOLATILES	RL	RESULTS (ug/L)	SEMIVOLATILE	RL	RESULTS (ug/L)
PHENOL	10	ND	3-NITROANILINE	25	ND
BIS(2-CHLOROETHYL)ETHER	10	ND	ACENAPHTHENE	10	ND
2-CHLOROPHENOL	10	ND	2,4-DINITROPHENOL	25	ND
1,3-DICHLOROBENZENE	10	ND	4-NITROPHENOL	25	ND
1,4-DICHLOROBENZENE	10	ND	2,4-DINITROTOLUENE	10	ND
BENZYL ALCOHOL	10	ND	DIBENZOFURAN	10	ND
1,2-DICHLOROBENZENE	10	ND	DIETHYLPHTHALATE	10	ND
2-METHYLPHENOL	10	ND	4-CHLOROPHENYL-PHENYLETHER	10	ND
BIS(2-CHLOROISOPROPYL)ETHER	10	ND	FLUORENE	10	ND
4-METHYLPHENOL	10	ND	4-NITROANILINE	25	ND
N-NITROSO-DI-n-PROPYLAMINE	10	ND	4,6-DINITRO-2-METHYLPHENOL	25	ND
HEXACHLOROETHANE	10	ND	N-NITROSODIPHENYLAMINE	10	ND
NITROBENZENE	10	ND	4-BROMOPHENYL-PHENYLETHER	10	ND
ISOPHORONE	10	ND	HEXACHLOROBENZENE	10	ND
2,4-DIMETHYLPHENOL	10	ND	PENTACHLOROPHENOL	25	ND
2-NITROPHENOL	10	ND	PHENANTHRENE	10	ND
BENZOIC ACID	50	ND	ANTHRACENE	10	ND
BIS(2-CHLOROETHOXY)METHANE	10	ND	DI-N-BUTYLPHTHALATE	10	ND
2,4-DICHLOROPHENOL	10	ND	FLUORANTHENE	10	ND
1,2,4-TRICHLOROBENZENE	10	ND	PYRENE	10	ND
NAPHTHALENE	10	ND	BUTYLBENZYLPHTHALATE	10	ND
4-CHLOROANILINE	10	ND	BIS(2-ETHYLHEXYL)PHTHALATE	10	ND
HEXACHLOROBUTADIENE	10	ND	3,3-'DICHLOROBENZIDINE	10	ND
4-CHLORO-3-METHYLPHENOL	10	ND	BENZO(A)ANTHRACENE	10	ND
2-METHYLNAPHTHALENE	10	ND	CHRYSENE	10	ND
HEXACHLOROCYCLOPENTADIENE	10	ND	DI-N-OCTYLPHTHALATE	10	ND
2,4,6-TRICHLOROPHENOL	10	ND	BENZO(b)FLUORANTHENE	10	ND
2,4,5-TRICHLOROPHENOL	25	ND	BENZO(k)FLUORANTHENE	10	ND
2-CHLORONAPHTHALENE	10	ND	BENZO(a)PYRENE	10	ND
2-NITROANILINE	25	ND	DIBENZO(A,H)ANTHRACENE	10	ND
DIMETHYLPHTHALATE	10	ND	INDENO(1,2,3-CD)PYRENE	10	ND
2,6-DINITROTOLUENE	10	ND	BENZO(G,H,I)PERYLENE	10	ND
ACENAPHTHYLENE	10	ND			

QA/QC SURROGATE RECOVERIES

NITROBENZENE-d5(35-114)	53 %	2-FLUOROBIPHENYL(43-116)	53 %
TERPHENYL-d14(33-141)	87 %	PHENOL-d5(10-94)	26 %
2-FLUOROPHENOL(21-100)	32 %	2,4,6-TRIBROMOPHENOL(10-123)	71 %

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RL = REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK, POSSIBLY BELOW THE REPORTING LIMIT.
* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

BORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : WATER
DATE EXTRACTED: 11-16-98
DATE ANALYZED : 11-17-98
METHOD REF. : SW846-8270, EPA METHODOLOGY

REPORT DATE: 12-08-98

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

COMPOUND	LCS % REC.	LCSD % REC.	RPD	QC RPD	ADVISORY LIMITS
PHENOL	25	24	4	45	9-38
2-CHLOROPHENOL	48	43	11	46	26-78
1,4-DICHLOROBENZENE	42	36	15	48	21-71
N-NITROSO-DI-n-PROPYLAMINE	54	50	8	44	28-105
1 2,4-TRICHLOROBENZENE	40	34	16	38	25-76
)CHLORO-3-METHYLPHENOL	55	51	8	32	35-88
. APHTHENE	48	44	9	22	43-91
4-NITROPHENOL	27	26	4	52	7-44
2,4-DINITROTOLUENE	54	52	4	28	41-106
PENTACHLOROPHENOL	68	57	18	50	9-103
PYRENE	60	60	0	37	34-133

* = VALUES OUTSIDE OF ADVISORY LIMITS

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)
DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 87
ATAS # : 24507.01
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-20-98
DATE ANALYZED : 11-20-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : S1

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	575	ND
AROCLOR 1221	575	ND
AROCLOR 1232	575	ND
AROCLOR 1242	575	ND
AROCLOR 1248	575	ND
AROCLOR 1254	575	ND
AROCLOR 1260	575	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	47 %
TETRACHLORO-M-XYLENE(30-150)	37 %

' = NOT DETECTED ABOVE REPORTING LIMIT
_ = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)
DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 90
ATAS # : 24507.02
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-20-98
DATE ANALYZED : 11-20-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : S2

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	556	ND
AROCLOR 1221	556	ND
AROCLOR 1232	556	ND
AROCLOR 1242	556	ND
AROCLOR 1248	556	ND
AROCLOR 1254	556	ND
AROCLOR 1260	556	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	62 %
TETRACHLORO-M-XYLENE(30-150)	55 %

)= NOT DETECTED ABOVE REPORTING LIMIT
ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
NO. ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)
DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 67
ATAS # : 24507.03
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-20-98
DATE ANALYZED : 11-20-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : S3

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	746	ND
AROCLOR 1221	746	ND
AROCLOR 1232	746	ND
AROCLOR 1242	746	ND
AROCLOR 1248	746	ND
AROCLOR 1254	746	ND
AROCLOR 1260	746	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	48 %
TETRACHLORO-M-XYLENE(30-150)	47 %

! = NOT DETECTED ABOVE REPORTING LIMIT
= ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

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CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 94
ATAS # : 24507.04
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-20-98
DATE ANALYZED : 11-20-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : S4

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	5320	ND
AROCLOR 1221	5320	ND
AROCLOR 1232	5320	ND
AROCLOR 1242	5320	ND
AROCLOR 1248	5320	ND
AROCLOR 1254	5320	ND
AROCLOR 1260	5320	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	D %
TETRACHLORO-M-XYLENE(30-150)	D %

) = NOT DETECTED ABOVE REPORTING LIMIT
) = DILUTED OUT
~ ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

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CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 77
ATAS # : 24507.05
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-20-98
DATE ANALYZED : 11-20-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : S5

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	6490	ND
AROCLOR 1221	6490	ND
AROCLOR 1232	6490	ND
AROCLOR 1242	6490	ND
AROCLOR 1248	6490	ND
AROCLOR 1254	6490	ND
AROCLOR 1260	6490	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	D %
TETRACHLORO-M-XYLENE(30-150)	D %

ND = NOT DETECTED ABOVE REPORTING LIMIT
= DILUTED OUT
= ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)
DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 70
ATAS # : 24507.06
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-20-98
DATE ANALYZED : 11-20-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : S6

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	7140	ND
AROCLOR 1221	7140	ND
AROCLOR 1232	7140	ND
AROCLOR 1242	7140	ND
AROCLOR 1248	7140	ND
AROCLOR 1254	7140	ND
AROCLOR 1260	7140	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	D %
TETRACHLORO-M-XYLENE(30-150)	D %

ND = NOT DETECTED ABOVE REPORTING LIMIT
= DILUTED OUT
= ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.
NC ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)

DATE : 12-08-98

SAMPLE MATRIX : WATER
ATAS # : 24507.07
DATE SUBMITTED : 11-13-98
DATE EXTRACTED : 11-18-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : W1

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	10	ND
AROCLOR 1221	10	ND
AROCLOR 1232	10	ND
AROCLOR 1242	10	ND
AROCLOR 1248	10	ND
AROCLOR 1254	10	ND
AROCLOR 1260	10	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	D %
TETRACHLORO-M-XYLENE(30-150)	D %

ND = NOT DETECTED ABOVE REPORTING LIMIT
D = DILUTED OUT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)

DATE : 12-08-98

SAMPLE MATRIX : WATER
ATAS # : 24507.08
DATE SUBMITTED : 11-13-98
DATE EXTRACTED : 11-18-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : W2

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	100	ND
AROCLOR 1221	100	ND
AROCLOR 1232	100	ND
AROCLOR 1242	100	ND
AROCLOR 1248	100	ND
AROCLOR 1254	100	ND
AROCLOR 1260	100	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	D %
TETRACHLORO-M-XYLENE(30-150)	D %

)= NOT DETECTED ABOVE REPORTING LIMIT
DILUTED OUT
B ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

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CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)
DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : METHOD BLANK
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-20-98
DATE ANALYZED : 11-20-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	33.3	ND
AROCLOR 1221	33.3	ND
AROCLOR 1232	33.3	ND
AROCLOR 1242	33.3	ND
AROCLOR 1248	33.3	ND
AROCLOR 1254	33.3	ND
AROCLOR 1260	33.3	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	79 %
TETRACHLORO-M-XYLENE(30-150)	84 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

L RATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : SOIL
DATE EXTRACTED: 11-20-98
DATE ANALYZED : 11-20-98
METHOD REF. : SW846-8081, EPA METHODOLOGY

REPORT DATE: 12-08-98

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	24507.01 MATRIX SPIKE % RECOVERY	24507.01 MATRIX SPIKE DUP. % RECOVERY	RELATIVE PERCENT DIFFERENCE
AR1260	88 %	98 %	11 %

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701PC(705)
DATE : 12-08-98

SAMPLE MATRIX : WATER
ATAS # : METHOD BLANK
DATE SUBMITTED : 11-13-98
DATE EXTRACTED : 11-18-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8081, EPA METHODOLOGY
PROJECT : #9811-801
SAMPLE ID : METHOD BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

PCB'S	REPORTING LIMIT	RESULTS
AROCLOR 1016	1.00	ND
AROCLOR 1221	1.00	ND
AROCLOR 1232	1.00	ND
AROCLOR 1242	1.00	ND
AROCLOR 1248	1.00	ND
AROCLOR 1254	1.00	ND
AROCLOR 1260	1.00	ND
TOTAL PCBs		ND

QA/QC SURROGATE RECOVERY

DECACHLOROBIPHENYL(30-150)	44 %
TETRACHLORO-M-XYLENE(30-150)	50 %

ND = NOT DETECTED ABOVE REPORTING LIMIT
B = ANALYTE DETECTED IN METHOD BLANK POSSIBLY BELOW THE REPORTING LIMIT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

L ORATORY QUALITY CONTROL SEQUENCE

SAMPLE MATRIX : WATER
DATE EXTRACTED: 11-18-98
DATE ANALYZED : 11-18-98
METHOD REF. : SW846-8081, EPA METHODOLOGY

REPORT DATE: 12-08-98

LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE RECOVERY

COMPOUND	LCS PERCENT RECOVERY	LCS DUP. PERCENT RECOVERY	RELATIVE PERCENT DIFFERENCE
AR1260	88 %	84 %	5 %

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(70
DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 87
ATAS # : 24507.01
DATE SUBMITTED: 11-13-98
PROJECT : #9811-801
SAMPLE ID : S1

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ALUMINUM	5.75	mg/Kg	4920	12-01-98	SW 6010
ANTIMONY	1.38	mg/Kg	2.44	12-01-98	SW 6010
BERYLLIUM	0.115	mg/Kg	0.483	12-01-98	SW 6010
COBALT	0.230	mg/Kg	8.09	12-01-98	SW 6010
THALLIUM	11.5	mg/Kg	ND	12-01-98	SW 6010
VANADIUM	1.15	mg/Kg	17.9	12-01-98	SW 6010
ARSENIC	1.15	mg/Kg	5.84	11-25-98	SW 6010
BARIUM	0.46	mg/Kg	66.8	11-25-98	SW 6010
CADMIUM	0.115	mg/Kg	8.80	11-25-98	SW 6010
CHROMIUM	0.230	mg/Kg	84.0	11-25-98	SW 6010
LEAD	1.15	mg/Kg	675	11-25-98	SW 6010
SILVER	0.230	mg/Kg	0.667	11-25-98	SW 6010
SELENIUM	2.30	mg/Kg	ND	11-25-98	SW 6010
CALCIUM	1150	mg/Kg	105000	11-30-98	SW 6010
MAGNESIUM	1150	mg/Kg	55100	11-30-98	SW 6010
POTASSIUM	46.0	mg/Kg	643	11-30-98	SW 6010
SODIUM	11.5	mg/Kg	211	11-30-98	SW 6010
COPPER	2.30	mg/Kg	443	11-30-98	SW 6010
IRON	115	mg/Kg	43200	11-30-98	SW 6010
MANGANESE	4.60	mg/Kg	716	11-30-98	SW 6010
NICKEL	0.230	mg/Kg	47.6	12-01-98	SW 6010
ZINC	3.45	mg/Kg	2030	11-30-98	SW 6010
MERCURY	0.230	mg/Kg	0.486	12-01-98	SW 7471

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(705)
DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 90
ATAS # : 24507.02
DATE SUBMITTED: 11-13-98
PROJECT : #9811-801
SAMPLE ID : S2

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ALUMINUM	11.1	mg/Kg	1710	12-01-98	SW 6010
ANTIMONY	1.33	mg/Kg	ND	12-01-98	SW 6010
BERYLLIUM	0.111	mg/Kg	0.156	12-01-98	SW 6010
COBALT	0.222	mg/Kg	1.96	12-01-98	SW 6010
THALLIUM	22.2	mg/Kg	ND	12-01-98	SW 6010
VANADIUM	1.11	mg/Kg	9.98	12-01-98	SW 6010
ARSENIC	1.11	mg/Kg	1.69	11-25-98	SW 6010
BARIUM	0.444	mg/Kg	19.8	11-25-98	SW 6010
CADMIUM	0.111	mg/Kg	0.533	11-25-98	SW 6010
CHROMIUM	0.222	mg/Kg	9.91	11-25-98	SW 6010
LEAD	1.11	mg/Kg	174	11-25-98	SW 6010
SILVER	0.222	mg/Kg	ND	11-25-98	SW 6010
SELENIUM	2.22	mg/Kg	ND	11-25-98	SW 6010
CALCIUM	11100	mg/Kg	129000	11-30-98	SW 6010
MAGNESIUM	1110	mg/Kg	74400	11-30-98	SW 6010
POTASSIUM	44.4	mg/Kg	462	11-30-98	SW 6010
SODIUM	11.1	mg/Kg	159	11-30-98	SW 6010
COPPER	0.222	mg/Kg	62.3	11-30-98	SW 6010
IRON	111	mg/Kg	7640	11-30-98	SW 6010
MANGANESE	0.444	mg/Kg	173	11-30-98	SW 6010
NICKEL	0.222	mg/Kg	8.29	11-30-98	SW 6010
ZINC	0.333	mg/Kg	102	11-30-98	SW 6010
MERCURY	0.222	mg/Kg	ND	11-18-98	SW 7471

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(7
DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 67
ATAS # : 24507.03
DATE SUBMITTED: 11-13-98
PROJECT : #9811-801
SAMPLE ID : S3

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ALUMINUM	14.9	mg/Kg	9120	12-01-98	SW 6010
ANTIMONY	17.9	mg/Kg	ND	12-01-98	SW 6010
BERYLLIUM	0.149	mg/Kg	0.478	12-01-98	SW 6010
COBALT	0.299	mg/Kg	14.1	12-01-98	SW 6010
THALLIUM	29.9	mg/Kg	ND	12-01-98	SW 6010
VANADIUM	1.49	mg/Kg	26.0	12-01-98	SW 6010
ARSENIC	1.49	mg/Kg	9.55	11-25-98	SW 6010
BARIUM	0.60	mg/Kg	46.1	11-25-98	SW 6010
CADMIUM	0.149	mg/Kg	3.16	11-25-98	SW 6010
CHROMIUM	29.9	mg/Kg	3490	11-25-98	SW 6010
LEAD	1.49	mg/Kg	164	11-25-98	SW 6010
SILVER	0.30	mg/Kg	0.925	11-25-98	SW 6010
SELENIUM	2.99	mg/Kg	ND	11-25-98	SW 6010
CALCIUM	1490	mg/Kg	32500	11-30-98	SW 6010
MAGNESIUM	1490	mg/Kg	19700	11-30-98	SW 6010
POTASSIUM	59.7	mg/Kg	1870	11-30-98	SW 6010
SODIUM	14.9	mg/Kg	199	11-30-98	SW 6010
COPPER	2.99	mg/Kg	273	11-30-98	SW 6010
IRON	149	mg/Kg	69600	11-30-98	SW 6010
MANGANESE	5.97	mg/Kg	881	11-30-98	SW 6010
NICKEL	0.299	mg/Kg	109	12-01-98	SW 6010
ZINC	4.48	mg/Kg	539	11-30-98	SW 6010
MERCURY	0.299	mg/Kg	0.412	11-18-98	SW 7471

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.09
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-16-98
PROJECT : #9811-801
SAMPLE ID : S3 (TCLP)

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			TCLP TOXICITY METALS		
ARSENIC	0.10	mg/L	ND	11-18-98	SW 6010
BARIUM	1.00	mg/L	ND	11-18-98	SW 6010
CADMIUM	0.01	mg/L	0.027	11-18-98	SW 6010
CHROMIUM	0.01	mg/L	ND	11-18-98	SW 6010
LEAD	0.10	mg/L	ND	11-18-98	SW 6010
SILVER	0.02	mg/L	0.039	11-18-98	SW 6010
SELENIUM	0.10	mg/L	ND	11-18-98	SW 6010
MERCURY	0.002	mg/L	ND	11-25-98	SW 7470

mg/L = PARTS PER MILLION(PPM)
= NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(7(

DATE : 12-08-98

QA/QC

DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	11-20-98	ALUMINUM	0.08	mg/L
METHOD BLANK	11-20-98	ANTIMONY	<0.06	mg/L
METHOD BLANK	11-20-98	BERYLLIUM	<0.005	mg/L
METHOD BLANK	11-20-98	COBALT	<0.01	mg/L
METHOD BLANK	11-20-98	THALLIUM	<0.1	mg/L
METHOD BLANK	11-20-98	VANADIUM	<0.05	mg/L
METHOD BLANK	11-22-98	ARSENIC	<0.05	mg/L
METHOD BLANK	11-22-98	BARIUM	<0.02	mg/L
METHOD BLANK	11-22-98	CADMIUM	<0.005	mg/L
METHOD BLANK	11-22-98	CHROMIUM	<0.005	mg/L
METHOD BLANK	11-22-98	LEAD	<0.05	mg/L
METHOD BLANK	11-22-98	SILVER	<0.01	mg/L
METHOD BLANK	11-22-98	SELENIUM	<0.1	mg/L
METHOD BLANK	11-18-98	CALCIUM	<0.5	mg/L
METHOD BLANK	11-18-98	MAGNESIUM	<0.5	mg/L
METHOD BLANK	11-18-98	POTASSIUM	<2.0	mg/L
METHOD BLANK	11-18-98	SODIUM	<0.5	mg/L
METHOD BLANK	11-20-98	COPPER	<0.01	mg/L
METHOD BLANK	11-20-98	IRON	<0.05	mg/L
METHOD BLANK	11-20-98	MANGANESE	<0.02	mg/L
METHOD BLANK	11-20-98	NICKEL	<0.01	mg/L
METHOD BLANK	11-20-98	ZINC	0.028	mg/L
CONTROL SPIKE	11-20-98	ALUMINUM	96 %	RECOVERY
CONTROL SPIKE	11-20-98	ANTIMONY	96 %	RECOVERY
CONTROL SPIKE	11-20-98	BERYLLIUM	94 %	RECOVERY
CONTROL SPIKE	11-20-98	COBALT	95 %	RECOVERY
CONTROL SPIKE	11-20-98	THALLIUM	97 %	RECOVERY
CONTROL SPIKE	11-20-98	VANADIUM	98 %	RECOVERY
CONTROL SPIKE	11-22-98	ARSENIC	97 %	RECOVERY
CONTROL SPIKE	11-22-98	BARIUM	91 %	RECOVERY
CONTROL SPIKE	11-22-98	CADMIUM	95 %	RECOVERY
CONTROL SPIKE	11-22-98	CHROMIUM	94 %	RECOVERY
CONTROL SPIKE	11-22-98	LEAD	92 %	RECOVERY
CONTROL SPIKE	11-22-98	SILVER	95 %	RECOVERY
CONTROL SPIKE	11-22-98	SELENIUM	94 %	RECOVERY
CONTROL SPIKE	11-18-98	CALCIUM	100 %	RECOVERY
CONTROL SPIKE	11-18-98	MAGNESIUM	97 %	RECOVERY
CONTROL SPIKE	11-18-98	POTASSIUM	96 %	RECOVERY
CONTROL SPIKE	11-18-98	SODIUM	98 %	RECOVERY
CONTROL SPIKE	11-20-98	COPPER	96 %	RECOVERY
CONTROL SPIKE	11-20-98	IRON	97 %	RECOVERY
CONTROL SPIKE	11-20-98	MANGANESE	97 %	RECOVERY
CONTROL SPIKE	11-20-98	NICKEL	95 %	RECOVERY
CONTROL SPIKE	11-20-98	ZINC	97 %	RECOVERY

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(705)
DATE : 12-08-98

SAMPLE MATRIX : WATER
ATAS # : 24507.08
DATE SUBMITTED: 11-13-98
PROJECT : #9811-801
SAMPLE ID : W2

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ALUMINUM	0.05	mg/L	2.40	11-20-98	SW 6010
ANTIMONY	0.06	mg/L	ND	11-20-98	SW 6010
BERYLLIUM	0.005	mg/L	ND	11-20-98	SW 6010
COBALT	0.01	mg/L	0.012	11-20-98	SW 6010
THALLIUM	0.1	mg/L	ND	11-20-98	SW 6010
VANADIUM	0.05	mg/L	ND	11-20-98	SW 6010
ARSENIC	0.05	mg/L	ND	11-22-98	SW 6010
BARIUM	0.02	mg/L	0.133	11-22-98	SW 6010
CADMIUM	0.005	mg/L	0.009	11-22-98	SW 6010
CHROMIUM	0.005	mg/L	0.182	11-22-98	SW 6010
LEAD	0.05	mg/L	0.449	11-22-98	SW 6010
SILVER	0.01	mg/L	ND	11-22-98	SW 6010
SELENIUM	0.1	mg/L	ND	11-22-98	SW 6010
CALCIUM	0.5	mg/L	9.03	11-18-98	SW 6010
MAGNESIUM	0.5	mg/L	31.4	11-18-98	SW 6010
POTASSIUM	2.0	mg/L	49.4	11-18-98	SW 6010
SODIUM	0.5	mg/L	11.6	11-18-98	SW 6010
COPPER	0.01	mg/L	0.536	11-20-98	SW 6010
IRON	0.05	mg/L	33.5	11-20-98	SW 6010
MANGANESE	0.02	mg/L	1.70	11-20-98	SW 6010
NICKEL	0.01	mg/L	0.196	11-20-98	SW 6010
ZINC	0.015	mg/L	3.08	11-20-98	SW 6010
MERCURY	0.002	mg/L	ND	11-25-98	SW 7470

mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(7(
DATE : 12-08-98

SAMPLE MATRIX : WATER
ATAS # : 24507.07
DATE SUBMITTED: 11-13-98
PROJECT : #9811-801
SAMPLE ID : W1

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ALUMINUM	0.05	mg/L	0.953	11-20-98	SW 6010
ANTIMONY	0.06	mg/L	ND	11-20-98	SW 6010
BERYLLIUM	0.005	mg/L	ND	11-20-98	SW 6010
COBALT	0.01	mg/L	ND	11-20-98	SW 6010
THALLIUM	0.1	mg/L	ND	11-20-98	SW 6010
VANADIUM	0.05	mg/L	ND	11-20-98	SW 6010
ARSENIC	0.05	mg/L	ND	11-22-98	SW 6010
BARIUM	0.02	mg/L	0.029	11-22-98	SW 6010
CADMIUM	0.005	mg/L	ND	11-22-98	SW 6010
CHROMIUM	0.005	mg/L	0.020	11-22-98	SW 6010
LEAD	0.05	mg/L	ND	11-22-98	SW 6010
SILVER	0.01	mg/L	ND	11-22-98	SW 6010
SELENIUM	0.1	mg/L	ND	11-22-98	SW 6010
CALCIUM	0.5	mg/L	23.3	11-18-98	SW 6010
MAGNESIUM	0.5	mg/L	11.2	11-18-98	SW 6010
POTASSIUM	2.0	mg/L	15.4	11-18-98	SW 6010
SODIUM	0.5	mg/L	34.9	11-18-98	SW 6010
COPPER	0.01	mg/L	0.062	11-20-98	SW 6010
IRON	0.05	mg/L	4.90	11-20-98	SW 6010
MANGANESE	0.02	mg/L	0.213	11-20-98	SW 6010
NICKEL	0.01	mg/L	0.040	11-20-98	SW 6010
ZINC	0.015	mg/L	2.10	11-20-98	SW 6010
MERCURY	0.002	mg/L	ND	11-25-98	SW 7470

mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 · FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(705)

DATE : 12-08-98

QA/QC

DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	12-01-98	ALUMINUM	<1.0	mg/Kg
METHOD BLANK	12-01-98	ANTIMONY	<1.2	mg/Kg
METHOD BLANK	12-01-98	BERYLLIUM	<0.1	mg/Kg
METHOD BLANK	12-01-98	COBALT	<0.2	mg/Kg
METHOD BLANK	12-01-98	THALLIUM	<2.0	mg/Kg
METHOD BLANK	12-01-98	VANADIUM	<1.0	mg/Kg
METHOD BLANK	11-25-98	ARSENIC	<1.0	mg/Kg
METHOD BLANK	11-25-98	BARIUM	<0.40	mg/Kg
METHOD BLANK	11-25-98	CADMIUM	<0.10	mg/Kg
METHOD BLANK	11-25-98	CHROMIUM	<0.20	mg/Kg
METHOD BLANK	11-25-98	LEAD	<1.0	mg/Kg
METHOD BLANK	11-25-98	SILVER	<0.20	mg/Kg
METHOD BLANK	11-25-98	SELENIUM	<2.0	mg/Kg
METHOD BLANK	11-30-98	CALCIUM	<10.0	mg/Kg
METHOD BLANK	11-30-98	MAGNESIUM	<10.0	mg/Kg
METHOD BLANK	11-30-98	POTASSIUM	<40.0	mg/Kg
METHOD BLANK	11-30-98	SODIUM	<10.0	mg/Kg
METHOD BLANK	11-30-98	COPPER	0.280	mg/Kg
ETHOD BLANK	11-30-98	IRON	1.00	mg/Kg
METHOD BLANK	11-30-98	MANGANESE	<0.40	mg/Kg
METHOD BLANK	11-30-98	NICKEL	<0.20	mg/Kg
METHOD BLANK	11-30-98	ZINC	2.36	mg/Kg
METHOD BLANK	12-01-98	MERCURY	<0.2	mg/Kg
METHOD BLANK	11-18-98	MERCURY	<0.2	mg/Kg
CONTROL SPIKE	12-01-98	ALUMINUM	96 %	RECOVERY
CONTROL SPIKE	12-01-98	ANTIMONY	95 %	RECOVERY
CONTROL SPIKE	12-01-98	BERYLLIUM	94 %	RECOVERY
CONTROL SPIKE	12-01-98	COBALT	93 %	RECOVERY
CONTROL SPIKE	12-01-98	THALLIUM	89 %	RECOVERY
CONTROL SPIKE	12-01-98	VANADIUM	95 %	RECOVERY
CONTROL SPIKE	11-25-98	ARSENIC	98 %	RECOVERY
CONTROL SPIKE	11-25-98	BARIUM	94 %	RECOVERY
CONTROL SPIKE	11-25-98	CADMIUM	97 %	RECOVERY
CONTROL SPIKE	11-25-98	CHROMIUM	97 %	RECOVERY
CONTROL SPIKE	11-25-98	LEAD	95 %	RECOVERY
CONTROL SPIKE	11-25-98	SILVER	100 %	RECOVERY
CONTROL SPIKE	11-25-98	SELENIUM	98 %	RECOVERY
CONTROL SPIKE	11-30-98	CALCIUM	118 %	RECOVERY
CONTROL SPIKE	11-30-98	MAGNESIUM	112 %	RECOVERY
CONTROL SPIKE	11-30-98	POTASSIUM	94 %	RECOVERY
CONTROL SPIKE	11-30-98	SODIUM	96 %	RECOVERY
ONTROL SPIKE	11-30-98	COPPER	96 %	RECOVERY
ONTROL SPIKE	11-30-98	IRON	97 %	RECOVERY
NTROL SPIKE	11-30-98	MANGANESE	96 %	RECOVERY
CONTROL SPIKE	11-30-98	NICKEL	94 %	RECOVERY
CONTROL SPIKE	11-30-98	ZINC	93 %	RECOVERY
CONTROL SPIKE	12-01-98	MERCURY	86 %	RECOVERY
CONTROL SPIKE	11-18-98	MERCURY	92 %	RECOVERY

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(70
DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 70
ATAS # : 24507.06
DATE SUBMITTED: 11-13-98
PROJECT : #9811-801
SAMPLE ID : S6

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ALUMINUM	14.3	mg/Kg	5060	12-01-98	SW 6010
ANTIMONY	17.1	mg/Kg	18.9	12-01-98	SW 6010
BERYLLIUM	0.143	mg/Kg	0.171	12-01-98	SW 6010
COBALT	2.86	mg/Kg	23.7	12-01-98	SW 6010
THALLIUM	286	mg/Kg	ND	12-02-98	SW 6010
VANADIUM	14.3	mg/Kg	35.4	12-01-98	SW 6010
ARSENIC	1.43	mg/Kg	10.3	11-25-98	SW 6010
BARIUM	0.571	mg/Kg	37.7	11-25-98	SW 6010
CADMIUM	0.143	mg/Kg	3.31	11-25-98	SW 6010
CHROMIUM	2.86	mg/Kg	2490	11-25-98	SW 6010
LEAD	1.43	mg/Kg	213	11-25-98	SW 6010
SILVER	0.286	mg/Kg	0.429	11-25-98	SW 6010
SELENIUM	28.6	mg/Kg	ND	11-25-98	SW 6010
CALCIUM	1430	mg/Kg	18600	11-30-98	SW 6010
MAGNESIUM	143	mg/Kg	3740	11-30-98	SW 6010
POTASSIUM	57.1	mg/Kg	476	11-30-98	SW 6010
SODIUM	14.3	mg/Kg	167	11-30-98	SW 6010
COPPER	2.86	mg/Kg	1470	11-30-98	SW 6010
IRON	143	mg/Kg	236000	11-30-98	SW 6010
MANGANESE	5.71	mg/Kg	2710	11-30-98	SW 6010
NICKEL	0.286	mg/Kg	160	12-01-98	SW 6010
ZINC	4.29	mg/Kg	767	11-30-98	SW 6010
MERCURY	0.286	mg/Kg	ND	11-18-98	SW 7471

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(705)
DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 77
ATAS # : 24507.05
DATE SUBMITTED: 11-13-98
PROJECT : #9811-801
SAMPLE ID : S5

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ALUMINUM	13.0	mg/Kg	8010	12-01-98	SW 6010
ANTIMONY	1.56	mg/Kg	ND	12-01-98	SW 6010
BERYLLIUM	0.130	mg/Kg	0.623	12-01-98	SW 6010
COBALT	0.260	mg/Kg	22.6	12-01-98	SW 6010
THALLIUM	26.0	mg/Kg	ND	12-01-98	SW 6010
VANADIUM	1.30	mg/Kg	23.2	12-01-98	SW 6010
ARSENIC	1.30	mg/Kg	11.1	11-25-98	SW 6010
BARIUM	0.519	mg/Kg	62.3	11-25-98	SW 6010
CADMIUM	0.130	mg/Kg	2.83	11-25-98	SW 6010
CHROMIUM	0.260	mg/Kg	49.9	11-25-98	SW 6010
LEAD	1.30	mg/Kg	95.8	11-25-98	SW 6010
SILVER	0.260	mg/Kg	0.779	11-25-98	SW 6010
SELENIUM	2.60	mg/Kg	ND	11-25-98	SW 6010
CALCIUM	1300	mg/Kg	17100	11-30-98	SW 6010
MAGNESIUM	130	mg/Kg	9780	11-30-98	SW 6010
POTASSIUM	51.9	mg/Kg	1160	11-30-98	SW 6010
SODIUM	13.0	mg/Kg	171	11-30-98	SW 6010
COPPER	2.60	mg/Kg	201	11-30-98	SW 6010
IRON	130	mg/Kg	66600	11-30-98	SW 6010
MANGANESE	5.19	mg/Kg	1420	11-30-98	SW 6010
NICKEL	0.260	mg/Kg	57.0	12-01-98	SW 6010
ZINC	3.90	mg/Kg	349	11-30-98	SW 6010
MERCURY	0.260	mg/Kg	ND	11-18-98	SW 7471

mg/Kg = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(7'

DATE : 12-08-98

SAMPLE MATRIX : SOIL % SOLID: 94
ATAS # : 24507.04
DATE SUBMITTED: 11-13-98
PROJECT : #9811-801
SAMPLE ID : S4

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			METALS		
ALUMINUM	106	mg/Kg	12000	12-01-98	SW 6010
ANTIMONY	1.28	mg/Kg	5.79	12-01-98	SW 6010
BERYLLIUM	0.106	mg/Kg	0.191	12-01-98	SW 6010
COBALT	0.213	mg/Kg	7.47	12-01-98	SW 6010
THALLIUM	21.3	mg/Kg	ND	12-01-98	SW 6010
VANADIUM	1.06	mg/Kg	15.0	12-01-98	SW 6010
ARSENIC	1.06	mg/Kg	6.02	11-25-98	SW 6010
BARIUM	0.426	mg/Kg	49.5	11-25-98	SW 6010
CADMIUM	1.06	mg/Kg	28.9	11-25-98	SW 6010
CHROMIUM	2.13	mg/Kg	580	11-25-98	SW 6010
LEAD	1.06	mg/Kg	432	11-25-98	SW 6010
SILVER	0.213	mg/Kg	1.43	11-25-98	SW 6010
SELENIUM	2.13	mg/Kg	ND	11-25-98	SW 6010
CALCIUM	10600	mg/Kg	164000	11-30-98	SW 6010
MAGNESIUM	1060	mg/Kg	66600	11-30-98	SW 6010
POTASSIUM	42.6	mg/Kg	542	11-30-98	SW 6010
SODIUM	10.6	mg/Kg	260	11-30-98	SW 6010
COPPER	21.3	mg/Kg	6840	11-30-98	SW 6010
IRON	106	mg/Kg	49500	11-30-98	SW 6010
MANGANESE	4.26	mg/Kg	677	11-30-98	SW 6010
NICKEL	0.213	mg/Kg	168	12-01-98	SW 6010
ZINC	31.9	mg/Kg	3010	11-30-98	SW 6010
MERCURY	0.213	mg/Kg	ND	11-18-98	SW 7471

mg/Kg = PARTS PER MILLION (PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT
NOTE: ALL REPORTED CONCENTRATIONS HAVE BEEN ADJUSTED TO DRY WEIGHT.

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.11
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-16-98
PROJECT : #9811-801
SAMPLE ID : S5 (TCLP)

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			TCLP TOXICITY METALS		
ARSENIC	0.10	mg/L	ND	11-18-98	SW 6010
BARIUM	1.00	mg/L	ND	11-18-98	SW 6010
CADMIUM	0.01	mg/L	0.012	11-18-98	SW 6010
CHROMIUM	0.01	mg/L	ND	11-18-98	SW 6010
LEAD	0.10	mg/L	ND	11-18-98	SW 6010
SILVER	0.02	mg/L	ND	11-18-98	SW 6010
SELENIUM	0.10	mg/L	ND	11-18-98	SW 6010
MERCURY	0.002	mg/L	ND	11-25-98	SW 7470

/L = PARTS PER MILLION(PPM)
= NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(7(

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.10
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-16-98
PROJECT : #9811-801
SAMPLE ID : S4 (TCLP)

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			TCLP TOXICITY METALS		
ARSENIC	0.10	mg/L	ND	11-18-98	SW 6010
BARIUM	1.00	mg/L	ND	11-18-98	SW 6010
CADMIUM	0.01	mg/L	0.206	11-18-98	SW 6010
CHROMIUM	0.01	mg/L	ND	11-18-98	SW 6010
LEAD	0.10	mg/L	ND	11-18-98	SW 6010
SILVER	0.02	mg/L	ND	11-18-98	SW 6010
SELENIUM	0.10	mg/L	ND	11-18-98	SW 6010
MERCURY	0.002	mg/L	ND	11-25-98	SW 7470

mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(705)

DATE : 12-08-98

SAMPLE MATRIX : SOIL
ATAS # : 24507.12
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-16-98
PROJECT : #9811-801
SAMPLE ID : S6 (TCLP)

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			TCLP TOXICITY METALS		
ARSENIC	0.10	mg/L	ND	11-18-98	SW 6010
BARIUM	1.00	mg/L	ND	11-18-98	SW 6010
CADMIUM	0.01	mg/L	ND	11-18-98	SW 6010
CHROMIUM	0.01	mg/L	0.019	11-18-98	SW 6010
LEAD	0.10	mg/L	ND	11-18-98	SW 6010
SILVER	0.02	mg/L	ND	11-18-98	SW 6010
SELENIUM	0.10	mg/L	ND	11-18-98	SW 6010
MERCURY	0.002	mg/L	ND	11-25-98	SW 7470

mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(7

DATE : 12-08-98

SAMPLE MATRIX : TCLP LEACHATE
ATAS # : TCLP BLANK
DATE SUBMITTED: 11-13-98
DATE EXTRACTED: 11-16-98
PROJECT : #9811-801
SAMPLE ID : TCLP BLANK

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
			TCLP TOXICITY METALS		
ARSENIC	0.10	mg/L	ND	12-07-98	SW 6010
BARIUM	1.00	mg/L	ND	12-07-98	SW 6010
CADMIUM	0.01	mg/L	ND	12-07-98	SW 6010
CHROMIUM	0.01	mg/L	ND	12-07-98	SW 6010
LEAD	0.10	mg/L	ND	11-18-98	SW 6010
SILVER	0.02	mg/L	0.033	12-07-98	SW 6010
SELENIUM	0.10	mg/L	ND	12-07-98	SW 6010
MERCURY	0.002	mg/L	ND	11-25-98	SW 7470

mg/L = PARTS PER MILLION(PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

ATAS 875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: ECOLOGY & ENVIRONMENT, INC.
33 N. DEARBORN ST., FL 9
CHICAGO, IL 60602
ATTN: DAVE HENDRON

REPORT: 2450701MT(705)

DATE : 12-08-98

QA/QC

DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	11-18-98	ARSENIC	<0.10	mg/L
METHOD BLANK	11-18-98	BARIUM	<1.00	mg/L
METHOD BLANK	11-18-98	CADMIUM	<0.01	mg/L
METHOD BLANK	11-18-98	CHROMIUM	<0.01	mg/L
METHOD BLANK	11-18-98	LEAD	<0.10	mg/L
METHOD BLANK	11-18-98	SILVER	<0.02	mg/L
METHOD BLANK	11-18-98	SELENIUM	<0.10	mg/L
METHOD BLANK	11-25-98	MERCURY	<0.002	mg/L
CONTROL SPIKE	11-18-98	ARSENIC	101 %	RECOVERY
CONTROL SPIKE	11-18-98	BARIUM	102 %	RECOVERY
CONTROL SPIKE	11-18-98	CADMIUM	101 %	RECOVERY
CONTROL SPIKE	11-18-98	CHROMIUM	100 %	RECOVERY
CONTROL SPIKE	11-18-98	LEAD	100 %	RECOVERY
CONTROL SPIKE	11-18-98	SILVER	103 %	RECOVERY
CONTROL SPIKE	11-18-98	SELENIUM	105 %	RECOVERY
CONTROL SPIKE	11-25-98	MERCURY	104 %	RECOVERY

Attachment D

Tables

Table 1

ANALYTICAL RESULTS SUMMARY - VOLATILE ORGANIC COMPOUNDS
COMETCO SITE
CHICAGO, COOK COUNTY, ILLINOIS
NOVEMBER 10, 1998

Compound	Soil Samples units = $\mu g/kg$							Water Samples units = $\mu g/L$		
	S1	S2	S3	S4	S5	S6	Region 3 RBC[1]	W1	W2	U.S. EPA MCL[2]
Acetone	13	10 ND	10 ND	9,500	10 ND	11,000	2.00 E+8	46	50 ND	NA
Carbon Disulfide	5 ND	5 ND	5 ND	5 ND	5 ND	1,200	2.00 E+8	5 ND	25 ND	NA
Chloroform	5 ND	6	5 ND	450 ND	6	500 ND	940,000	5 ND	25 ND	100
cis-1,2-Dichloroethylene	5 ND	5 ND	5 ND	5 ND	5 ND	2,900	2.00 E+7	5 ND	25 ND	70
4-Methyl-2-pentanone	10 ND	10 ND	10 ND	1,400	10 ND	6,300	NA	10 ND	50 ND	NA
Methylene Chloride	7 NDB	40 NDB	5 ND	980 B	26 NDB	1,800 B	760,000	5 ND	25 ND	NA
n-Propylbenzene	5 ND	5 ND	5 ND	1,000	5 ND	500 ND	NA	5 ND	25 ND	NA
Toluene	5 ND	5 ND	5 ND	580	5 ND	1,600	4.10 E+8	5 ND	25 ND	1.0
Trichloroethylene	5 ND	5 ND	5 ND	610	5 ND	500 ND	520,000	5 ND	25 ND	5.0
1,3,5-Trimethylbenzene	5 ND	5 ND	5 ND	2,800	5 ND	500 ND	1.00 E+8	5 ND	25 ND	NA
1,2,4-Trimethylbenzene	5 ND	5 ND	5 ND	9,600	5 ND	3,900	1.00 E+8	5 ND	25 ND	NA
Xylenes (total)	5 ND	5 ND	5 ND	1,100	5 ND	500 ND	1.00 E+9	5 ND	25 ND	1,000

Key:

[1] = U.S. EPA Region 3 Risk-Based Screening Concentration (RBC) for industrial soil (10/98).
[2] = U.S. EPA Maximum Contaminant Level (MCL).
B = Analyte detected in method blank. Concentration detected is more than 10 times the associated blank level.
NA = Not applicable.
ND = Analyte not detected. Associated value represents sample quantitation limit.
NDB = Analyte detected in method blank. Concentration detected is less than 10 times the associated blank value. Anlayte should be considered not detected.

Source: ATAS, Inc., Saint Louis, Missouri under analytical TDD S05-9811-801.

Table 2

ANALYTICAL RESULTS SUMMARY - SEMIVOLATILE ORGANIC COMPOUNDS
COMETCO SITE
CHICAGO, COOK COUNTY, ILLINOIS
NOVEMBER 10, 1998

Compound	Soil Samples units = μg/kg							Water Samples units = μg/L		
	S1	S2	S3	S4	S5	S6	Region 3 RBC[1]	W1	W2	U.S. EPA MCL[2]
Phenol	330 ND	330 ND	330 ND	1,320 ND	330 ND	330 ND	1.2 E+9	13 J	160	NA
Benzoic Acid	1,600 ND	1,600 ND	1,600 ND	6,400 ND	1,600 ND	1,600 ND	8.2 E+9	100 ND	190 J	NA
Naphthalene	330 ND	330 ND	330 ND	1,320 ND	450	330 ND	4.1 E+7	20 ND	100 ND	NA
4-Methylphenol	330 ND	330 ND	330 ND	1,320 ND	330 ND	330 ND	1.0 E+7	20 ND	25 J	NA
4-Chloro-3-methylphenol	330 ND	330 ND	330 ND	4,000	330 ND	330	NA	32	260	NA
2-Methylnaphthalene	330 ND	330 ND	330 ND	880 J	330 ND	330 ND	4.1 E+7	20 ND	18 J	NA
Acenapthene	330 ND	330 ND	330 ND	1,320 ND	360	330 ND	1.2 E+8	20 ND	100 ND	NA
Fluorene	330 ND	330 ND	330 ND	420 J	370	330 ND	8.2 E+7	20 ND	100 ND	NA
Phenanthrene	1,000	330 ND	620	1,100 J	2,600	330 ND	NA	20 ND	74 J	NA
Anthracene	330 ND	330 ND	330 ND	1,320 ND	690	330 ND	6.1 E+8	20 ND	100 ND	NA
Fluoranthene	1,300	350	730	480 J	2,800	330 ND	8.2 E+7	20 ND	100 ND	NA
Pyrene	1,400	370	720	480 J	1,900	330 ND	6.1 E+7	20 ND	100 ND	NA
Bis(2-ethylhexyl)phthalate	330 ND	330 ND	330 ND	5,000	330 ND	330 ND	4.1 E+8	20 ND	100 ND	NA
Benzo(a)anthracene	650	330 ND	370	1,320 ND	1,400	330 ND	7,800	20 ND	100 ND	NA
Chrysene	850	330 ND	480	1,320 ND	1,500	330 ND	780,000	20 ND	100 ND	NA
Benzo(b)fluoranthene	330 ND	330 ND	330 ND	1,320 ND	1,300	330 ND	7,800	20 ND	100 ND	NA

Table 2

ANALYTICAL RESULTS SUMMARY - SEMIVOLATILE ORGANIC COMPOUNDS
COMETCO SITE
CHICAGO, COOK COUNTY, ILLINOIS
NOVEMBER 10, 1998

Compound	Soil Samples units = $\mu g/kg$							Water Samples units = $\mu g/L$		
	S1	S2	S3	S4	S5	S6	Region 3 RBC[1]	W1	W2	U.S. EPA MCL[2]
Benzo(k)fluoranthene	770	330 ND	330 ND	1,320 ND	1,000	330 ND	78,000	20 ND	100 ND	NA
Benzo(a)pyrene	800	330 ND	330 ND	1,320 ND	1,300	330 ND	780	20 ND	100 ND	NA
Dibenzo(a,h)anthracene	330 ND	330 ND	330 ND	1,320 ND	610	330 ND	780	20 ND	100 ND	NA
Ideno(1,2,3-c,d)pyrene	790	330 ND	420	1,320 ND	1,200	330 ND	7,800	20 ND	100 ND	NA
Benzo(g,h,i)pyrelene	480	330 ND	330 ND	1,320 ND	690	330 ND	NA	20 ND	100 ND	NA

Key:

[1] = U.S. EPA Region 3 Risk-Based Screening Concentration (RBC) for industrial soil (10/98).
[2] = U.S. EPA Maximum Contaminant Level (MCL).
J = Estimated value. Analyte detected but concentration is below sample reporting limit.
NA = Not applicable.
ND = Analyte not detected. Associated value represents sample quantitation limit.
= Shading indicates that contaminant level exceeds Region 3 RBC.

Source: ATAS, Inc., Saint Louis, Missouri under analytical TDD S05-9811-801.

Table 3

ANALYTICAL RESULTS SUMMARY - POLYCHLORINATED BIPHENYLS
COMETCO SITE
CHICAGO, COOK COUNTY, ILLINOIS
NOVEMBER 10, 1998

Compound	Soil Samples units = $\mu g/kg$							Water Samples units = $\mu g/L$		
	S1	S2	S3	S4	S5	S6	Region 3 RBC[1]	W1	W2	U.S. EPA MCL[2]
Aroclor 1016	575 ND	556 ND	746 ND	5,320 ND	6,490 ND	7,140 ND	8,200	10 ND	100 ND	5.0
Aroclor 1221	575 ND	556 ND	746 ND	5,320 ND	6,490 ND	7,140 ND	2,900	10 ND	100 ND	5.0
Aroclor 1232	575 ND	556 ND	746 ND	5,320 ND	6,490 ND	7,140 ND	2,900	10 ND	100 ND	5.0
Aroclor 1242	575 ND	556 ND	746 ND	5,320 ND	6,490 ND	7,140 ND	2,900	10 ND	100 ND	5.0
Aroclor 1248	575 ND	556 ND	746 ND	5,320 ND	6,490 ND	7,140 ND	2,900	10 ND	100 ND	5.0
Aroclor 1254	575 ND	556 ND	746 ND	5,320 ND	6,490 ND	7,140 ND	2,900	10 ND	100 ND	5.0
Aroclor 1260	575 ND	556 ND	746 ND	5,320 ND	6,490 ND	7,140 ND	2,900	10 ND	100 ND	5.0

Key:

[1] = U.S. EPA Region 3 Risk-Based Screening Concentration (RBC) for industrial soil (10/98).
[2] = U.S. EPA Maximum Contaminant Level (MCL).
ND = Analyte not detected. Associated value represents sample quantitation limit.

Source: ATAS, Inc., Saint Louis, Missouri under analytical TDD S05-9811-801.

Table 4

ANALYTICAL RESULTS SUMMARY - TOTAL METALS
COMETCO SITE
CHICAGO, COOK COUNTY, ILLINOIS
NOVEMBER 10, 1998

Compound	Soil Samples units = mg/kg							Water Samples units = mg/L		
	S1	S2	S3	S4	S5	S6	Region 3 RBC	W1	W2	U.S. EPA MCL
Aluminum	4920	1,710	9,120	12,000	8,010	5,060	2.00 E+6	0.953	2.40	NA
Antimony	2.44	1.33 ND	17.9 ND	5.79	1.56 ND	18.9	820	0.06 ND	0.06 ND	6.0
Beryllium	0.483	0.156	0.478	0.191	0.623	0.171	4,100	0.005 ND	0.005 ND	4.0
Cobalt	8.09	1.96	14.1	7.47	22.6	23.7	120,000	0.01 ND	0.012	NA
Thallium	11.5 ND	22.2 ND	29.9 ND	21.3 ND	26.0 ND	286 ND	140	0.1 ND	0.1 ND	2.0
Vanadium	17.9	9.98	26.0	15.0	23.2	35.4	14,000	0.05 ND	0.05 ND	NA
Arsenic	5.84	1.69	9.55	6.02	11.1	10.3	3.8	0.05 ND	0.05 ND	NA
Barium	66.8	19.8	46.1	49.5	62.3	37.7	140,000	0.029	0.133	2,000
Cadmium	8.80	0.533	3.16	28.9	2.83	3.31	1,000	0.005 ND	0.009	5.0
Chromium	84.0	9.91	3,490	580	49.9	2,490	NA	0.020	0.182	100
Lead	675	174	164	432	95.8	213	NA	0.05 ND	0.449	15.0
Silver	0.667	0.22 ND	0.925	1.43	0.779	0.429	10,000	0.01 ND	0.01 ND	NA
Selenium	2.3 ND	2.22 ND	2.99 ND	2.13 ND	2.60 ND	28.6 ND	10,000	0.10 ND	0.10 ND	50.0
Calcium	105,000	129,000	32,500	164,000	17,100	18,600	NA	23.3	9.03	NA
Magnesium	55,100	74,440	19,700	66,600	9,780	3,740	NA	11.2	31.4	NA
Potassium	643	462	1,870	542	1,160	476	NA	15.4	49.4	NA

Table 4

ANALYTICAL RESULTS SUMMARY - TOTAL METALS
COMETCO SITE
CHICAGO, COOK COUNTY, ILLINOIS
NOVEMBER 10, 1998

Compound	Soil Samples units = mg/kg							Water Samples units = mg/L		
	S1	S2	S3	S4	S5	S6	Region 3 RBC	W1	W2	U.S. EPA MCL
Sodium	211	159	199	260	171	167	NA	34.9	11.6	NA
Copper	443	62.3	273	6,840	201	1,470	76,000	0.062	0.536	1,300
Iron	43,200	7,640	69,600	49,500	66,600	236,000	NA	4.90	33.5	NA
Managnese	716	173	881	677	1,420	2,710	10,000	0.213	1.70	NA
Nickel	47.6	8.29	109	168	57.0	160	41,000	0.040	0.196	100
Zinc	2,030	102	539	3,010	349	767	610,000	2.10	3.08	NA
Mercury	0.486	0.222 ND	0.412	0.213 ND	0.260 ND	0.286 ND	610	0.002 ND	0.002 ND	2.0

Key:

[1] = U.S. EPA Region 3 Risk-Based Screening Concentration (RBC) for industrial soil (10/98).
[2] = U.S. EPA Maximum Contaminant Level (MCL).
NA = Not applicable.
ND = Analyte not detected. Associated value represents sample quantitation limit.
= Shading indicates that contaminant level exceeds Region 3 RBC.

Source: ATAS, Inc., Saint Louis, Missouri under analytical TDD S05-9811-801.

Table 5

ANALYTICAL RESULTS SUMMARY - TCLP METALS
COMETCO SITE
CHICAGO, COOK COUNTY, ILLINOIS
NOVEMBER 10, 1998

Compound	Soil Samples units = mg/L				TCLP Regulatory Limit
	S3	S4	S5	S6	
Arsenic	0.10 ND	0.10 ND	0.10 ND	0.10 ND	5.0
Barium	1.00 ND	1.00 ND	1.00 ND	1.00 ND	100
Cadmium	0.027	0.206	0.012	0.019	1.0
Chromium	0.01 ND	0.01 ND	0.01 ND	0.01 ND	5.0
Lead	0.10 ND	0.10 ND	0.10 ND	0.10 ND	5.0
Silver	0.039 NDB	0.02 ND	0.02 ND	0.02 ND	5.0
Selenium	0.10 ND	0.10 ND	0.10 ND	0.10 ND	1.0
Mercury	0.002 ND	0.002 ND	0.002 ND	0.002 ND	0.2

Key:

ND = Analyte not detected. Associated value represents sample quantitation limit.
NDB = Analyte detected in method blank. Concentration indicated is less than 5 times the associated blank value. Analyte should be considered not detected.

Source: ATAS, Inc., Saint Louis, Missouri under analytical TDD S05-9811-801.

APPENDIX 2

Appendix 2. Test Pit and Boring Logs

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: A-A1

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 0920	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
1, 2		X	2	DARK BROWN SILTY FILL* AND TOPSOIL WITH ORGANIC DEBRIS		1	A-A1-COMP
3, 4, 5		X	2	YELLOWISH, BROWN AND BLACK, CLAYEY, SANDY AND GREVELLY FILL		2	
6				GRAYISH-BROWN, STIFF, SILTY CLAY, TRACE GRAVEL AND WOOD		N	
7, 8, 9, 10, 11, 12, 13				END OF BORING @ 6 FEET * DUG HOLE AT SURFACE TO VERIFY DUE TO POOR RECOVERY; 2 FOOT RECOVERY LIKELY FROM 2-4 FEET BASED ON SURFACE OBSERVATIONS			

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTLM - Cometco\PCB Assessment\Borings\boring_a-a1

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

CPI ENVIRONMENTAL SERVICES, INC.
1125 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: A-A2

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 0910	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTM - Cometco\PCB Assessment\Borings\boring-a-a1

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
1			3	DARK BROWN GRAVELLY FILL		1	A-A2-COMP
2				BLACK SILTY AND SANDY FILL		2	
3				REDDISH BROWN SANDY AND SILTY CLAYEY FILL		3	
4				DARK REDDISH BROWN, SANDY AND STIFF CLAYEY FILL, MOIST		4	
5			3	BROWN, SANDY AND GRAVELLY FILL, WET		5	
6				BROWN, SILTY CLAY, SOFT TO STIFF		N	
7				END OF BORING @ 6 FEET			
8							
9							
10							
11							
12							
13							

CPI ENVIRONMENTAL SERVICES, INC.
1125 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: A-A3

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 0830	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\WILM - Cometco\PCB Assessment\Borings\boring_a-a1

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION	PID	SAMPLE NO. AND TIME	REMARKS
				SURFACE:			
1			3	DARK BROWN GRAVELLY FILL		1	— A-A3-COMP —
				WHITE CRUSHED STONE			
				BLACK, GRAY, SILT GRADING TO BLACK SILTY AND GRAY FILL		2	
2				REDDISH BROWN, SANDY FILL			
				BROWN, STIFF, SILTY CLAY FILL		3	
3				BROWN AND BLACK, SANDY FILL		4	
				SOFT TO STIFF, GRAYISH BROWN SILTY CLAY FILL		N	
4							
5			2				
6				END OF BORING @ 6 FEET			
7							
8							
9							
10							
11							
12							
13							

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: A-B1

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1000	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
0–4		X	2	DARK BROWN TO BLACK SILTY, SANDY FILL WITH GRAVEL, COAL, WOOD FRAGMENTS, ORGANICS, TRACE METAL AND GLASS, MOIST		1	A-B1-COMP
4–6		X	1	YELLOWISH BROWN SAND AND SMALL GRAVEL, WET WITH SILTY CLAY		2	
6				DARK, GRAY STIFF SILTY CLAY		N	
				END OF BORING @ 6 FEET			

NOTE: BORING APPROXIMATLEY 3 FEET ABOVE ELEVATION OF A1 GRID

DUE TO POOR RECOVERY AND SIMILARITY OF SOIL TYPES, DELINIATED BASED ON SOIL CONDITIONS RATHER THAN FOOT INTERVALS

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTLM - Cometco\PCB Assessment\Borings\boring_a-a1

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: A-B2

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1030	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTLM - Cometco\PCB Assessment\Borings\boring_a-b1

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
1, 2		X	2.5	DARK BROWN SILTY, SANDY FILL WITH TRACE CRUSHED STONE, WOOD FRAGMENTS, MOIST TO DRY		1	A-B2-COMP AND DUP
3		X		DARK BROWN AND REDDISH BROWN SANDY AND GRAVELLY FILL, MOIST		2	
4		X		DARK BROWN AND BLACK CLAYEY SILT FILL WITH TRACE BRICK FRAGMENTS		3	
5		X	2	BROWN, SANDY, GRAVELLY FILL WITH SILTY CLAY, TRACE SMALL BRICK FRAGMENTS, WET		4	
6		X		DARK BROWN, STIFF, SILTY CLAY , DRY TO MOIST		N	
7, 8, 9, 10, 11, 12, 13				END OF BORING @ 6 FEET			

CPI ENVIRONMENTAL SERVICES, INC.
1125 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: A-B3

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1100	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
1, 2		X	2	FILL: DARK BROWN TO BLACK SILT, SAND AND GRAVEL WITH TRACE COAL AND ONE-INCH LAYERS OF CRUSHED STONE AND REDDISH BROWN SAND		1	
3				FILL: DARK BROWN TO BLACK, SANDY AND GRAVELLY WITH THREE-INCH LAYER OF RED-BROWN SAND AND GRAVEL		2	
4, 5, 6		X	0.5	GRAYSIH BROWN SOFT TO STIFF SILTY CLAY, MOIST TO WET			
7				END OF BORING @ 6 FEET *INTERVAL UNCERTAIN: SINCE ONLY TWO SAMPLES DID NOT COMPOSITE THE SAMPLE			
8, 9, 10, 11, 12, 13							

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MITLK - Cometco\PCB Assessment\Borings\boring_a-d1

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: B-A1

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1300	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
0–1		X	3	BROWN FILL AND CRUSHED STONE		1	
1–2		X		DARK BROWN TO BLACK FILL, VERY STRONG PETROLEUM LIKE ODOR		2	
2–4		X		SILTY CLAY			
4				END OF BORING @ 4 FEET			

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTLM - Cometco\PCB Assessment\Borings\boring_a-a1

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: B-A2

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1315	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTLM - Cometco\PCB Assessment\Borings\boring_a-a1

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
1			3	BROWN FILL AND CRUSHED STONE		1	
2							
3				DARK BROWN TO BLACK FILL, VERY STRONG PETROLEUM LIKE ODOR		2	
4				SILTY CLAY			
5				END OF BORING @ 4 FEET			
6							
7				*INTERVAL UNCERTAIN; SINCE ONLY TWO SAMPLES DID NOT COMPOSITE THE SAMPLE			
8							
9							
10							
11							
12							
13							

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: B-A3

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME	TIME
DATE	DATE
11/22/2006	11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
1			3.75	BROWN FILL AND CRUSHED STONE		1	
2				DARK BROWN TO BLACK FILL, VERY STRONG PETROLEUM LIKE ODOR		2	
3				SILTY CLAY			
4				END OF BORING @ 4 FEET			
5							
6							
7				*INTERVAL UNCERTAIN; SINCE ONLY TWO SAMPLES DID NOT COMPOSITE THE SAMPLE			
8							
9							
10							
11							
12							
13							

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\WILM - Cometco\PCB Assessment\Borings\boring_a-a1

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: B-B1

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1130	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
1				DARK BROWN FILL WITH CRUSHED STONE		1	B-B1-COMP
2			2	BLACK FILL		2	
3				WOOD CORE			
4							
5			1	REDDISH BROWN AND GRAY, MOTTLED, VERY STIFF SILTY CLAY WITH TRACE GRAVEL			
6				END OF BORING @ 6 FEET			
7							
8							
9							
10							
11							
12							
13							

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTM - Cometco\PCB Assessment\Borings\boring_e-b1

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: B-B2

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1245	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTM - Cometco\PCB Assessment\Boring\boring_a-d

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION	PID	SAMPLE NO. AND TIME	REMARKS
				SURFACE:			
1				BROWN FILL OVERLYING CRUSHED STONE		1	B-B2-COMP AND DUP
2			2	DARK BROWN TO BLACK FILL, STRONG PETROLEUM ODOR		2	
3				SILTY CLAY		N	B-B2-N
4			1				
5							
6				END OF BORING @ 6 FEET			
7							
8							
9							
10							
11							
12							
13							

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: B-C1

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1145	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
				6" CRUSHED STONE OVERLYING DARK BROWN TO BLACK FILL		1	B-C1-COMP
1				DARK BROWN TO BLACK FILL		2	
2			3.5				
3				VERY STIFF, DARK BROWN AND GRAY, SILTY CLAY			
4							
5			2				
6				END OF BORING @ 6 FEET			
7							
8							
9							
10							
11							
12							
13							

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTLM - Cometco\PCB Assessment\Borings\boring_c-a1

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

CPI ENVIRONMENTAL SERVICES, INC.
1125 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: B-C2

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1200	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
1			3	6"CRUSHED STONE OVERLYING DARK BROWN TO BLACK FILL		1	B-C2-COMP
2				SLAG, STRONG PETROLEUM LIKE ODOR		2	
3				VERY STIFF, DARK BROWN, SILTY CLAY			
4			2				
5							
6				END OF BORING @ 6 FEET			
7							
8							
9							
10							
11							
12							
13							

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

CHECKED BY: SARAH SCHLICHTHOLZ

FILE NAME: C:\Figures\MTLM - Cometco\PCB Assessment\Borings\boring_c-o1

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION:

ELEVATION: DATUM:

DRILLING METHOD: DIRECT PUSH

DRILLING FLUID: NONE

SAMPLING METHOD: 2-INCH DIAMETER, FOUR FOOT LONG MACROCORE WITH ACETATE SLEEVE

RIG: TRUCK MOUNTED GEOPROBE

DRILLING CONTRACTOR: CABENO

BORING NO.: B-C3

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1230	TIME
DATE 11/22/2006	DATE 11/22/2006

CLIENT: METAL MANGEMENT - MIDWEST

PURPOSE: CHARACTERIZE PCB AREAS

PROJECT NO.: E05-74-25-591

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

DEPTH IN FEET	BLOW COUNTS	SAMPLE INTERVAL	RECOVERY	DESCRIPTION (SURFACE:)	PID	SAMPLE NO. AND TIME	REMARKS
1			3.5	CRUSHED STONE		1	B-C3-COMP
2				DARK BROWN TO BLACK FILL		2	
3				SILTY CLAY			
4			2				
5							
6				END OF BORING @ 6 FEET			
7							
8							
9							
10							
11							
12							
13							

LOGGED BY: SARAH SCHLICHTHOLZ

FORM COMPLETED BY: DAVID CRUICKSHANK

CHECKED BY: SARAH SCHLICHTHOLZ

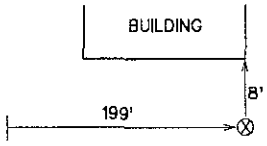
FILE NAME: C:\Figures\MTLM - Cometco\PCB Assessment\Borings\boring_a-d

CPI ENVIRONMENTAL SERVICES, INC.
1123 WHEATON OAKS COURT
WHEATON, IL 60187 (630) 407-0800

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 45C

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-6

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1000	TIME 1100
DATE 04/24/02	DATE 04/24/02

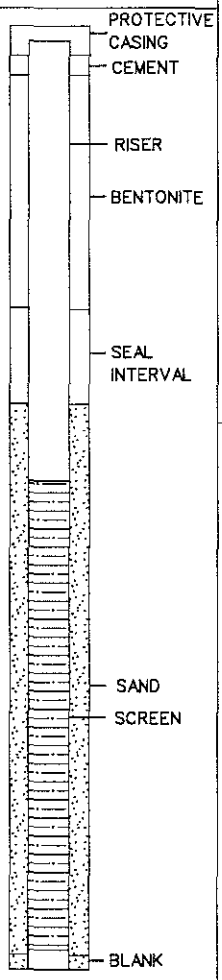
CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:
NO WATER	1135	04/24/02	0.5'
18.4'	1100	04/25/02	0.5'

ELEV. TOC: 97.65'
ELEV. GROUND: 98.11'
WELL DIAMETER: 2"
LENGTH OF SCREEN: 10'
SCREEN SLOT SIZE: 0.01'
WELL TYPE: FLUSH MIOUNT

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME	DESCRIPTION	GRAPHIC	USCS
0							AUGERED THROUGH FILL TO 2 FEET BGS.		
2		2-4	2/2	9/10 11/15			FILL, SAND AND GRAVEL WITH SLAG, BLACK, DRY.		
4		4-6	2/2	3/3 4/6					
		6-8	1.8/2	4/5 8/10			SILTY CLAY (CL), BROWN-GREY, MOTTLED, DRY-MOIST, STIFF, 15-30% MEDIUM TO COARSE SAND, 5-10% FINE GRAVEL.		CL
8		8-10	2/2	4/5 6/5					
10		10-12	2/2	4/8 9/12			GRADES TO CLAY (CH), GREY, TRACE FINE SAND.		
12		12-14	2/2	4/6 7/6					
14		14-16	2/2	5/5 11/12			CLAY (CH), GREY, MOIST-WET, STIFF-SOFT, MEDIUM-HIGH PLASTICITY, 5-10% FINE GRAVEL.		CH
16		16-18	2/2	4/5 6/8					
18		18-20	2/2	2/2 2/2					
20		20-22	2/2	3/3 4/5					
22							END OF BORING 22.0 FEET		



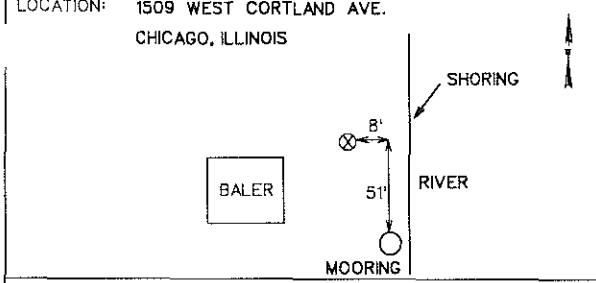
LOGGED BY: NAHID BROWN
FORM COMPLETED BY: BETHANY FRANK
CHECKED BY: NAHID BROWN
FILE NAME: MW6.DGN

CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6340

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 45C

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-7

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1200	TIME 1325
DATE 04/24/02	DATE 04/24/02

CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

ELEV. TOC: 96.71'

ELEV. GROUND: 97.13'

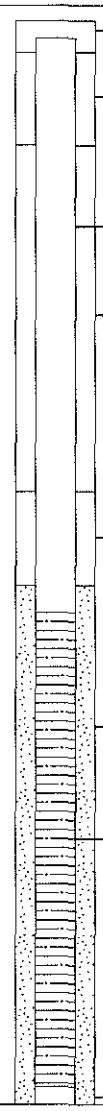
WELL DIAMETER: 2"

LENGTH OF SCREEN: 10'

SCREEN SLOT SIZE: 0.01'

WELL TYPE: FLUSH MOUNT

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	GRAPHIC	USCS
0							AUGERED THROUGH FILL TO 4 FEET BGS.		
2							FILL, SAND AND GRAVEL, CINDER, SLAG, WOOD CHIPS, WET-SATURATED.		
4		4-6	0.5/2	—					
							GRADES TO SILT AND SAND, 5-10% FINE GRAVEL, 15-30% CLAY, BLACK, WET.		
6		6-8	1.8/2	1/1 1/1					
8		8-10	0/2	—					
10		10-12	1/2	4/5 6/9					
12		12-14	2/2	2/2 3/3			SILTY CLAY (CL), BROWN-GREY MOTTLED, DRY-MOIST, STIFF, 15-30% MEDIUM-COARSE SAND, 5-10% FINE GRAVEL.		CL
14		14-16	0.1/2	2/2 2/2					
16		16-18	0.2/2	1/1 2/2			CLAY (CH), GREY, MOIST-WET, MEDIUM STIFF-SOFT, MEDIUM-HIGH PLASTICITY, <5% FINE GRAVEL.		CH
18		18-20	2/2	0.2/2					
20		20-22	2/2	3/3 4/3					
22									



END OF BORING 22.0 FEET

LOGGED BY: NAHID BROWN
FORM COMPLETED BY: BETHANY FRANK

CHECKED BY: NAHID BROWN
FILE NAME: MW7.DGN

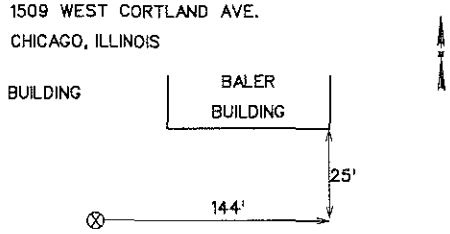
CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6340

CPIES FORM 2001-3

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 45C

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-8

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 0800	TIME 0900
DATE 04/24/02	DATE 04/24/02

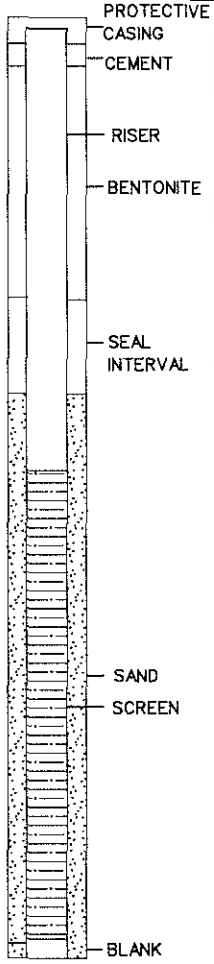
CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:
19.2	0930	04/24/02	0.5'

ELEV. TOC: 97.10'
ELEV. GROUND: 97.55'
WELL DIAMETER: 2"
LENGTH OF SCREEN: 10'
SCREEN SLOT SIZE: 0.01'
WELL TYPE: FLUSH MOUNT

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	GRAPHIC	USCS
0							AUGERED THROUGH FILL TO 2 FEET BGS.		
2		2-4	0/2	—			FILL, SAND AND GRAVEL WITH SLAG, BLACK, DRY.		
4		4-6	2/2	10/11 12/13			SILTY CLAY (CL), BROWN-GREY, MOTTLED, DRY, STIFF 5-10% FINE-MEDIUM SAND, <5% FINE-MEDIUM GRAVEL.		CL
		6-8	2/2	5/6 8/8					
8		8-10	0/2	5/8 7/9			OBSTRUCTION AT 8'		
10		10-12	2/2	5/9 10/11			CLAY (CH), GREY, MOIST-WET, MEDIUM STIFF-STIFF, 5-10% COARSE SAND, 15-30% FINE GRAVEL.		CH
12		12-14	2/2	5/5 6/7					
14		14-16	2/2	7/6 5/5					
16		16-18	2/2	5/5 6/6					
18		18-20	2/2	1/2 3/3					
20		20-22	2/2	3/4 4/5					
22		22-24	2/2	3/4 3/4					
24							END OF BORING 24.0 FEET		



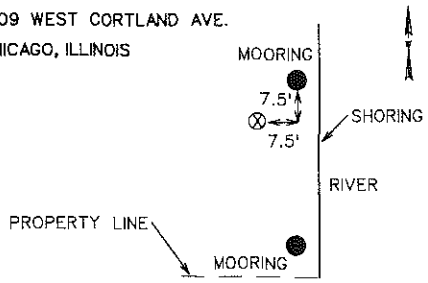
LOGGED BY: NAHID BROWN
FORM COMPLETED BY: BETHANY FRANK
CHECKED BY: NAHID BROWN
FILE NAME: MW8.DGN

CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6540

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 75

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-9

SHEET 1 OF 2

DRILLING	
START	FINISH
TIME 1100	TIME 1330
DATE 04/25/02	DATE 04/25/02

CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

ELEV. TOC: 97.68'

ELEV. GROUND: 95.86'

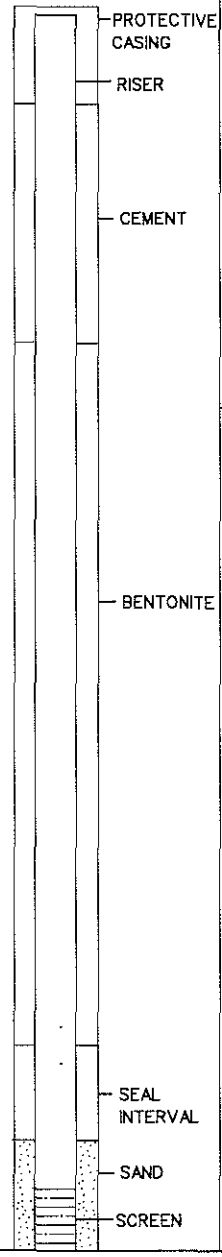
WELL DIAMETER: 2"

LENGTH OF SCREEN: 5'

SCREEN SLOT SIZE: 0.01'

WELL TYPE: STICK UP

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	GRAPHIC	USCS
+2									
0							AUGERED THROUGH FILL TO 3 FEET BGS.		
2		3-5	1.5/2	4/4 5/8			FILL, SAND AND GRAVEL, CINDER, SLAG, WOOD CHIPS, WET-SATURATED.		
6		5-7	0.5/2	9/6 4/4					
8		7-9	1/2	7/7 6/8					
10		9-11	1/2	2/4 8/5					
12		11-13	0/2	3/3 3/3					
14		13-15	0.1/2	3/3 2/2					
16		15-17	2/2	1/1 1/1			GRADES TO SILT AND SAND, 15-30% CLAY, BLACK, WET.		
18		17-19	0/2	3/2 3/3					
20		19-21	1/2	1/3 2/2					
22		21-23	2/2	2/2 3/4			GRADES TO CLAY (CH), GREY, MOIST, <5% FINE GRAVEL, 15-30% SILT.		
24		23-25	2/2	4/4 6/8			CLAY (CH), GREY, WET, HIGH PLASTICITY, STIFF, <5% FINE GRAVEL.		CH



LOGGED BY: NAHID BROWN
FORM COMPLETED BY: BETHANY FRANK

CHECKED BY: NAHID BROWN
FILE NAME: MW9.DGN

CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6240

SOIL BOREHOLE LOG (CONTINUED)

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE., CHICAGO, IL

SHEET 2 OF 2

BORING/WELL NO.: MW-9

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	GRAPHIC	USCS	(CONTINUED)
		25-27	0.1/2	12/12 12/12			SILT (MH), GREY, WET, <5% CLAY.			
26							CLAY (CH), GREY, WET, VERY STIFF, 15-30% FINE GRAVEL.		CH	
		27-28	0/2	—						BLANK
28							END OF BORING 28.0 FEET			

CHECKED BY: NAHID BROWN

PROJECT NO.: MW9.DGN

LOGGED BY: NAHID BROWN

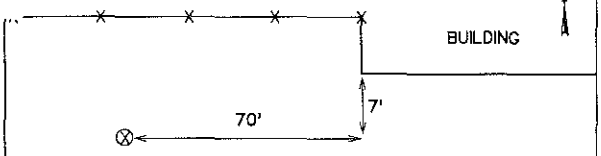
CLIENT: BETHANY FRANK

CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6340

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 75

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-10

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 0730	TIME 0930
DATE 04/25/02	DATE 04/25/02

CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

ELEV. TOC: 99.92'

ELEV GROUND: 97.42'

WELL DIAMETER: 2"

LENGTH OF SCREEN: 10'

SCREEN SLOT SIZE: 0.01'

WELL TYPE: STICK UP

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	GRAPHIC	USCS
+2									
0							AUGERED THROUGH FILL TO 3 FEET BGS.		
2							FILL, SAND AND GRAVEL WITH SLAG, BLACK, WET.		
4		3-5	2/2	8/20 6/7					
6		5-7	0.1/2	4/4 4/4					
8		7-9	2/2	10/7 7/5			SILTY CLAY (CL), BROWN-GREY, MOTTLED, MOIST, STIFF, 15-30% MEDIUM-COARSE SAND, 5-10% FINE GRAVEL.		CL
10		9-11	1.8/2	7/7 8/8					
12		11-13	2/2	7/7 7/7					
14		13-15	2/2	7/6 7/8			GRADES TO CLAY (CH), GREY, MOIST, 5-10% FINE GRAVEL.		
16		15-17	0.1/2	6/5 5/5					
18		17-19	1/2	5/6 5/5			CLAY (CH), GREY, WET, STIFF, HIGH PLASTICITY, <5% FINE GRAVEL.		CH
20		19-21	2/2	6/6 3/4					
22		21-23	2/2	—					

END OF BORING 23.0 FEET

CHECKED BY: NAHID BROWN

FILE NAME: MW10.DGN

LOGGED BY: NAHID BROWN

FORM COMPLETED BY: BETHANY FRANK

CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6340

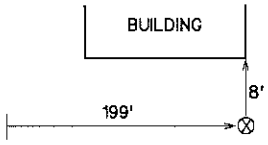
APPENDIX 3

Appendix 3. Monitoring Well Construction Reports

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 45C

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-6

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1000	TIME 1100
DATE 04/24/02	DATE 04/24/02

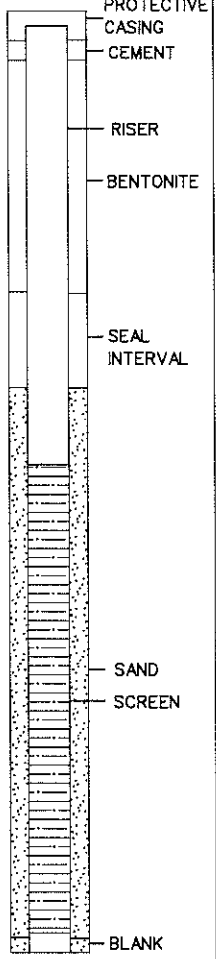
CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:
NO WATER	1135	04/24/02	0.5'
18.4'	1100	04/25/02	0.5'

ELEV. TOC: 97.65'
ELEV. GROUND: 98.11'
WELL DIAMETER: 2"
LENGTH OF SCREEN: 10'
SCREEN SLOT SIZE: 0.01'
WELL TYPE: FLUSH MIOUNT

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	GRAPHIC	USCS
0							AUGERED THROUGH FILL TO 2 FEET BGS.		
2		2-4	2/2	9/10 11/15			FILL, SAND AND GRAVEL WITH SLAG, BLACK, DRY.		
4		4-6	2/2	3/3 4/6					
		6-8	1.8/2	4/5 8/10			SILTY CLAY (CL), BROWN-GREY, MOTTLED, DRY-MOIST, STIFF, 15-30% MEDIUM TO COARSE SAND, 5-10% FINE GRAVEL.		CL
8		8-10	2/2	4/5 6/6					
10		10-12	2/2	4/8 9/12			GRADES TO CLAY (CH), GREY, TRACE FINE SAND.		
12		12-14	2/2	4/6 7/6					
14		14-16	2/2	5/5 11/12			CLAY (CH), GREY, MOIST-WET, STIFF-SOFT, MEDIUM-HIGH PLASTICITY, 5-10% FINE GRAVEL.		CH
16		16-18	2/2	4/5 6/8					
18		18-20	2/2	2/2 2/2					
20		20-22	2/2	3/3 4/5					
22							END OF BORING 22.0 FEET		



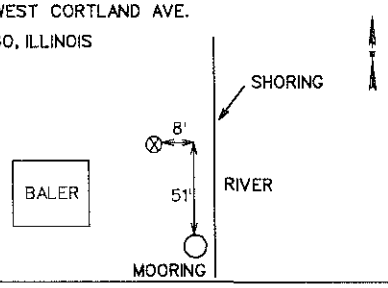
LOGGED BY: NAHID BROWN
FORM COMPLETED BY: BETHANY FRANK
CHECKED BY: NAHID BROWN
FILE NAME: MW6.DGN

CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6340

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 45C

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-7

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 1200	TIME 1325
DATE 04/24/02	DATE 04/24/02

CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

ELEV. TOC: 96.71'

ELEV. GROUND: 97.13'

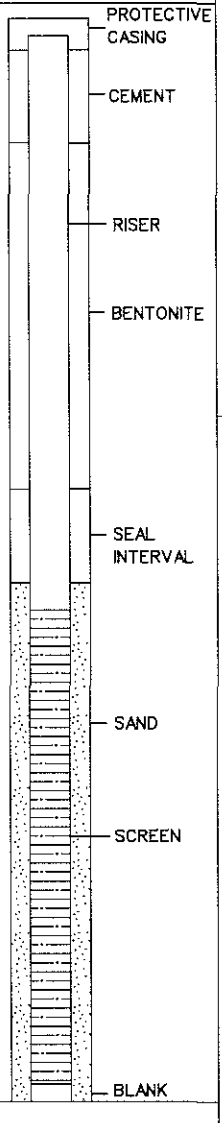
WELL DIAMETER: 2"

LENGTH OF SCREEN: 10'

SCREEN SLOT SIZE: 0.01'

WELL TYPE: FLUSH MOUNT

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	USCS
0							AUGERED THROUGH FILL TO 4 FEET BGS.	
2							FILL, SAND AND GRAVEL, CINDER, SLAG, WOOD CHIPS, WET-SATURATED.	
4		4-6	0.5/2	—				
		6-8	1.8/2	1/1 1/1			GRADES TO SILT AND SAND, 5-10% FINE GRAVEL, 15-30% CLAY, BLACK, WET.	
8		8-10	0/2	—				
10		10-12	1/2	4/5 6/9				
12		12-14	2/2	2/2 3/3			SILTY CLAY (CL), BROWN-GREY MOTTLED, DRY-MOIST, STIFF, 15-30% MEDIUM-COARSE SAND, 5-10% FINE GRAVEL.	CL
14		14-16	0.1/2	2/2 2/2				
16		16-18	0.2/2	1/1 2/2			CLAY (CH), GREY, MOIST-WET, MEDIUM STIFF-SOFT, MEDIUM-HIGH PLASTICITY, <5% FINE GRAVEL.	CH
18		18-20	2/2	0.2/2				
20		20-22	2/2	3/3 4/3				
22								



END OF BORING 22.0 FEET

CHECKED BY: NAHID BROWN

FILE NAME: MW7.DGN

LOGGED BY: NAHID BROWN

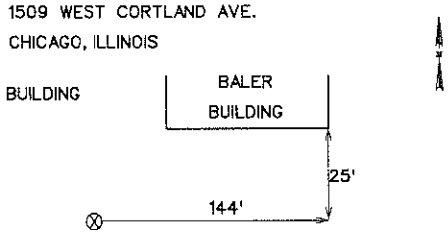
FORM COMPLETED BY: BETHANY FRANK

CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6340

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 45C

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-8

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 0800	TIME 0900
DATE 04/24/02	DATE 04/24/02

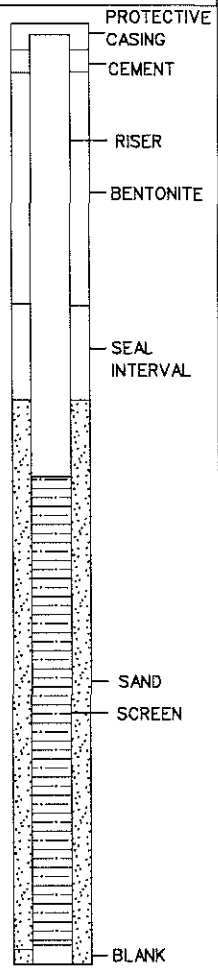
CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:
19.2	0930	04/24/02	0.5'

ELEV. TOC: 97.10'
ELEV. GROUND: 97.55'
WELL DIAMETER: 2"
LENGTH OF SCREEN: 10'
SCREEN SLOT SIZE: 0.01'
WELL TYPE: FLUSH MOUNT

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	GRAPHIC	USCS
0							AUGERED THROUGH FILL TO 2 FEET BGS.		
2		2-4	0/2	—			FILL, SAND AND GRAVEL WITH SLAG, BLACK, DRY.		
4		4-6	2/2	10/11 12/13			SILTY CLAY (CL), BROWN-GREY, MOTTLED, DRY, STIFF 5-10% FINE-MEDIUM SAND, <5% FINE-MEDIUM GRAVEL.		CL
		6-8	2/2	5/6 8/8					
8		8-10	0/2	5/8 7/9			OBSTRUCTION AT 8'		
10		10-12	2/2	5/9 10/11			CLAY (CH), GREY, MOIST-WET, MEDIUM STIFF-STIFF, 5-10% COARSE SAND, 15-30% FINE GRAVEL.		CH
12		12-14	2/2	5/5 6/7					
14		14-16	2/2	7/6 5/5					
16		16-18	2/2	5/5 6/6					
18		18-20	2/2	1/2 3/3					
20		20-22	2/2	3/4 4/5					
22		22-24	2/2	3/4 3/4					
24							END OF BORING 24.0 FEET		



LOGGED BY: NAHID BROWN
FORM COMPLETED BY: BETHANY FRANK
CHECKED BY: NAHID BROWN
FILE NAME: MW8.DGN

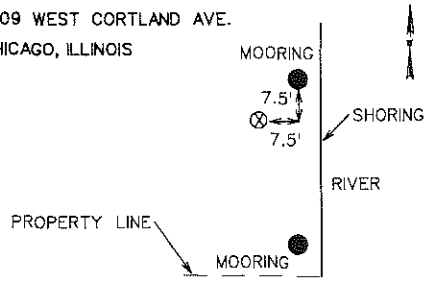
CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6340

CPIES FORM 2001-3

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 75

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-9

SHEET 1 OF 2

DRILLING	
START	FINISH
TIME 1100	TIME 1330
DATE 04/25/02	DATE 04/25/02

CHECKED BY: NAHID BROWN

FILE NAME: MW9.DGN

CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

ELEV. TOC: 97.68'

ELEV. GROUND: 95.86'

WELL DIAMETER: 2"

LENGTH OF SCREEN: 5'

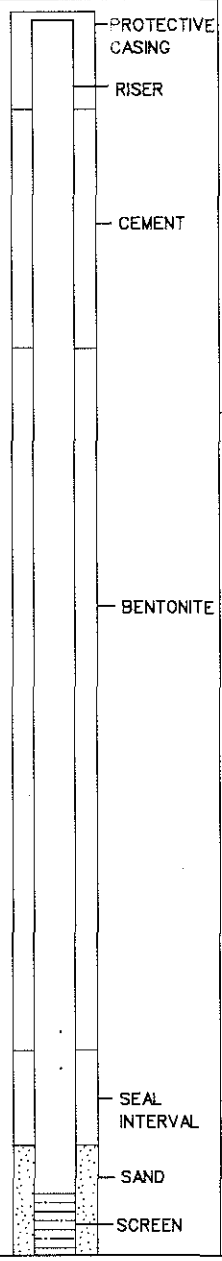
SCREEN SLOT SIZE: 0.01'

WELL TYPE: STICK UP

LOGGED BY: NAHID BROWN

FORM COMPLETED BY: BETHANY FRANK

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	GRAPHIC	USCS
+2									
0							AUGERED THROUGH FILL TO 3 FEET BGS.		
2		3-5	1.5/2	4/4 5/8			FILL, SAND AND GRAVEL, CINDER, SLAG, WOOD CHIPS, WET-SATURATED.		
6		5-7	0.5/2	9/6 4/4					
8		7-9	1/2	7/7 6/8					
10		9-11	1/2	2/4 8/5					
12		11-13	0/2	3/3 3/3					
14		13-15	0.1/2	3/3 2/2					
16		15-17	2/2	1/1 1/1			GRADES TO SILT AND SAND, 15-30% CLAY, BLACK, WET.		
18		17-19	0/2	3/2 3/3					
20		19-21	1/2	1/3 2/2					
22		21-23	2/2	2/2 3/4			GRADES TO CLAY (CH), GREY, MOIST, <5% FINE GRAVEL, 15-30% SILT.		
24		23-25	2/2	4/4 6/8			CLAY (CH), GREY, WET, HIGH PLASTICITY, STIFF, <5% FINE GRAVEL.		CH



CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD, BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6340

SOIL BOREHOLE LOG (CONTINUED)

SITE NAME: COMETCO
LOCATION: 1509 WEST CORTLAND AVE., CHICAGO, IL

SHEET 2 OF 2

BORING/WELL NO.: MW-9

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME	DESCRIPTION	GRAPHIC	USCS	(CONTINUED)
		25-27	0.1/2	12/12 12/12			SILT (MH), GREY, WET, <5% CLAY.			
26							CLAY (CH), GREY, WET, VERY STIFF, 15-30% FINE GRAVEL.		CH	
		27-28	0/2	—						
28										BLANK

END OF BORING 28.0 FEET

CHECKED BY: NAHID BROWN
PROJECT NO.: MW9.DGN

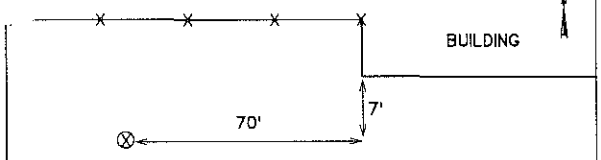
LOGGED BY: NAHID BROWN
CLIENT: BETHANY FRANK

CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6340

SOIL BOREHOLE LOG

SITE NAME: COMETCO

LOCATION: 1509 WEST CORTLAND AVE.
CHICAGO, ILLINOIS



DRILLING METHOD: HOLLOW STEM AUGER

DRILLING FLUID: NA

SAMPLING METHOD: SPLIT SPOON

RIG: CME 75

DRILLING CONTRACTOR: GEOSERVE, UNION, IL

BORING/WELL NO.: MW-10

SHEET 1 OF 1

DRILLING	
START	FINISH
TIME 0730	TIME 0930
DATE 04/25/02	DATE 04/25/02

CHECKED BY: NAHID BROWN

FILE NAME: MW10.DGN

CLIENT: METAL MANAGEMENT MIDWEST, INC.

PROJECT NO.: E05-74-06-249

WATER LEVEL:	TIME:	DATE:	CASING DEPTH:

ELEV. TOC: 99.92'

ELEV GROUND: 97.42'

WELL DIAMETER: 2"

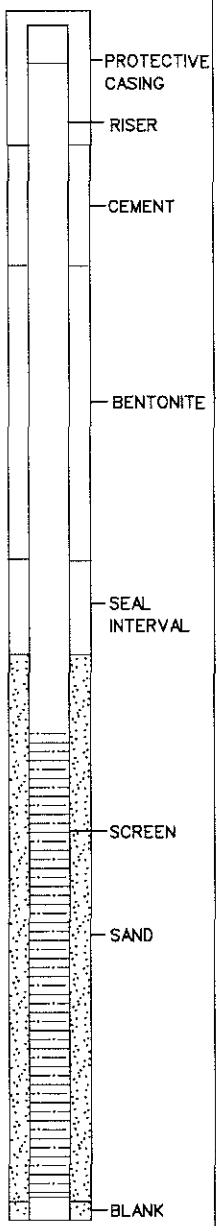
LENGTH OF SCREEN: 10'

SCREEN SLOT SIZE: 0.01'

WELL TYPE: STICK UP

DEPTH IN FEET	SAMPLE NO.	SAMPLE INTERVAL	RECOVERY	BLOWS PER 0.5 FT	HEADSPACE	SAMPLE TIME.	DESCRIPTION	GRAPHIC	USCS
+2									
0							AUGERED THROUGH FILL TO 3 FEET BGS.		
2							FILL, SAND AND GRAVEL WITH SLAG, BLACK, WET.		
4		3-5	2/2	8/20 6/7					
6		5-7	0.1/2	4/4 4/4					
8		7-9	2/2	10/7 7/5			SILTY CLAY (CL), BROWN-GREY, MOTTLED, MOIST, STIFF, 15-30% MEDIUM-COARSE SAND, 5-10% FINE GRAVEL.		CL
10		9-11	1.8/2	7/7 8/8					
12		11-13	2/2	7/7 7/7					
14		13-15	2/2	7/6 7/8			GRADES TO CLAY (CH), GREY, MOIST, 5-10% FINE GRAVEL.		
16		15-17	0.1/2	6/5 5/5					
18		17-19	1/2	5/6 5/5			CLAY (CH), GREY, WET, STIFF, HIGH PLASTICITY, <5% FINE GRAVEL.		CH
20		19-21	2/2	6/6 3/4					
22		21-23	2/2	—					

END OF BORING 23.0 FEET



LOGGED BY: NAHID BROWN

FORM COMPLETED BY: BETHANY FRANK

CPI ENVIRONMENTAL SERVICES, INC.
799 ROOSEVELT RD., BLDG. 6, STE. 110
GLEN ELLYN, IL 60137 (630) 469-6540

APPENDIX 4

Appendix 4. Laboratory Analytical Reports

An Analytical
Testing Laboratory

Prairie Analytical Systems, INCORPORATED

1210 Capital Airport Drive
Springfield, Illinois 62707
Phone: 217-753-1148
Fax: 217-753-1152
www.prairieanalytical.com

December 04, 2006

Sarah Schlichtholz
CPI ENVIRONMENTAL SERVICES, INC.
1123 Wheaton Oaks Ct.
Wheaton, IL 60187

RE: E05-74-25-591 PAS Order No.:0611197

Dear Sarah Schlichtholz:

Prairie Analytical Systems, Inc. received 49 samples on 11/22/2006 4:15:00 PM for the analyses presented in the following report.

All applicable quality control procedures met method specific acceptance criteria.

This report shall not be reproduced, except in full, without the prior written consent of Prairie Analytical Systems, Inc.

If you have any questions, please feel free to call me at (217) 753-1148.

Sincerely,

Kristen A. Potter
Project Manager

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A3-COMP
Lab Order:	0611197	**Collection Date:**	11/22/2006 8:40:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-006	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.041		mg/Kg-dry	1	11/28/2006
Aroclor 1221	U	0.041		mg/Kg-dry	1	11/28/2006
Aroclor 1232	U	0.041		mg/Kg-dry	1	11/28/2006
Aroclor 1242	U	0.041		mg/Kg-dry	1	11/28/2006
Aroclor 1248	U	0.041		mg/Kg-dry	1	11/28/2006
Aroclor 1254	U	0.041		mg/Kg-dry	1	11/28/2006
Aroclor 1260	0.104	0.041		mg/Kg-dry	1	11/28/2006
Surr: Decachlorobiphenyl	84.5	60-140		%REC	1	11/28/2006
Surr: Tetrachloro-m-xylene	75.7	60-140		%REC	1	11/28/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	20.9	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A2-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 9:15:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-007	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.035		mg/Kg-dry	1	11/28/2006
Aroclor 1221	U	0.035		mg/Kg-dry	1	11/28/2006
Aroclor 1232	U	0.035		mg/Kg-dry	1	11/28/2006
Aroclor 1242	U	0.035		mg/Kg-dry	1	11/28/2006
Aroclor 1248	U	0.035		mg/Kg-dry	1	11/28/2006
Aroclor 1254	U	0.035		mg/Kg-dry	1	11/28/2006
Aroclor 1260	0.521	0.174		mg/Kg-dry	5	11/28/2006
Surr: Decachlorobiphenyl	87.5	60-140		%REC	5	11/28/2006
Surr: Tetrachloro-m-xylene	81.2	60-140		%REC	5	11/28/2006
Surr: Decachlorobiphenyl	83.5	60-140		%REC	1	11/28/2006
Surr: Tetrachloro-m-xylene	71.2	60-140		%REC	1	11/28/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	7.37	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A2-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 9:16:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-008	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.039		mg/Kg-dry	1	11/28/2006
Aroclor 1221	U	0.039		mg/Kg-dry	1	11/28/2006
Aroclor 1232	U	0.039		mg/Kg-dry	1	11/28/2006
Aroclor 1242	U	0.039		mg/Kg-dry	1	11/28/2006
Aroclor 1248	U	0.039		mg/Kg-dry	1	11/28/2006
Aroclor 1254	U	0.039		mg/Kg-dry	1	11/28/2006
Aroclor 1260	0.071	0.039		mg/Kg-dry	1	11/28/2006
Surr: Decachlorobiphenyl	88.5	60-140		%REC	1	11/28/2006
Surr: Tetrachloro-m-xylene	74.0	60-140		%REC	1	11/28/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	17.7	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A2-3
Lab Order:	0611197	**Collection Date:**	11/22/2006 9:17:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-009	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.040		mg/Kg-dry	1	11/28/2006
Aroclor 1221	U	0.040		mg/Kg-dry	1	11/28/2006
Aroclor 1232	U	0.040		mg/Kg-dry	1	11/28/2006
Aroclor 1242	U	0.040		mg/Kg-dry	1	11/28/2006
Aroclor 1248	U	0.040		mg/Kg-dry	1	11/28/2006
Aroclor 1254	U	0.040		mg/Kg-dry	1	11/28/2006
Aroclor 1260	U	0.040		mg/Kg-dry	1	11/28/2006
Surr: Decachlorobiphenyl	87.2	60-140		%REC	1	11/28/2006
Surr: Tetrachloro-m-xylene	60.0	60-140	S	%REC	1	11/28/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	18.8	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A2-4
Lab Order:	0611197	**Collection Date:**	11/22/2006 9:18:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-010	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.048		mg/Kg-dry	1	11/28/2006
Aroclor 1221	U	0.048		mg/Kg-dry	1	11/28/2006
Aroclor 1232	U	0.048		mg/Kg-dry	1	11/28/2006
Aroclor 1242	U	0.048		mg/Kg-dry	1	11/28/2006
Aroclor 1248	U	0.048		mg/Kg-dry	1	11/28/2006
Aroclor 1254	U	0.048		mg/Kg-dry	1	11/28/2006
Aroclor 1260	U	0.048		mg/Kg-dry	1	11/28/2006
Surr: Decachlorobiphenyl	88.2	60-140		%REC	1	11/28/2006
Surr: Tetrachloro-m-xylene	74.2	60-140		%REC	1	11/28/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	32.3	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A2-5
Lab Order:	0611197	**Collection Date:**	11/22/2006 9:19:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-011	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.046		mg/Kg-dry	1	11/28/2006
Aroclor 1221	U	0.046		mg/Kg-dry	1	11/28/2006
Aroclor 1232	U	0.046		mg/Kg-dry	1	11/28/2006
Aroclor 1242	U	0.046		mg/Kg-dry	1	11/28/2006
Aroclor 1248	U	0.046		mg/Kg-dry	1	11/28/2006
Aroclor 1254	U	0.046		mg/Kg-dry	1	11/28/2006
Aroclor 1260	0.109	0.046		mg/Kg-dry	1	11/28/2006
Surr: Decachlorobiphenyl	81.2	60-140		%REC	1	11/28/2006
Surr: Tetrachloro-m-xylene	75.5	60-140		%REC	1	11/28/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	29.2	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A2-N
Lab Order:	0611197	**Collection Date:**	11/22/2006 9:21:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-012	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.051		mg/Kg-dry	1	11/28/2006
Aroclor 1221	U	0.051		mg/Kg-dry	1	11/28/2006
Aroclor 1232	U	0.051		mg/Kg-dry	1	11/28/2006
Aroclor 1242	U	0.051		mg/Kg-dry	1	11/28/2006
Aroclor 1248	U	0.051		mg/Kg-dry	1	11/28/2006
Aroclor 1254	U	0.051		mg/Kg-dry	1	11/28/2006
Aroclor 1260	U	0.051		mg/Kg-dry	1	11/28/2006
Surr: Decachlorobiphenyl	83.5	60-140		%REC	1	11/28/2006
Surr: Tetrachloro-m-xylene	81.5	60-140		%REC	1	11/28/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	34.8	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A2-COMP
Lab Order:	0611197	**Collection Date:**	11/22/2006 9:20:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-013	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1260	0.065	0.043		mg/Kg-dry	1	11/29/2006
Surr: Decachlorobiphenyl	92.5	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	95.0	60-140		%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	23.5	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A1-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 9:30:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-014	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.040		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.040		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.040		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.040		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.040		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.040		mg/Kg-dry	1	11/29/2006
Aroclor 1260	0.447	0.198		mg/Kg-dry	5	12/1/2006
Surr: Decachlorobiphenyl	75.0	60-140		%REC	5	12/1/2006
Surr: Decachlorobiphenyl	66.5	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	80.0	60-140		%REC	5	12/1/2006
Surr: Tetrachloro-m-xylene	66.0	60-140		%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	17.7	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-A1-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 9:31:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-015	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.046		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.046		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.046		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.046		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.046		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.046		mg/Kg-dry	1	11/29/2006
Aroclor 1260	0.185	0.046		mg/Kg-dry	1	11/29/2006
Surr: Decachlorobiphenyl	81.2	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	65.2	60-140		%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	28.6	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-B1-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 10:00:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-018	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1260	0.074	0.043		mg/Kg-dry	1	11/29/2006
Surr: Decachlorobiphenyl	79.7	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	73.2	60-140		%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	24.0	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-B1-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 10:01:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-019	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.043		mg/Kg-dry	1	11/29/2006
Aroclor 1260	U	0.043		mg/Kg-dry	1	11/29/2006
Surr: Decachlorobiphenyl	85.7	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	66.0	60-140		%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	24.0	0.01		wt%	1	11/29/2006 4:00:00 PM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-B2-COMP
Lab Order:	0611197	**Collection Date:**	11/22/2006 10:40:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-025	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1260	U	0.041		mg/Kg-dry	1	11/29/2006
Surr: Decachlorobiphenyl	87.7	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	69.0	60-140		%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	21.8	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-COMP-DUP
Lab Order:	0611197	**Collection Date:**	11/22/2006
Project:	E05-74-25-591		
Lab ID:	0611197-026	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.041		mg/Kg-dry	1	11/29/2006
Aroclor 1260	U	0.041		mg/Kg-dry	1	11/29/2006
Surr: Decachlorobiphenyl	91.7	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	79.0	60-140		%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	21.8	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-B3-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 11:05:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-027	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.038		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.038		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.038		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.038		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.038		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.038		mg/Kg-dry	1	11/29/2006
Aroclor 1260	0.065	0.038		mg/Kg-dry	1	11/29/2006
Surr: Decachlorobiphenyl	83.0	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	80.7	60-140		%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	15.3	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	A-B3-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 11:06:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-028	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.044		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.044		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.044		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.044		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.044		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.044		mg/Kg-dry	1	11/29/2006
Aroclor 1260	U	0.044		mg/Kg-dry	1	11/29/2006
Surr: Decachlorobiphenyl	85.0	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	73.7	60-140		%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	25.4	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-B1-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 11:35:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-029	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.033		mg/Kg-dry	1	11/29/2006
Aroclor 1221	U	0.033		mg/Kg-dry	1	11/29/2006
Aroclor 1232	U	0.033		mg/Kg-dry	1	11/29/2006
Aroclor 1242	U	0.033		mg/Kg-dry	1	11/29/2006
Aroclor 1248	U	0.033		mg/Kg-dry	1	11/29/2006
Aroclor 1254	U	0.033		mg/Kg-dry	1	11/29/2006
Aroclor 1260	U	0.033		mg/Kg-dry	1	11/29/2006
Surr: Decachlorobiphenyl	66.0	60-140		%REC	1	11/29/2006
Surr: Tetrachloro-m-xylene	48.5	60-140	S	%REC	1	11/29/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	2.55	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-B1-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 11:37:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-030	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.038		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	86.2	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	101	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	14.5	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-C1-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 11:50:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-032	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.038		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	75.7	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	55.5	60-140	S	%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	15.0	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-C1-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 11:51:00 AM
Project:	E05-74-25-591		
Lab ID:	0611197-033	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.043		mg/Kg-dry	1	12/2/2006
Aroclor 1221	U	0.043		mg/Kg-dry	1	12/2/2006
Aroclor 1232	U	0.043		mg/Kg-dry	1	12/2/2006
Aroclor 1242	U	0.043		mg/Kg-dry	1	12/2/2006
Aroclor 1248	U	0.043		mg/Kg-dry	1	12/2/2006
Aroclor 1254	U	0.043		mg/Kg-dry	1	12/2/2006
Aroclor 1260	U	0.043		mg/Kg-dry	1	12/2/2006
Surr: Decachlorobiphenyl	99.2	60-140		%REC	1	12/2/2006
Surr: Tetrachloro-m-xylene	87.2	60-140		%REC	1	12/2/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	23.6	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	Client Sample ID	B-C2-1
Lab Order:	0611197	Collection Date:	11/22/2006 12:05:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-035	Matrix:	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.039		mg/Kg-dry	1	12/2/2006
Aroclor 1221	U	0.039		mg/Kg-dry	1	12/2/2006
Aroclor 1232	U	0.039		mg/Kg-dry	1	12/2/2006
Aroclor 1242	U	0.039		mg/Kg-dry	1	12/2/2006
Aroclor 1248	U	0.039		mg/Kg-dry	1	12/2/2006
Aroclor 1254	U	0.039		mg/Kg-dry	1	12/2/2006
Aroclor 1260	U	0.039		mg/Kg-dry	1	12/2/2006
Surr: Decachlorobiphenyl	26.0	60-140	S	%REC	1	12/2/2006
Surr: Tetrachloro-m-xylene	98.0	60-140		%REC	1	12/2/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	17.4	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-C2-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 12:06:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-036	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.036		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	72.5	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	71.7	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	9.40	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-C2-COMP
Lab Order:	0611197	**Collection Date:**	11/22/2006 12:10:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-037	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.036		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	79.5	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	692	60-140	S	%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	9.64	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-C3-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 12:30:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-038	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.037		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	92.5	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	106	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	13.4	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-C3-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 12:31:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-039	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.036		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.036		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	92.2	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	76.2	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	8.66	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-B2-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 12:45:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-040	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.037		mg/Kg-dry	1	12/2/2006
Aroclor 1221	U	0.037		mg/Kg-dry	1	12/2/2006
Aroclor 1232	U	0.037		mg/Kg-dry	1	12/2/2006
Aroclor 1242	U	0.037		mg/Kg-dry	1	12/2/2006
Aroclor 1248	U	0.037		mg/Kg-dry	1	12/2/2006
Aroclor 1254	U	0.037		mg/Kg-dry	1	12/2/2006
Aroclor 1260	U	0.037		mg/Kg-dry	1	12/2/2006
Surr: Decachlorobiphenyl	116	60-140		%REC	1	12/2/2006
Surr: Tetrachloro-m-xylene	63.0	60-140		%REC	1	12/2/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	10.1	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-B2-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 12:46:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-041	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.038		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	164	60-140	S	%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	114	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	16.2	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-B2-DUP
Lab Order:	0611197	**Collection Date:**	11/22/2006
Project:	E05-74-25-591		
Lab ID:	0611197-042	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.037		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	52.2	60-140	S	%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	62.2	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	11.2	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-B2-N
Lab Order:	0611197	**Collection Date:**	11/22/2006 12:45:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-043	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.044		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	88.2	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	48.5	60-140	S	%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	24.6	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-A1-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 1:05:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-044	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.037		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.037		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	106	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	28.5	60-140	S	%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	13.9	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-A1-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 1:06:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-045	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.043		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.043		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.043		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.043		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.043		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.043		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.043		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	86.7	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	69.0	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	24.9	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-A2-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 1:20:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-046	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.034		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.034		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.034		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.034		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.034		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.034		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.034		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	63.2	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	81.5	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	4.45	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-A2-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 1:22:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-047	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.044		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.044		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	80.5	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	79.7	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	25.3	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-A3-1
Lab Order:	0611197	**Collection Date:**	11/22/2006 1:35:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-048	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.038		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.038		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	96.2	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	68.7	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	15.4	0.01		wt%	1	11/28/2006 9:30:00 AM

Prairie Analytical Systems, Inc.

Date: *04-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.	**Client Sample ID**	B-A3-2
Lab Order:	0611197	**Collection Date:**	11/22/2006 1:40:00 PM
Project:	E05-74-25-591		
Lab ID:	0611197-049	**Matrix:**	SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS ANALYSIS		**SW8082**		**(SW3550B)**		Analyst: **DPM**
Aroclor 1016	U	0.046		mg/Kg-dry	1	12/1/2006
Aroclor 1221	U	0.046		mg/Kg-dry	1	12/1/2006
Aroclor 1232	U	0.046		mg/Kg-dry	1	12/1/2006
Aroclor 1242	U	0.046		mg/Kg-dry	1	12/1/2006
Aroclor 1248	U	0.046		mg/Kg-dry	1	12/1/2006
Aroclor 1254	U	0.046		mg/Kg-dry	1	12/1/2006
Aroclor 1260	U	0.046		mg/Kg-dry	1	12/1/2006
Surr: Decachlorobiphenyl	89.7	60-140		%REC	1	12/1/2006
Surr: Tetrachloro-m-xylene	74.2	60-140		%REC	1	12/1/2006
PERCENT MOISTURE ANALYSIS		**D2216**				Analyst: **RMN**
Percent Moisture	29.0	0.01		wt%	1	11/28/2006 9:30:00 AM

Qualifiers :

B - Analyte detected in the associated method blank.

E - Value above quantitation range.

H - Analysis performed past holding time.

HT - Sample received past holding time.

J - Analyte detected between RL and MDL.

R - RPD outside acceptance limits.

S - Spike recovery outside acceptance limits.

U - Analyte not detected (i.e. less than RL or MDL).

CLIENT: CPI ENVIRONMENTAL SERVICES, INC
Work Order: 0611197
Project: E05-74-25-591

ANALYTICAL QC SUMMARY REPORT

TestCode: 8082/PCB(m)_S

Sample ID: **MB-8527** SampType: **MBLK** TestCode: **8082/PCB(m)** Units: **mg/Kg** Prep Date: **11/28/2006** Run ID: **GC1_061128B**
Client ID: **ZZZZZ** Batch ID: **8527** TestNo: **SW8082** **(SW3550B)** Analysis Date: **11/28/2006** SeqNo: **290514**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	U	0.0330									
Aroclor 1221	U	0.0330									
Aroclor 1232	U	0.0330									
Aroclor 1242	U	0.0330									
Aroclor 1248	U	0.0330									
Aroclor 1254	U	0.0330									
Aroclor 1260	U	0.0330									
Surr: Decachlorobiphenyl	0.06333	0	0.06667	0	95	60	140	0	0		
Surr: Tetrachloro-m-xylene	0.05383	0	0.06667	0	80.7	60	140	0	0		

Sample ID: **MB-8542** SampType: **MBLK** TestCode: **8082/PCB(M)** Units: **mg/Kg** Prep Date: **11/29/2006** Run ID: **GC1_061129A**
Client ID: **ZZZZZ** Batch ID: **8542** TestNo: **SW8082** **(SW3550B)** Analysis Date: **11/29/2006** SeqNo: **290791**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1221	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1232	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1242	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1248	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1254	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1260	U	0.0330	0	0	0	0	0	0	0		
Surr: Decachlorobiphenyl	0.065	0	0.06667	0	97.5	60	140	0	0		
Surr: Tetrachloro-m-xylene	0.05083	0	0.06667	0	76.2	60	140	0	0		

Sample ID: **MB-8545** SampType: **MBLK** TestCode: **8082/PCB(M)** Units: **mg/Kg** Prep Date: **11/30/2006** Run ID: **GC1_061201A**
Client ID: **ZZZZZ** Batch ID: **8545** TestNo: **SW8082** **(SW3550B)** Analysis Date: **12/1/2006** SeqNo: **290969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	U	0.0330	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: CPI ENVIRONMENTAL SERVICES, INC
Work Order: 0611197
Project: E05-74-25-591

ANALYTICAL QC SUMMARY REPORT

TestCode: 8082/PCB(m)_S

Sample ID: **MB-8545** SampType: **MBLK** TestCode: **8082/PCB(M)** Units: **mg/Kg** Prep Date: **11/30/2006** Run ID: **GC1_061201A**
Client ID: **ZZZZZ** Batch ID: **8545** TestNo: **SW8082** **(SW3550B)** Analysis Date: **12/1/2006** SeqNo: **290969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1221	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1232	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1242	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1248	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1254	U	0.0330	0	0	0	0	0	0	0		
Aroclor 1260	U	0.0330	0	0	0	0	0	0	0		
Surr: Decachlorobiphenyl	0.05717	0	0.06667	0	85.7	60	140	0	0		
Surr: Tetrachloro-m-xylene	0.04967	0	0.06667	0	74.5	60	140	0	0		

Sample ID: **LCS-8527** SampType: **LCS** TestCode: **8082/PCB(m)** Units: **mg/Kg** Prep Date: **11/28/2006** Run ID: **GC1_061128B**
Client ID: **ZZZZZ** Batch ID: **8527** TestNo: **SW8082** **(SW3550B)** Analysis Date: **11/28/2006** SeqNo: **290515**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.1706	0.0330	0.2	0	85.3	40.3	130	0	0		
Aroclor 1260	0.2051	0.0330	0.2	0	103	60	130	0	0		
Surr: Decachlorobiphenyl	0.06517	0	0.06667	0	97.7	60	140	0	0		
Surr: Tetrachloro-m-xylene	0.0525	0	0.06667	0	78.7	60	140	0	0		

Sample ID: **LCS-8542** SampType: **LCS** TestCode: **8082/PCB(M)** Units: **mg/Kg** Prep Date: **11/29/2006** Run ID: **GC1_061129A**
Client ID: **ZZZZZ** Batch ID: **8542** TestNo: **SW8082** **(SW3550B)** Analysis Date: **11/29/2006** SeqNo: **290792**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.1724	0.0330	0.2	0	86.2	40.3	130	0	0		
Aroclor 1260	0.1978	0.0330	0.2	0	98.9	60	130	0	0		
Surr: Decachlorobiphenyl	0.0655	0	0.06667	0	98.2	60	140	0	0		
Surr: Tetrachloro-m-xylene	0.04817	0	0.06667	0	72.2	60	140	0	0		

Sample ID: **LCS-8545** SampType: **LCS** TestCode: **8082/PCB(M)** Units: **mg/Kg** Prep Date: **11/30/2006** Run ID: **GC1_061201A**
Client ID: **ZZZZZ** Batch ID: **8545** TestNo: **SW8082** **(SW3550B)** Analysis Date: **12/1/2006** SeqNo: **290970**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

CLIENT: CPI ENVIRONMENTAL SERVICES, INC
Work Order: 0611197
Project: E05-74-25-591

ANALYTICAL QC SUMMARY REPORT

TestCode: 8082/PCB(m)_S

Sample ID: **LCS-8545** SampType: **LCS** TestCode: **8082/PCB(M)** Units: **mg/Kg** Prep Date: **11/30/2006** Run ID: **GC1_061201A**
Client ID: **ZZZZZ** Batch ID: **8545** TestNo: **SW8082** **(SW3550B)** Analysis Date: **12/1/2006** SeqNo: **290970**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.188	0.0330	0.2	0	94	40.3	130	0	0		
Aroclor 1260	0.1782	0.0330	0.2	0	89.1	60	130	0	0		
Surr: Decachlorobiphenyl	0.06183	0	0.06667	0	92.7	60	140	0	0		
Surr: Tetrachloro-m-xylene	0.05717	0	0.06667	0	85.7	60	140	0	0		

Sample ID: **0611197-012AMS** SampType: **MS** TestCode: **8082/PCB(M)** Units: **mg/Kg-dry** Prep Date: **11/28/2006** Run ID: **GC1_061128B**
Client ID: **A-A2-N** Batch ID: **8527** TestNo: **SW8082** **(SW3550B)** Analysis Date: **11/28/2006** SeqNo: **290523**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.1285	0.0505	0.3063	0	41.9	40.3	130	0	0		
Aroclor 1260	0.2736	0.0505	0.3063	0	89.3	60	130	0	0		
Surr: Decachlorobiphenyl	0.08782	0	0.1021	0	86	60	140	0	0		
Surr: Tetrachloro-m-xylene	0.07863	0	0.1021	0	77	60	140	0	0		

Sample ID: **0611197-012AMSD** SampType: **MSD** TestCode: **8082/PCB(M)** Units: **mg/Kg-dry** Prep Date: **11/28/2006** Run ID: **GC1_061128B**
Client ID: **A-A2-N** Batch ID: **8527** TestNo: **SW8082** **(SW3550B)** Analysis Date: **11/28/2006** SeqNo: **290524**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	0.1393	0.0497	0.3013	0	46.2	40.3	130	0	0		
Aroclor 1260	0.2596	0.0497	0.3013	0	86.2	60	130	0	0		
Surr: Decachlorobiphenyl	0.08588	0	0.1004	0	85.5	60	140	0	0		
Surr: Tetrachloro-m-xylene	0.07608	0	0.1004	0	75.7	60	140	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

CLIENT: CPI ENVIRONMENTAL SERVICES, INC
Work Order: 0611197
Project: E05-74-25-591

ANALYTICAL QC SUMMARY REPORT

TestCode: PMOIST

Sample ID: **MB-R16346** SampType: **MBLK** TestCode: **PMOIST** Units: **wt%** Prep Date: Run ID: **BALANCE2_061128A**
Client ID: **ZZZZZ** Batch ID: **R16346** TestNo: **D2216** Analysis Date: **11/28/2006** SeqNo: **290350**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	U	0.0100									

Sample ID: **MB-R16371** SampType: **MBLK** TestCode: **PMOIST** Units: **wt%** Prep Date: Run ID: **BALANCE2_061129B**
Client ID: **ZZZZZ** Batch ID: **R16371** TestNo: **D2216** Analysis Date: **11/29/2006** SeqNo: **290660**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	U	0.0100									

Sample ID: **0611197-049A DUP** SampType: **DUP** TestCode: **PMOIST** Units: **wt%** Prep Date: Run ID: **BALANCE2_061128A**
Client ID: **B-A3-2** Batch ID: **R16346** TestNo: **D2216** Analysis Date: **11/28/2006** SeqNo: **290375**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	29.2	0.0100	0	0	0	0	0	29	0.687	20	

Sample ID: **0611219-004D DUP** SampType: **DUP** TestCode: **PMOIST** Units: **wt%** Prep Date: Run ID: **BALANCE2_061129B**
Client ID: **ZZZZZ** Batch ID: **R16371** TestNo: **D2216** Analysis Date: **11/29/2006** SeqNo: **290691**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	16.1	0.0100	0	0	0	0	0	16.5	2.45	20	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

Chain of Custody Record

Central IL- 1210 Capital Airport Drive - Springfield, IL 62707-8490 - Phone (217) 753-1148 - Facsimile (217) 753-1152
Chicago Office - PO Box 2116 - Crystal Lake, IL 60039-2116 - Phone (847) 651-2604 - Facsimile (847) 458-9680
www.prairieanalytical.com

Prairie Analytical Systems, INCORPORATED

Client	CPI Environmental
Address	1123 Wheaton Oaks Ct
City, State Zip Code	Wheaton IL 60187
Phone / Facsimile No.	(630) 407-0800 / 407-0799
Client Project	E05-74-25-591
Location	Chicago, IL
Sampler(s) / Phone	Sarah Schlichtholz / (630) 710-6340
Turnaround Time	Standard [X] Rush [ ] Date Required:
P.O. # or Invoice To	
Contact Person	Sarah Schlichtholz

Analysis and/or method Requested: Total PCBS; Hold

Reporting: TACO; ___ Resid / N/A Ind/Comm; CALM; N/A A B C; RISC; N/A Resid / ___ Indust

Sample Description	Sampling Date	Sampling Time	Matrix Code[1]	Total # of Containers	Sample Comp	Sample Grab	Total PCBS	Hold	Laboratory Comments
A-A3-1	11/22/06	835	S	1		✓		✓	
A-A3-2		836				✓		✓	
A-A3-3		837				✓		✓	
A-A3-4		839				✓		✓	
A-A3-N		839				✓		✓	
A-A3-COMP		840			✓		✓		
A-A2-1		915				✓	✓		
A-A2-2		916				✓	✓		
A-A2-3		917				✓	✓		
A-A2-4		918				✓	✓		
A-A2-5		919				✓	✓		
A-A2-N		921				✓	✓		

[1] M = Matrix Code: A - Aqueous; DW - Drinking Water; GW - Groundwater; NA - Non-aqueous Liquid; S - Solids; O - Other (Specify)

Relinquished By	Date	Time	Received By	Date	Time	Method of Shipment
[illegible]	11/22/06	1615	[illegible]	11/22/06	1615	UPS
[illegible]	11/24/06	1700	[illegible]	11-25-06	8:45am	

Special Instructions:

Q/C Level: 1__ 2__ 3__ 4__

On Wet Ice: Y / N

Proper Preservation: Y / N

Temperature (°C): 5.5°C

Copies: White - Client Yellow - PAS, Inc. [illegible] - Sampler

C in of Custody Record

Central IL - 1210 Capital Airport Drive - Springfield, IL 62707-8490 - Phone (217) 753-1148 - Facsimile (217) 753-1152
Chicago Office - PO Box 2116 - Crystal Lake, IL 60039-2116 - Phone (847) 651-2604 - Facsimile (847) 458-9680
www.prairieanalytical.com

Prairie Analytical Systems, INCORPORATED

Client	CEI Environmental
Address	
City, State Zip Code	See Page 1 of 5
Phone / Facsimile No.	
Client Project	
Location	
Sampler(s) / Phone	/
Turnaround Time	Standard [ ] Rush [ ] Date Required:
P.O. # or Invoice To	
Contact Person	

Analysis and/or method Requested: Total PCBs; Hold

Reporting: TACO; ____ Resid; ____ Ind/Comm; CALM; __ A __ B __ C; RISC; ____ Resid; ____ Indust

Sample Description	Sampling Date	Sampling Time	Matrix Code[1]	Total # of Containers	Sample Comp	Sample Grab	Total PCBs	Hold	Laboratory Comments
A-A2-COMP	11/22/06	920	S	1	✓		✓		
A-A1-1		930				✓	✓		
A-A1-2		931				✓	✓		
A-A1-N		935				✓		✓	
A-A1-COMP		932			✓			✓	
A-B1-1		1000				✓	✓		
A-B1-2		1001				✓	✓		
A-B1-COMP		1005			✓			✓	
A-B2-1		1035				✓		✓	
A-B2-2		1036				✓		✓	
A-B2-3		1037				✓		✓	
A-B2-4		1038				✓		✓	

[1] M = Matrix Code: A - Aqueous; DW - Drinking Water; GW - Groundwater; NA - Non-aqueous Liquid; S - Solids; O - Other (Specify)

Relinquished By	Date	Time	Received By	Date	Time	Method of Shipment
[signature]	11/22/06	16:15	[signature]	11/22/06	1615	UPS
[signature]	11/24/06	1700	[signature]	11-25-06	8:45am	

Special Instructions:

Q/C Level: 1__ 2__ 3__ 4__

On Wet Ice: Y / N

Proper Preservation: Y / N

Temperature (°C): 5.5°C

Copies: White - Client Yellow - PAS, Inc. Pink - Sampler

Chain of Custody Record

Central IL- 1210 Capital Airport Drive - Springfield, IL 62707-8490 - Phone (217) 753-1148 - Facsimile (217) 753-1152
Chicago Office - PO Box 2116 - Crystal Lake, IL 60039-2116 - Phone (847) 651-2604 - Facsimile (847) 458-9680
www.prairieanalytical.com

Prairie Analytical Systems, INCORPORATED

Client	CPI Environmental
Address	
City, State Zip Code	
Phone / Facsimile No.	See Page 1
Client Project	of 5
Location	
Sampler(s) / Phone	
Turnaround Time	Standard [ ] Rush [ ] Date Required:
P.O. # or Invoice To	
Contact Person	

Analysis and/or method Requested: Total PCBs; Hold

Reporting: TACO ___ Resid ___ Ind/Comm; CALM __ A __ B __ C; RISC ___ Resid ___ Indust

Sample Description	Sampling Date	Sampling Time	Matrix Code[1]	Total # of Containers	Sample Comp	Sample Grab	Total PCBs	Hold	Laboratory Comments
A-B2-COMP	11/22/06	1040	S	1	✓		✓		
A-B2-DUP		—			✓		✓		
A-B3-1		1105				✓	✓		
A-B3-2		1106				✓	✓		
B-B1-1		1135				✓	✓		
B-B1-2		1137				✓	✓		
B-B1-COMP		1140			✓			✓	
B-C1-1		1150				✓	✓		
B-C1-2		1151				✓	✓		
B-C1-COMP		1152			✓			✓	
B-C2-1		1205				✓	✓		
B-C2-2		1206				✓	✓		

[1] M = Matrix Code: A - Aqueous; DW - Drinking Water; GW - Groundwater; NA - Non-aqueous Liquid; S - Solids; O - Other (Specify)

Relinquished By	Date	Time	Received By	Date	Time	Method of Shipment
[signature]	11/22/06	1615	[signature]	11/22/06	1615	UPS
[signature]	11/24/06	1700	[signature]	11-25-06	8:45	

Special Instructions:

Q/C Level 1__ 2__ 3__ 4__

On Wet Ice (Y) / N

Proper Preservation (Y) / N

Temperature (°C) 5.5 °C

Copies: White - Client Yellow - PAS, Inc. Pink - Sampler

C n of Custody Record

Central IL- 1210 Capital Airport Drive - Springfield, IL 62707-8490 - Phone (217) 753-1148 - Facsimile (217) 753-1162
Chicago Office - PO Box 2116 - Crystal Lake, IL 60039-2116 - Phone (847) 651-2604 - Facsimile (847) 458-9680
www.prairieanalytical.com

Prairie Analytical Systems, INCORPORATED

Client	CPI Environmental
Address	
City, State Zip Code	
Phone / Facsimile No.	See Page
Client Project	
Location	1 of 5
Sampler(s) / Phone	
Turnaround Time	Standard [ ] Rush [ ] Date Required:
P.O. # or Invoice To	
Contact Person	

Analysis and/or method Requested: Total PCBs; Hold

Reporting: TACO; ___ Resid; ___ Ind/Comm; CALM; __ A __ B __ C; RISC; ___ Resid; ___ Indust

Sample Description	Sampling Date	Sampling Time	Matrix Code[1]	Total # of Containers	Sample Comp	Sample Grab	Total PCBs	Hold	Laboratory Comments
B-C2-Comp	11/22/06	1210	S	1	✓		✓	NO	
B-C3-1		1230				✓	✓		
B-C3-2		1231				✓	✓		
B-B2-1		1245				✓	✓		
B-B2-2		1246				✓	✓		
B-B2-DUP		—				✓	✓		
B-B2-N		1245				✓	✓		
B-A1-1		1305				✓	✓		
B-A1-2		1306				✓	✓		
B-A2-1		1320				✓	✓		
B-A2-2		1322				✓	✓		
B-A3-1		1335				✓	✓		

[1] M = Matrix Code: A - Aqueous; DW - Drinking Water; GW - Groundwater; NA - Non-aqueous Liquid; S - Solids; O - Other (Specify)

Relinquished By	Date	Time	Received By	Date	Time	Method of Shipment
[signature]	11/22/06	1615	[signature]	11/22/06	1615	UPS
[signature]	11/24/06	1700	[signature]	11-25-06	8:45	

Special Instructions:

Q/C Level: 1__ 2__ 3__ 4__

On Wet Ice: Y / N

Proper Preservation: Y / N

Temperature (°C): 5.5 °C

Copies: White - Client Yellow - PAS, Inc. Pink - Sampler

Chain of Custody Record

Central IL- 1210 Capital Airport Drive - Springfield, IL 62707-8490 - Phone (217) 753-1148 - Facsimile (217) 753-1152
Chicago Office - PO Box 2116 - Crystal Lake, IL 60039-2116 - Phone (847) 651-2604 - Facsimile (847) 458-9680
www.prairieanalytical.com

Prairie Analytical Systems, INCORPORATED

Client	CPI Environmental	Analysis and/or method Requested	Reporting
Address			TACO
City, State Zip Code	See Page 1 of 5		___ Resid
Phone / Facsimile No.			___ Ind/Comm
Client Project			CALM
Location			__ A __ B __ C
Sampler(s) / Phone			
Turnaround Time	Standard [ ] Rush [ ] Date Required:		RISC
P.O. # or Invoice To			___ Resid
Contact Person			___ Indust

Analysis and/or method Requested: Total PCBs

Sample Description	Sampling Date	Sampling Time	Matrix Code[1]	Total # of Containers	Sample Comp	Sample Grab	Total PCBs								Laboratory Comments
B-A3-2	11/22	1340	S	1		✓	✓								

[1] M = Matrix Code: A - Aqueous; DW - Drinking Water; GW - Groundwater; NA - Non-aqueous Liquid; S - Solids; O - Other (Specify)

Relinquished By	Date	Time	Received By	Date	Time	Method of Shipment
[signature]	11/22/06	16:15	[signature]	11/22/06	1615	UPS
[signature]	11/24/06	1700	[signature]	11-25-06	8:45am	

Special Instructions:	Q/C Level	On Wet Ice	Temperature (°C)
	1__ 2__ 3__ 4__	Y / N	5.5°C
		Proper Preservation Y / N	

Copies: White - Client Yellow - PAS, Inc. Pink - Sampler

Prairie Analytical Systems, Inc. Date: *07-Dec-06*

CLIENT:	CPI ENVIRONMENTAL SERVICES, INC.
Project:	E05-74-25-591
Lab Order:	0611197

CASE NARRATIVE

Samples along with QA/QC samples presented in this report were processed through an acid cleanup (method SW846 3665A) due to matrix interferences. Without cleanup, the samples would have been reported with elevated reporting levels.

Samples B-B2-1, B-B2-2, A-A2-1 and A-A2-2 were re-analyzed for PCB by method SW846 8082 with no cleanup. The samples had to be analyzed at a dilution because of physical matrix interference before injection on the instrument. B-B2-2 and A-A2-2 were analyzed at 10 X dilution. B-B2-1 and A-A2-1 were analyzed at 20X dilution. No PCBs were detected at these dilutions and in presence of matrix interferences.

First Environmental Laboratories, Inc.

IL ELAP / NELAC Accreditation # 100292

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

February 1, 2007

Ms. Sarah Schlichtholz
CPI ENVIRONMENTALS SERVICES, INC.
1123 Wheaton Oaks Court
Wheaton IL 60187

Dear Ms. Schlichtholz:

Attached is the additional QC information requested for QC Data Package for lab samples 17996 & 17989. The following is included:

- Initial Calibration report for Aroclor 1016/1260
- Continuing Calibration report for Aroclor 1016/1260
- Single Point Calibration for Aroclor 1242
- Organic Prep Log
- Injection Log

Should you have any questions regarding any of the enclosed information or need additional information, please contact me at (630) 778-1200.

Sincerely,

Lorrie Franklin

Lorrie Franklin
Director of Quality Assurance

Response Factor Report GC Instru
Initial Calibration

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000

Calibration Files
1 =D23261.D 2 =D23262.D 3 =D23263.D
4 =D23264.D 5 =D23265.D 6 =D23266.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	IA,B1-Bromo-2-nitrobenzen	----------	----------	----------	ISTD	----------	----------	----------		
2)	SA Tetrachloro-m-xylen	0.965	0.949	0.951	0.971	0.965	0.967	0.960	0	1.00
3)	SA Decachlorobiphenyl		0.603	0.599		0.719	0.786	0.677	0	13.52
4)	L1 Aroclor-1016{1}	0.032	0.026	0.024	0.021	0.020	0.019	0.023	0	23.21
5)	L1 Aroclor-1016{2}	0.074	0.061	0.055	0.049	0.045	0.041	0.052	0	24.92
6)	L1 Aroclor-1016{3}	0.017	0.016	0.014	0.014	0.013	0.012	0.014	0	13.99
7)	L1 Aroclor-1016{4}		0.030	0.030	0.029	0.026	0.024	0.027	0	11.74
8)	L1 Aroclor-1016{5}		0.011	0.011	0.011	0.010	0.009	0.010	0	11.61
9)	L2 Aroclor-1221{1}							0.000	0	-1.00
10)	L2 Aroclor-1221{2}							0.000	0	-1.00
11)	L2 Aroclor-1221{3}							0.000	0	-1.00
12)	L2 Aroclor-1221{4}							0.000	0	-1.00
13)	L2 Aroclor-1221{5}							0.000	0	-1.00
14)	L3 Aroclor-1232{1}							0.000	0	-1.00
15)	L3 Aroclor-1232{2}							0.000	0	-1.00
16)	L3 Aroclor-1232{3}							0.000	0	-1.00
17)	L3 Aroclor-1232{4}							0.000	0	-1.00
18)	L3 Aroclor-1232{5}							0.000	0	-1.00
19)	L4 Aroclor-1242{1}							0.000	0	-1.00
20)	L4 Aroclor-1242{2}							0.000	0	-1.00
21)	L4 Aroclor-1242{3}							0.000	0	-1.00
22)	L4 Aroclor-1242{4}							0.000	0	-1.00
23)	L4 Aroclor-1242{5}							0.000	0	-1.00
24)	L5 Aroclor-1248{1}							0.000	0	-1.00
25)	L5 Aroclor-1248{2}							0.000	0	-1.00
26)	L5 Aroclor-1248{3}							0.000	0	-1.00
27)	L5 Aroclor-1248{4}							0.000	0	-1.00
28)	L5 Aroclor-1248{5}							0.000	0	-1.00
29)	L6 Aroclor-1254{1}							0.000	0	-1.00
30)	L6 Aroclor-1254{2}							0.000	0	-1.00
31)	L6 Aroclor-1254{3}							0.000	0	-1.00
32)	L6 Aroclor-1254{4}							0.000	0	-1.00
33)	L6 Aroclor-1254{5}							0.000	0	-1.00
34)	L7 Aroclor-1260{1}		0.053	0.047	0.052	0.043	0.040	0.046	0	11.73
35)	L7 Aroclor-1260{2}		0.052	0.045	0.053	0.043	0.041	0.047	0	10.78
36)	L7 Aroclor-1260{3}		0.036	0.033	0.044	0.034	0.033	0.036	0	11.53
37)	L7 Aroclor-1260{4}		0.025	0.023	0.032	0.025	0.024	0.026	0	12.60
38)	L7 Aroclor-1260{5}		0.061	0.057	0.086	0.064	0.063	0.068	0	16.51

Signal #2 Calibration Files
1 =D23261.D 2 =D23262.D 3 =D23263.D
4 =D23264.D 5 =D23265.D 6 =D23266.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	IA,B1-Bromo-2-nitrobenzen	----------	----------	----------	ISTD	----------	----------	----------		
2)	SA Tetrachloro-m-xylen	0.686	0.737	0.710	0.727	0.756	0.803	0.732	0	5.23
3)	SA Decachlorobiphenyl	0.331	0.345	0.359		0.332		0.352	0	7.51
4)	L1 Aroclor-1016{1}	0.021	0.022	0.019	0.017	0.016	0.016	0.018	0	16.48

5)	L1	Aroclor-1016{2}	0.033	0.031	0.028	0.024	0.022	0.020	0.026	0	19.76
6)	L1	Aroclor-1016{3}	0.036	0.039	0.033	0.028	0.026	0.025	0.031	0	18.37
7)	L1	Aroclor-1016{4}	0.026		0.024	0.020	0.020	0.019	0.021	0	18.31
8)	L1	Aroclor-1016{5}	0.029	0.031	0.028	0.026	0.023	0.024	0.026	0	16.33
9)	L2	Aroclor-1221{1}							0.000	0	-1.00
10)	L2	Aroclor-1221{2}							0.000	0	-1.00
11)	L2	Aroclor-1221{3}							0.000	0	-1.00
12)	L2	Aroclor-1221{4}							0.000	0	-1.00
13)	L2	Aroclor-1221{5}							0.000	0	-1.00
14)	L3	Aroclor-1232{1}							0.000	0	-1.00
15)	L3	Aroclor-1232{2}							0.000	0	-1.00
16)	L3	Aroclor-1232{3}							0.000	0	-1.00
17)	L3	Aroclor-1232{4}							0.000	0	-1.00
18)	L3	Aroclor-1232{5}							0.000	0	-1.00
19)	L4	Aroclor-1242{1}							0.000	0	-1.00
20)	L4	Aroclor-1242{2}							0.000	0	-1.00
21)	L4	Aroclor-1242{3}							0.000	0	-1.00
22)	L4	Aroclor-1242{4}							0.000	0	-1.00
23)	L4	Aroclor-1242{5}							0.000	0	-1.00
24)	L5	Aroclor-1248{1}							0.000	0	-1.00
25)	L5	Aroclor-1248{2}							0.000	0	-1.00
26)	L5	Aroclor-1248{3}							0.000	0	-1.00
27)	L5	Aroclor-1248{4}							0.000	0	-1.00
28)	L5	Aroclor-1248{5}							0.000	0	-1.00
29)	L6	Aroclor-1254{1}							0.000	0	-1.00
30)	L6	Aroclor-1254{2}							0.000	0	-1.00
31)	L6	Aroclor-1254{3}							0.000	0	-1.00
32)	L6	Aroclor-1254{4}							0.000	0	-1.00
33)	L6	Aroclor-1254{5}							0.000	0	-1.00
34)	L7	Aroclor-1260{1}	0.060	0.059	0.054	0.053	0.045	0.047	0.051	0	14.98
35)	L7	Aroclor-1260{2}	0.052	0.050	0.047	0.047	0.043	0.045	0.046	0	9.17
36)	L7	Aroclor-1260{3}	0.050	0.051	0.044	0.041	0.033	0.039	0.041	0	18.60
37)	L7	Aroclor-1260{4}	0.069	0.064	0.065	0.070	0.055		0.063	0	9.32
8)	L7	Aroclor-1260{5}	0.027	0.027	0.028	0.029	0.021		0.026	0	12.36

(#) = Out of Range ### Number of calibration levels exceeded format ###

D_PCB4.M Wed Jan 31 15:24:30 2007 RICK

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\CPIDATA\D23696.D\ECD1A.CH Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\CPIDATA\D23696.D\ECD2B.CH
Acq On : 10-24-00 3:50:33 PM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile Signal #1: DPCB1.E IntFile Signal #2: DPCB2.E

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)	
1	IA,	B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	106	-0.04	
2	SA	Tetrachloro-m-xylene	50.000	47.273	5.5	99	-0.07	
3	SA	Decachlorobiphenyl	50.000	67.814	-35.6#	0	-0.19	
4	L1	Aroclor-1016{1}	500.000	458.330	8.3	94	-0.08	
5	L1	Aroclor-1016{2}	500.000	465.499	6.9	93	-0.08	
6	L1	Aroclor-1016{3} Avg 458.798 / 500.000 = -41.502 -8% D	500.000	429.017	14.2	95	-0.08	OK
7	L1	Aroclor-1016{4}	500.000	479.088	4.2	94	-0.09	
8	L1	Aroclor-1016{5}	500.000	460.557	7.9	90	-0.09	
34	L7	Aroclor-1260{1}	500.000	492.409	1.5	93	-0.09	
35	L7	Aroclor-1260{2}	500.000	572.788	-14.6	107	-0.09	
36	L7	Aroclor-1260{3} 565.141 / 500.000 = 65.141 13% D	500.000	573.933	-14.8	101	-0.09	OK
37	L7	Aroclor-1260{4}	500.000	578.673	-15.7#	101	-0.09	
38	L7	Aroclor-1260{5}	500.000	607.904	-21.6#	103	-0.09	

Signal #2

1	IA,	B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	112	-0.04
2	SA	Tetrachloro-m-xylene	50.000	56.288	-12.6	127	-0.07
3	SA	Decachlorobiphenyl	50.000	99.840	-99.7#	0	-0.12
4	L1	Aroclor-1016{1}	500.000	496.322	0.7	116	-0.08
5	L1	Aroclor-1016{2}	500.000	447.798	10.4	111	-0.09
6	L1	Aroclor-1016{3}	500.000	443.048	11.4	112	-0.09
7	L1	Aroclor-1016{4}	500.000	466.059	6.8	107	-0.09
8	L1	Aroclor-1016{5}	500.000	478.841	4.2	106	-0.10
34	L7	Aroclor-1260{1}	500.000	552.060	-10.4	120	-0.10
35	L7	Aroclor-1260{2}	500.000	671.112	-34.2#	149	-0.10
36	L7	Aroclor-1260{3}	500.000	561.655	-12.3	127	-0.10
37	L7	Aroclor-1260{4}	500.000	812.189	-62.4#	165	-0.10
38	L7	Aroclor-1260{5}	500.000	834.742	-66.9#	166	-0.10

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\CPIDATA\D23719.D\ECD1A.CH Vial: 2
Acq On : 10-25-00 3:27:59 AM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile : DPCB1.E

Data File : C:\HPCHEM\1\DATA\CPIDATA\D23719.D\ECD2B.CH Vial: 2
Acq On : 10-25-00 3:27:58 AM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile : DPCB2.E

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IA,	B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	106	-0.03
2	SA	Tetrachloro-m-xylene	50.000	48.449	3.1	102	-0.05
3	SA	Decachlorobiphenyl	50.000	58.173	-16.3#	0	-0.14
4	L1	Aroclor-1016{1}	500.000	445.478	10.9	91	-0.06
5	L1	Aroclor-1016{2}	500.000	436.357	12.7	88	-0.06
6	L1	Aroclor-1016{3}	500.000	421.467	15.7#	93	-0.07 OK
7	L1	Aroclor-1016{4}	500.000	450.223	10.0	89	-0.07
8	L1	Aroclor-1016{5}	500.000	478.391	4.3	94	-0.07
4	L7	Aroclor-1260{1}	500.000	484.838	3.0	92	-0.07
35	L7	Aroclor-1260{2}	500.000	583.350	-16.7#	109	-0.07
36	L7	Aroclor-1260{3}	500.000	518.360	-3.7	91	-0.07
37	L7	Aroclor-1260{4}	500.000	531.648	-6.3	93	-0.07 OK
38	L7	Aroclor-1260{5}	500.000	575.762	-15.2#	98	-0.07

Avg 446.383 / -500.000 / -53.617 -11% D

538.792 / -500.000 / 38.792 8% D

Signal #2

1	IA,	B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	66	-0.03
2	SA	Tetrachloro-m-xylene	50.000	63.760	-27.5#	85	-0.05
3	SA	Decachlorobiphenyl	50.000	54.413	-8.8	0	-0.09
4	L1	Aroclor-1016{1}	500.000	537.358	-7.5	74	-0.07
5	L1	Aroclor-1016{2}	500.000	505.398	-1.1	74	-0.07
6	L1	Aroclor-1016{3}	500.000	561.883	-12.4	84	-0.07
7	L1	Aroclor-1016{4}	500.000	582.129	-16.4#	79	-0.07
8	L1	Aroclor-1016{5}	500.000	517.847	-3.6	67	-0.08
34	L7	Aroclor-1260{1}	500.000	496.677	0.7	64	-0.07
35	L7	Aroclor-1260{2}	500.000	422.989	15.4#	55	-0.07
36	L7	Aroclor-1260{3}	500.000	394.894	21.0#	53	-0.07
37	L7	Aroclor-1260{4}	500.000	421.683	15.7#	50	-0.07
38	L7	Aroclor-1260{5}	500.000	469.363	6.1	55	-0.07

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\CPIDATA\D23733.D\ECD1A.CH Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\CPIDATA\D23733.D\ECD2B.CH
Acq On : 10-25-00 10:37:34 AM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile Signal #1: DPCB1.E IntFile Signal #2: DPCB2.E

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)	
1	IA,	B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	79	-0.06	
2	SA	Tetrachloro-m-xylene	50.000	51.182	-2.4	80	-0.09	
3	SA	Decachlorobiphenyl	50.000	62.616	-25.2#	0	-0.22	
4	L1	Aroclor-1016{1}	500.000	465.476	6.9	71	-0.09	
5	L1	Aroclor-1016{2}	500.000	473.369	5.3	71	-0.09	
6	L1	Aroclor-1016{3}	500.000	438.863	12.2	72	-0.10	OK
7	L1	Aroclor-1016{4}	500.000	477.936	4.4	70	-0.10	
8	L1	Aroclor-1016{5}	500.000	453.986	9.2	66	-0.10	
34	L7	Aroclor-1260{1}	500.000	449.338	10.1	63	-0.10	
35	L7	Aroclor-1260{2}	500.000	520.030	-4.0	73	-0.10	
36	L7	Aroclor-1260{3}	500.000	453.628	9.3	59	-0.10	OK
37	L7	Aroclor-1260{4}	500.000	494.502	1.1	64	-0.10	
38	L7	Aroclor-1260{5}	500.000	504.845	-1.0	64	-0.10	

Signal #2

1	IA,	B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	55	-0.05
2	SA	Tetrachloro-m-xylene	50.000	54.521	-9.0	61	-0.08
3	SA	Decachlorobiphenyl	50.000	54.189	-8.4	0	-0.13
4	L1	Aroclor-1016{1}	500.000	513.162	-2.6	59	-0.10
5	L1	Aroclor-1016{2}	500.000	509.669	-1.9	62	-0.10
6	L1	Aroclor-1016{3}	500.000	490.226	2.0	61	-0.10
7	L1	Aroclor-1016{4}	500.000	505.542	-1.1	57	-0.11
8	L1	Aroclor-1016{5}	500.000	490.034	2.0	53	-0.11
34	L7	Aroclor-1260{1}	500.000	489.765	2.0	52	-0.10
35	L7	Aroclor-1260{2}	500.000	465.232	7.0	51	-0.10
36	L7	Aroclor-1260{3}	500.000	319.690	36.1#	36	-0.10
37	L7	Aroclor-1260{4}	500.000	387.284	22.5#	39	-0.10
38	L7	Aroclor-1260{5}	500.000	430.493	13.9	42	-0.11

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\CPIDATA\D23746.D\ECD1A.CH Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\CPIDATA\D23746.D\ECD2B.CH
Acq On : 10-25-00 6:08:48 PM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile Signal #1: DPCB1.E IntFile Signal #2: DPCB2.E

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)	
1	IA,	B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	108	-0.08	
2	SA	Tetrachloro-m-xylene	50.000	48.784	2.4	104	-0.12	
3	SA	Decachlorobiphenyl	50.000	60.231	-20.5#	0	-0.28	
4	L1	Aroclor-1016{1}	500.000	450.712	9.9	94	-0.12	
5	L1	Aroclor-1016{2}	500.000	482.489	3.5	98	-0.12	
6	L1	Aroclor-1016{3}	500.000	453.201	9.4	102	-0.13	OK
7	L1	Aroclor-1016{4}	500.000	473.417	5.3	95	-0.13	
8	L1	Aroclor-1016{5}	500.000	452.425	9.5	90	-0.13	
34	L7	Aroclor-1260{1}	500.000	478.970	4.2	92	-0.13	
35	L7	Aroclor-1260{2}	500.000	533.691	-6.7	102	-0.13	
36	L7	Aroclor-1260{3}	500.000	451.456	9.7	81	-0.13	OK
37	L7	Aroclor-1260{4}	500.000	496.625	0.7	88	-0.13	
38	L7	Aroclor-1260{5}	500.000	497.128	0.6	86	-0.13	

Signal #2

40	IA,	B1-Bromo-2-nitrobenzene #2	50.000	50.000	0.0	87	-0.06
41	SA	Tetrachloro-m-xylene #2	50.000	56.904	-13.8	100	-0.09
42	SA	Decachlorobiphenyl #2	50.000	55.575	-11.2	0	-0.14
43	L1	Aroclor-1016{1} #2	500.000	495.454	0.9	90	-0.11
44	L1	Aroclor-1016{2} #2	500.000	460.555	7.9	89	-0.11
45	L1	Aroclor-1016{3} #2	500.000	437.812	12.4	86	-0.11
46	L1	Aroclor-1016{4} #2	500.000	470.310	5.9	84	-0.11
47	L1	Aroclor-1016{5} #2	500.000	466.688	6.7	80	-0.12
73	L7	Aroclor-1260{1} #2	500.000	473.152	5.4	80	-0.11
74	L7	Aroclor-1260{2} #2	500.000	526.991	-5.4	91	-0.11
75	L7	Aroclor-1260{3} #2	500.000	386.508	22.7#	68	-0.11
76	L7	Aroclor-1260{4} #2	500.000	444.182	11.2	70	-0.11
77	L7	Aroclor-1260{5} #2	500.000	504.485	-0.9	78	-0.11

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\CPIDATA\D23734.D\ECD1A.CH Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\CPIDATA\D23734.D\ECD2B.CH
Acq On : 10-25-00 11:05:43 AM Operator: RAH
Sample : AR1242 500ppb Single pt. calibration Inst : GC Instru
Misc : #3444, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile Signal #1: DPCB1.E IntFile Signal #2: DPCB2.E

Method : C:\HPCHEM\1\METHODS\D_1242.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Thu Jun 29 10:20:35 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IA,B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	96	0.06
2	SA Tetrachloro-m-xylene	50.000	48.763	2.5	100	0.08
3	SA Decachlorobiphenyl	50.000	48.763	2.5	98	0.18
4	L4 Aroclor-1242{1}	500.000	467.673	6.5	84	0.07
5	L4 Aroclor-1242{2}	500.000	487.632	2.5	85	0.08
6	L4 Aroclor-1242{3}	500.000	487.632	2.5	95	0.09
7	L4 Aroclor-1242{4}	500.000	487.632	2.5	89	0.09
8	L4 Aroclor-1242{5}	500.000	487.632	2.5	83	0.10

Signal #2

1	IA,B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	707	-0.10
2	SA Tetrachloro-m-xylene	50.000	46.702	6.6	698	-0.17
3	SA Decachlorobiphenyl	50.000	46.702	6.6	387	-0.28
4	L4 Aroclor-1242{1}	500.000	664.252	-32.9#	699	-0.19
5	L4 Aroclor-1242{2}	500.000	605.392	-21.1#	744	-0.21
6	L4 Aroclor-1242{3}	500.000	546.418	-9.3	621	-0.20
7	L4 Aroclor-1242{4}	500.000	497.297	0.5	705	-0.21
8	L4 Aroclor-1242{5}	500.000	448.017	10.4	547	-0.21

(#) = Out of Range SPCC's out = 0 CCC's out = 0

.rst
Environmental
Laboratories

O. . .nic Prep
Sonic Sep F Sox
3550C 3510C 3540C

B. 8270C
PNA 8270C
TPH 8015B
PEST/PCB 8081C/8082

Extn Date	Fraction	Split?	Sample ID	Initial Wt/ Volume	Surrogate Amt/ID	Spike Amt/ID	Comments	Final Vol	ISTD ID
10/23/00	BNA SOX	N	BLANK	30.00	1.0ml 4119			1mL	25uL4190
10/23/00	BNA SOX	N	LCS	30.00	1.0ml 4119	1.0 ml4120		1mL	25uL4190
10/23/00	BNA SOX	N	ms17994	30.00	1.0ml 4119	1.0 ml4120		2mL	25uL4190
10/23/00	BNA SOX	N	msd17994	30.01	1.0ml 4119	1.0 ml4120		3mL	25uL4190
10/23/00	BNA SOX	N	17988	30.00	1.0ml 4119		CPI	5mL	25uL4190
10/23/00	BNA SOX	N	17990	30.15	1.0ml 4119		CPI	5mL	25uL4190
10/23/00	BNA SOX	N	17994	30.08	1.0ml 4119		CPI	3mL	25uL4190
10/23/00	BNA SOX	N	17995	30.45	1.0ml 4119		CPI	5mL	25uL4190
10/23/00	BNA SOX	N	17997	30.30	1.0ml 4119		CPI	3mL	25uL4190
10/23/00	PCB SOX	N	BLANK	30.00	100uL 4176			10mL	25uL4177/1mL
10/23/00	PCB SOX	N	LCS	30.00	100uL 4176	100uL 4118		10mL	25uL4177/1mL
10/23/00	PCB SOX	N	ms18256	30.12	100uL 4176	100uL 4118		10mL	25uL4177/1mL
10/23/00	PCB SOX	N	msd18256	30.19	100uL 4176	100uL 4118		10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17988	30.16	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17989	30.02	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17990	30.12	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17991	30.05	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17993	30.00	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17994	30.26	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17995	30.25	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17996	30.32	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17997	30.10	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17998	30.04	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17999	30.08	100uL 4176		CPI	10mL	25uL4177/1mL

Analyst's Initials_____

Extended QA_____

Revised 05 May 00:

Tied QA meets 24 hour batch criteria; See page ____

Page #_____

Injection Log

Directory: d:\0010\001024

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	3	D23694.d	1.	ENDRIN/DDT 100ppb	#3448, 25ul#4177/1mL	24 Oct 2000 10:26
2	4	D23695.d	1.	PEST CAL STD MIX AB	#4091, #3471surr,...	24 Oct 2000 15:22
3	2	D23696.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	24 Oct 2000 15:50
4	5	D23697.d	1.	AR1242 500ppb	#3444, #3471surr,...	24 Oct 2000 17:09
5	6	D23698.d	1.	AR1248 500ppb	#3445, #3471surr,...	24 Oct 2000 17:41
6	7	D23699.d	1.	AR1221/1254 500ppb	#3442, #3471surr,...	24 Oct 2000 18:09
7	8	D23700.d	1.	BLANK PCBSOX 10/23/00	30.00g/10mL, 25ul...	24 Oct 2000 18:36
8	9	D23701.d	1.	LCS PCBSOX 10/23/00	30.00g/10mL, 25ul...	24 Oct 2000 19:04
9	10	D23702.d	1.	17988DL CPI PCBSOX 10/23/00	30.16g/100mL, 25u...	24 Oct 2000 19:32
10	11	D23703.d	1.	17989 CPI PCBSOX 10/23/00	30.02g/10mL, 25ul...	24 Oct 2000 20:00
11	12	D23704.d	1.	17990 CPI PCBSOX 10/23/00	30.12g/10mL, 25ul...	24 Oct 2000 20:28
12	13	D23705.d	1.	17991 CPI PCBSOX 10/23/00	30.05g/10mL, 25ul...	24 Oct 2000 20:56
13	14	D23706.d	1.	17993DL CPI PCBSOX 10/23/00	30.00g/100mL, 25u...	24 Oct 2000 21:24
14	15	D23707.d	1.	17994 CPI PCBSOX 10/23/00	30.26g/10mL, 25ul...	24 Oct 2000 21:52
15	16	D23708.d	1.	17995 CPI PCBSOX 10/23/00	30.25g/10mL, 25ul...	24 Oct 2000 22:20
16	17	D23709.d	1.	17996 CPI PCBSOX 10/23/00	30.32g/10mL, 25ul...	24 Oct 2000 22:48
17	18	D23710.d	1.	17997 CPI PCBSOX 10/23/00	30.10g/10mL, 25ul...	24 Oct 2000 23:16
18	19	D23711.d	1.	17998DL CPI PCBSOX 10/23/00	30.04g/10mL, 25ul...	24 Oct 2000 23:44
19	20	D23712.d	1.	17999DL CPI PCBSOX 10/23/00	30.08g/100mL, 25u...	25 Oct 2000 00:12
20	21	D23713.d	1.	18246 ROUX PCBSOX 10/23/00	30.07g/10mL, 25ul...	25 Oct 2000 00:40
21	22	D23714.d	1.	18247DL ROUX PCBSOX 10/23/00	30.25g/100mL, 25u...	25 Oct 2000 01:07
22	23	D23715.d	1.	18248 ROUX PCBSOX 10/23/00	30.14g/10mL, 25ul...	25 Oct 2000 01:36
23	24	D23716.d	1.	18249 ROUX PCBSOX 10/23/00	30.13g/10mL, 25ul...	25 Oct 2000 02:04
24	25	D23717.d	1.	18250 ROUX PCBSOX 10/23/00	30.15g/10mL, 25ul...	25 Oct 2000 02:32
25	26	D23718.d	1.	18251 ROUX PCBSOX 10/23/00	30.07g/10mL, 25ul...	25 Oct 2000 03:00
26	2	D23719.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 03:27
27	5	D23720.d	1.	AR1242 500ppb	#3444, #3471surr,...	25 Oct 2000 03:55
28	6	D23721.d	1.	AR1248 500ppb	#3445, #3471surr,...	25 Oct 2000 04:24
29	7	D23722.d	1.	AR1221/1254 500ppb	#3442, #3471surr,...	25 Oct 2000 04:52
30	27	D23723.d	1.	18252 ROUX PCBSOX 10/23/00	30.13g/10mL, 25ul...	25 Oct 2000 05:20
31	28	D23724.d	1.	18253 ROUX PCBSOX 10/23/00	30.25g/10mL, 25ul...	25 Oct 2000 05:48
32	29	D23725.d	1.	18254 ROUX PCBSOX 10/23/00	30.18g/10mL, 25ul...	25 Oct 2000 06:16
33	30	D23726.d	1.	18255 ROUX PCBSOX 10/23/00	30.00g/10mL, 25ul...	25 Oct 2000 06:44
34	31	D23727.d	1.	18256 ROUX PCBSOX 10/23/00	30.22g/10mL, 25ul...	25 Oct 2000 07:12
35	32	D23728.d	1.	MS18256 ROUX PCBSOX 10/23/00	30.12g/10mL, 25ul...	25 Oct 2000 07:40
36	33	D23729.d	1.	MSD18256 ROUX PCBSOX 10/23/00	30.19g/10mL, 25ul...	25 Oct 2000 08:08
37	34	D23730.d	1.	18257 ROUX PCBSOX 10/23/00	30.00g/10mL, 25ul...	25 Oct 2000 08:37
38	35	D23731.d	1.	18047DL BEST PCBSOX 10/23/00	30.29g/100mL, 25u...	25 Oct 2000 09:05
39	2	D23732.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 09:33

Injection Log

Directory: D:\0010\001025

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
	2	D23733.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 10:37
2	5	D23734.d	1.	AR1242 500ppb	#3444, #3471surr,...	25 Oct 2000 11:05
3	7	D23735.d	1.	AR1221/1254 500ppb	#3442, #3471surr,...	25 Oct 2000 11:33
4	8	D23736.d	1.	17989DL CPI PCBSOX 10/23/00	30.02g/2000mL, 25...	25 Oct 2000 12:02
5	9	D23737.d	1.	17990DL CPI PCBSOX 10/23/00	30.12g/100mL, 25u...	25 Oct 2000 12:30
6	10	D23738.d	1.	17991DL CPI PCBSOX 10/23/00	30.05g/100mL, 25u...	25 Oct 2000 12:58
7	11	D23739.d	1.	17996DL CPI PCBSOX 10/23/00	30.32g/2000mL, 25...	25 Oct 2000 13:28
8	12	D23740.d	1.	17995DL CPI PCBSOX 10/23/00	30.25g/100mL, 25u...	25 Oct 2000 13:59
9	13	D23741.d	1.	17994DL CPI PCBSOX 10/23/00	30.26g/100mL, 25u...	25 Oct 2000 14:27
10	14	D23742.d	1.	17997DL CPI PCBSOX 10/23/00	30.10g/100mL, 25u...	25 Oct 2000 14:55
11	15	D23743.d	1.	17998DL CPI PCBSOX 10/23/00	30.04g/1000mL, 25...	25 Oct 2000 15:24
12	16	D23744.d	1.	17999DL CPI PCBSOX 10/23/00	30.08g/1000mL, 25...	25 Oct 2000 15:52
13	5	D23745.d	1.	AR1242 500ppb	#3444, #3471surr,...	25 Oct 2000 17:40
14	2	D23746.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 18:08
15	7	D23747.d	1.	AR1221/1254 500ppb	#3442, #3471surr,...	25 Oct 2000 18:36
16	17	D23748.d	1.	18246DL ROUX PCBSOX 10/23/00	30.07g/100mL, 25u...	25 Oct 2000 19:05
17	18	D23749.d	1.	18247DL2 ROUX PCBSOX 10/23/00	30.25g/1000mL, 25...	25 Oct 2000 19:33
18	19	D23750.d	1.	18248DL ROUX PCBSOX 10/23/00	30.14g/2000mL, 25...	25 Oct 2000 20:01
19	20	D23751.d	1.	18249DL ROUX PCBSOX 10/23/00	30.13g/100mL, 25u...	25 Oct 2000 20:29
20	21	D23752.d	1.	18250DL ROUX PCBSOX 10/23/00	30.15g/1000mL, 25...	25 Oct 2000 20:57
21	22	D23753.d	1.	18252DL ROUX PCBSOX 10/23/00	30.13g/1000mL, 25...	25 Oct 2000 21:26
22	23	D23754.d	1.	18254DL ROUX PCBSOX 10/23/00	30.18g/100mL, 25u...	25 Oct 2000 21:54
23	24	D23755.d	1.	18255DL ROUX PCBSOX 10/23/00	30.00g/2000mL, 25...	25 Oct 2000 22:22
24	25	D23758.d	1.	18256DL ROUX PCBSOX 10/23/00	30.22g/1000mL, 25...	25 Oct 2000 22:50
25	26	D23759.d	1.	18257DL ROUX PCBSOX 10/23/00	30.00g/500mL, 25u...	25 Oct 2000 23:19
26	2	D23760.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 23:47

Prairie Analytical Systems, Inc. **Date:** *07-Dec-06*

CLIENT: CPI ENVIRONMENTAL SERVICES, INC.
Project: E05-74-25-591
Lab Order: 0611197

CASE NARRATIVE

Samples along with QA/QC samples presented in this report were processed through an acid cleanup (method SW846 3665A) due to matrix interferences. Without cleanup, the samples would have been reported with elevated reporting levels.

Samples B-B2-1, B-B2-2, A-A2-1 and A-A2-2 were re-analyzed for PCB by method SW846 8082 with no cleanup. The samples had to be analyzed at a dilution because of physical matrix interference before injection on the instrument. B-B2-2 and A-A2-2 were analyzed at 10 X dilution. B-B2-1 and A-A2-1 were analyzed at 20X dilution. No PCBs were detected at these dilutions and in presence of matrix interferences.

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Road Nashville, TN 37204 * 800-765-0980 * Fax 615-726-3404

December 07, 2006 2:41:57PM

Client: CPI Environmental (14244)
1123 Wheaton Oaks Court
Wheaton, IL 60187
Attn: Sarah Schlichtholz

Work Order: NPL0629
Project Name: CPI Environmental
Project Nbr: E05-74-25-591
P/O Nbr:
Date Received: 12/06/06

SAMPLE IDENTIFICATION	LAB NUMBER	COLLECTION DATE AND TIME
A-A2-1	NPL0629-01	11/22/06 09:15
A-A2-2	NPL0629-02	11/22/06 09:16
B-B2-1	NPL0629-03	11/22/06 12:45
B-B2-2	NPL0629-04	11/22/06 12:46

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accredidation.

This material is intended only for the use of the individual(s) or entity to whom it is addressed, and may contain information that is privileged and confidential. If you are not the intended recipient, or the employee or agent responsible for delivering this material to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this material is strictly prohibited. If you have received this material in error, please notify us immediately at 615-726-0177.

Illinois Certification Number: 001177

The Chain(s) of Custody, 3 pages, are included and are an integral part of this report.

These results relate only to the items tested. This report shall not be reproduced except in full and with permission of the laboratory.

Report Approved By:

Kenyatta Thompson

Kenyatta D. Thompson
Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Road Nashville, TN 37204 * 800-765-0980 * Fax 615-726-3404

Client	CPI Environmental (14244) 1123 Wheaton Oaks Court Wheaton, IL 60187	Work Order:	NPL0629
		Project Name:	CPI Environmental
		Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

ANALYTICAL REPORT

Analyte	Result	Flag	Units	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
Sample ID: NPL0629-01 (A-A2-1 - Soil) Sampled: 11/22/06 09:15								
Polychlorinated Biphenyls by EPA Method 8082								
PCB-1016	ND		mg/kg	0.0324	1	12/07/06 07:22	SW846 8082	6120841
PCB-1221	ND		mg/kg	0.0324	1	12/07/06 07:22	SW846 8082	6120841
PCB-1232	ND		mg/kg	0.0324	1	12/07/06 07:22	SW846 8082	6120841
PCB-1242	ND		mg/kg	0.0324	1	12/07/06 07:22	SW846 8082	6120841
PCB-1248	ND		mg/kg	0.0324	1	12/07/06 07:22	SW846 8082	6120841
PCB-1254	**0.198**		mg/kg	0.0324	1	12/07/06 07:22	SW846 8082	6120841
PCB-1260	ND		mg/kg	0.0324	1	12/07/06 07:22	SW846 8082	6120841
Surr: Tetrachloro-meta-xylene (63-132%)	*8 %*	*Z6*				*12/07/06 07:22*	*SW846 8082*	*6120841*
Surr: Decachlorobiphenyl (39-108%)	*96 %*					*12/07/06 07:22*	*SW846 8082*	*6120841*
Sample ID: NPL0629-02 (A-A2-2 - Soil) Sampled: 11/22/06 09:16								
Polychlorinated Biphenyls by EPA Method 8082								
PCB-1016	ND		mg/kg	0.0325	1	12/07/06 10:35	SW846 8082	6120841
PCB-1221	ND		mg/kg	0.0325	1	12/07/06 10:35	SW846 8082	6120841
PCB-1232	ND		mg/kg	0.0325	1	12/07/06 10:35	SW846 8082	6120841
PCB-1242	ND		mg/kg	0.0325	1	12/07/06 10:35	SW846 8082	6120841
PCB-1248	ND		mg/kg	0.0325	1	12/07/06 10:35	SW846 8082	6120841
PCB-1254	**0.0460**		mg/kg	0.0325	1	12/07/06 10:35	SW846 8082	6120841
PCB-1260	ND		mg/kg	0.0325	1	12/07/06 10:35	SW846 8082	6120841
Surr: Tetrachloro-meta-xylene (63-132%)	*69 %*					*12/07/06 10:35*	*SW846 8082*	*6120841*
Surr: Decachlorobiphenyl (39-108%)	*98 %*					*12/07/06 10:35*	*SW846 8082*	*6120841*
Sample ID: NPL0629-03 (B-B2-1 - Soil) Sampled: 11/22/06 12:45								
Polychlorinated Biphenyls by EPA Method 8082								
PCB-1016	ND		mg/kg	0.0326	1	12/07/06 08:03	SW846 8082	6120841
PCB-1221	ND		mg/kg	0.0326	1	12/07/06 08:03	SW846 8082	6120841
PCB-1232	ND		mg/kg	0.0326	1	12/07/06 08:03	SW846 8082	6120841
PCB-1242	ND		mg/kg	0.0326	1	12/07/06 08:03	SW846 8082	6120841
PCB-1248	ND		mg/kg	0.0326	1	12/07/06 08:03	SW846 8082	6120841
PCB-1254	ND		mg/kg	0.0326	1	12/07/06 08:03	SW846 8082	6120841
PCB-1260	ND		mg/kg	0.0326	1	12/07/06 08:03	SW846 8082	6120841
Surr: Tetrachloro-meta-xylene (63-132%)	*5 %*	*ZX*				*12/07/06 08:03*	*SW846 8082*	*6120841*
Surr: Decachlorobiphenyl (39-108%)	*155 %*	*ZX*				*12/07/06 08:03*	*SW846 8082*	*6120841*
Sample ID: NPL0629-04 (B-B2-2 - Soil) Sampled: 11/22/06 12:46								
Polychlorinated Biphenyls by EPA Method 8082								
PCB-1016	ND	RL1	mg/kg	0.662	20	12/07/06 11:02	SW846 8082	6120841
PCB-1221	ND	RL1	mg/kg	0.662	20	12/07/06 11:02	SW846 8082	6120841
PCB-1232	ND	RL1	mg/kg	0.662	20	12/07/06 11:02	SW846 8082	6120841
PCB-1242	ND	RL1	mg/kg	0.662	20	12/07/06 11:02	SW846 8082	6120841
PCB-1248	ND	RL1	mg/kg	0.662	20	12/07/06 11:02	SW846 8082	6120841
PCB-1254	ND	RL1	mg/kg	0.662	20	12/07/06 11:02	SW846 8082	6120841
PCB-1260	ND	RL1	mg/kg	0.662	20	12/07/06 11:02	SW846 8082	6120841
Surr: Tetrachloro-meta-xylene (63-132%)	*	*Z3*				*12/07/06 11:02*	*SW846 8082*	*612084*

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Road Nashville, TN 37204 * 800-765-0980 * Fax 615-726-3404

ient	CPI Environmental (14244)	Work Order:	NPL0629
	1123 Wheaton Oaks Court	Project Name:	CPI Environmental
	Wheaton, IL 60187	Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

ANALYTICAL REPORT

Analyte	Result	Flag	Units	MRL	Dilution Factor	Analysis Date/Time	Method	Batch
Sample ID: NPL0629-04 (B-B2-2 - Soil) - cont. Sampled: 11/22/06 12:46								
Polychlorinated Biphenyls by EPA Method 8082 - cont.								
Surr: Decachlorobiphenyl (39-108%)	*	*Z3*				*12/07/06 11:02*	*SW846 8082*	*6120841*

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Client	CPI Environmental (14244)	Work Order:	NPL0629
	1123 Wheaton Oaks Court	Project Name:	CPI Environmental
	Wheaton, IL 60187	Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

SAMPLE EXTRACTION DATA

Parameter	Batch	Lab Number	Wt/Vol Extracted	Extracted Vol	Date	Analyst	Extraction Method
Polychlorinated Biphenyls by EPA Method 8082							
SW846 8082	6120841	NPL0629-01	30.86	10.00	12/06/06 01:50	BJM	EPA 3550B
SW846 8082	6120841	NPL0629-02	30.72	10.00	12/06/06 01:50	BJM	EPA 3550B
SW846 8082	6120841	NPL0629-03	30.60	10.00	12/06/06 01:50	BJM	EPA 3550B
SW846 8082	6120841	NPL0629-04	30.17	10.00	12/06/06 01:50	BJM	EPA 3550B

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ient	CPI Environmental (14244)	Work Order:	NPL0629
	1123 Wheaton Oaks Court	Project Name:	CPI Environmental
	Wheaton, IL 60187	Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

PROJECT QUALITY CONTROL DATA
Blank

Analyte	Blank Value	Q	Units	Q.C. Batch	Lab Number	Analyzed Date/Time
Polychlorinated Biphenyls by EPA Method 8082						
6120841-BLK1						
PCB-1016	<0.0160		mg/kg	6120841	6120841-BLK1	12/07/06 04:59
PCB-1221	<0.00490		mg/kg	6120841	6120841-BLK1	12/07/06 04:59
PCB-1232	<0.0110		mg/kg	6120841	6120841-BLK1	12/07/06 04:59
PCB-1242	<0.0140		mg/kg	6120841	6120841-BLK1	12/07/06 04:59
PCB-1248	<0.00580		mg/kg	6120841	6120841-BLK1	12/07/06 04:59
PCB-1254	<0.0140		mg/kg	6120841	6120841-BLK1	12/07/06 04:59
PCB-1260	<0.00551		mg/kg	6120841	6120841-BLK1	12/07/06 04:59
Surrogate: Tetrachloro-meta-xylene	98%			6120841	6120841-BLK1	12/07/06 04:59
Surrogate: Decachlorobiphenyl	65%			6120841	6120841-BLK1	12/07/06 04:59

TestAmerica
ANALYTICAL TESTING CORPORATION
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Client	CPI Environmental (14244) 1123 Wheaton Oaks Court Wheaton, IL 60187	Work Order:	NPL0629
		Project Name:	CPI Environmental
		Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

PROJECT QUALITY CONTROL DATA
LCS

Analyte	Known Val.	Analyzed Val	Q	Units	% Rec.	Target Range	Batch	Analyzed Date/Time
Polychlorinated Biphenyls by EPA Method 8082								
6120841-BS1								
PCB-1254	0.167	0.128		mg/kg	77%	67 - 139	6120841	12/07/06 05:20
Surrogate: Tetrachloro-meta-xylene	0.0167	0.0167			100%	63 - 132	6120841	12/07/06 05:20
Surrogate: Decachlorobiphenyl	0.0167	0.0114			68%	39 - 108	6120841	12/07/06 05:20

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Road Nashville, TN 37204 * 800-765-0980 * Fax 615-726-3404

ient	CPI Environmental (14244)	Work Order:	NPL0629
	1123 Wheaton Oaks Court	Project Name:	CPI Environmental
	Wheaton, IL 60187	Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

PROJECT QUALITY CONTROL DATA
Matrix Spike

Analyte	Orig. Val.	MS Val	Q	Units	Spike Conc	% Rec.	Target Range	Batch	Sample Spiked	Analyzed Date/Time
Polychlorinated Biphenyls by EPA Method 8082										
6120841-MS1										
PCB-1254	ND	0.113		mg/kg	0.166	68%	54 - 151	6120841	NPL0556-01RE1	12/07/06 05:40
Surrogate: Tetrachloro-meta-xylene		0.0146		mg/kg	0.0166	88%	63 - 132	6120841	NPL0556-01RE1	12/07/06 05:40
Surrogate: Decachlorobiphenyl		0.0102		mg/kg	0.0166	61%	39 - 108	6120841	NPL0556-01RE1	12/07/06 05:40

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Road Nashville, TN 37204 * 800-765-0980 * Fax 615-726-3404

Client	CPI Environmental (14244) 1123 Wheaton Oaks Court Wheaton, IL 60187	Work Order:	NPL0629
		Project Name:	CPI Environmental
		Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

PROJECT QUALITY CONTROL DATA

Matrix Spike Dup

Analyte	Orig. Val.	Duplicate	Q	Units	Spike Conc	% Rec.	Target Range	RPD	Limit	Batch	Sample Duplicated	Analyzed Date/Time
Polychlorinated Biphenyls by EPA Method 8082												
6120841-MSD1												
PCB-1254	ND	0.113		mg/kg	0.166	68%	54 - 151	0	39	6120841	NPL0556-01RE1	12/07/06 06:00
Surrogate: Tetrachloro-meta-xylene		0.0140		mg/kg	0.0166	84%	63 - 132			6120841	NPL0556-01RE1	12/07/06 06:00
Surrogate: Decachlorobiphenyl		0.0100		mg/kg	0.0166	60%	39 - 108			6120841	NPL0556-01RE1	12/07/06 06:00

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Road Nashville, TN 37204 * 800-765-0980 * Fax 615-726-3404

ient	CPI Environmental (14244)	Work Order:	NPL0629
	1123 Wheaton Oaks Court	Project Name:	CPI Environmental
	Wheaton, IL 60187	Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

CERTIFICATION SUMMARY

TestAmerica - Nashville, TN

Method	Matrix	AIHA	Nelac	Illinois
SW846 8082	Soil	N/A	X	X

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Road Nashville, TN 37204 * 800-765-0980 * Fax 615-726-3404

Client	CPI Environmental (14244) 1123 Wheaton Oaks Court Wheaton, IL 60187	Work Order:	NPL0629
		Project Name:	CPI Environmental
		Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

NELAC CERTIFICATION SUMMARY

TestAmerica Analytical - Nashville does not hold NELAC certifications for the following analytes included in this report

Method	Matrix	Analyte

2960 Foster Creighton Road Nashville, TN 37204 * 800-765-0980 * Fax 615-726-3404

ient	CPI Environmental (14244)	Work Order:	NPL0629
	1123 Wheaton Oaks Court	Project Name:	CPI Environmental
	Wheaton, IL 60187	Project Number:	E05-74-25-591
Attn	Sarah Schlichtholz	Received:	12/06/06 08:00

DATA QUALIFIERS AND DEFINITIONS

RL1	Reporting limit raised due to sample matrix effects.
Z3	The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.
Z6	Surrogate recovery was below acceptance limits.
ZX	Due to sample matrix effects, the surrogate recovery was outside the acceptance limits.

METHOD MODIFICATION NOTES

TestAmerica
ANALYTICAL TESTING CORPORATION

NPL0629

Nashville Division
COOLER RECEIPT FORM

BC#

Cooler Received/Opened On_12/06/06_@_08:00_

1. Indicate the Airbill Tracking Number (last 4 digits for Fedex only) and Name of Courier below: 0359

Fed-Ex UPS Velocity DHL Route Off-street Misc.

2. Temperature of representative sample or temperature blank when opened: 4.2 Degrees Celsius
(indicate IR Gun ID#)

NA A00466 A00750 A01124 100190 101282 10594 Raynger ST

3. Were custody seals on outside of cooler?..... YES...NO...NA

a. If yes, how many and where:_____

4. Were the seals intact, signed, and dated correctly?..... YES...NO...NA

5. Were custody papers inside cooler?..... YES...NO...NA

I certify that I opened the cooler and answered questions 1-5 (intial)..... _____

6. Were custody seals on containers: YES NO and Intact YES NO NA

were these signed, and dated correctly?..... YES...NO...NA

7. What kind of packing material used? Bubblewrap Peanuts Vermiculite Foam Insert

Plastic bag Paper Other_____ None

8. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

9. Did all containers arrive in good condition (unbroken)?..... YES...NO...NA

10. Were all container labels complete (#, date, signed, pres., etc)?..... YES...NO...NA

11. Did all container labels and tags agree with custody papers?..... YES...NO...NA

12. a. Were VOA vials received?..... YES...NO...NA

b. Was there any observable head space present in any VOA vial?..... YES...NO...NA

I certify that I unloaded the cooler and answered questions 6-12 (intial)..... _____

13. a. On preserved bottles did the pH test strips suggest that preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used..... YES...NO...NA

If preservation in-house was needed, record standard ID of preservative used here_____

14. Was residual chlorine present?..... YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 13-14 (intial)..... _____

15. Were custody papers properly filled out (ink, signed, etc)?..... YES...NO...NA

16. Did you sign the custody papers in the appropriate place?..... YES...NO...NA

17. Were correct containers used for the analysis requested?..... YES...NO...NA

18. Was sufficient amount of sample sent in each container?..... YES...NO...NA

I certify that I entered this project into LIMS and answered questions 15-18 (intial)..... _____

I certify that I attached a label with the unique LIMS number to each container (intial)..... _____

19. Were there Non-Conformance issues at login YES NO Was a PIPE generated YES NO #_____

BIS = Broken in shipment
Cooler Receipt Form

LF-1
End of Form

Revised 3/9/06

CHAIN OF CUSTODY RECORD

TestAmerica
ANALYTICAL TESTING CORPORATION

[X] Nashville, TN [ ] Orlando, FL [ ] Cedar Falls, IA [ ] Dayton, OH [ ] Watertown, WI [ ] Pontiac, MI [ ] Indianapolis, IN

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?

NPL0629
12/07/06 23:59

ient Name/Account #: CPI Environmental Services, Inc.
Address: 1123 Wheaton Oaks Court
City/State/Zip: Wheaton, IL
Project Manager: Sarah Schlichtholz (sschlic@continentalplacer.com)
Telephone Number: 630-408-0800 x 109 Fax No.: 630-407-0799
Sampler Name: (Print) Sarah Schlichtholz
Sampler Signature:

Compliance Monitoring? Yes No
Enforcement Action? Yes No
Report To: Sarah Schlichtholz
Invoice To: Sarah Schlichtholz
TA Quote #:
Project ID:
Project #: E05-074-25-591

Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Preservative: Ice	HNO_3 (Red Label)	HCl (Blue Label)	NaOH (Orange Label)	H_2SO_4 Plastic (Yellow Label)	H_2SO_4 Glass(Yellow Label)	None (Black Label)	Other (Specify)	Matrix: Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other (specify):	Analyze For: To be PCBs										RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
A-A2-1	11/22/06	9:15	1	✓			✓												✓		✓						NPL 0624-01				✓			
A-A2-2	↓	9:16	1	✓			✓												✓		✓								02		✓			
B-B2-1		12:45	1	✓			✓												✓		✓								03		✓			
B-B2-2	↓	12:46	1	✓			✓												✓		✓								04		✓			

Special Instructions: To be extracted upon receipt (12/6/06)

Method of Shipment: FEDEX

Relinquished by:	Date	Time	Received by:	Date	Time
	12/5/06	4:30		12/5/2006	5:00 p.m.
Relinquished by:	**Date**	**Time**	**Received by TestAmerica:**	**Date**	**Time**
				12-6-06	0800

Laboratory Comments:
Temperature Upon Receipt: 4.2c
VOCs Free of Headspace? Y N

(7)

TestAmerica
ANALYTICAL TESTING CORPORATION

NASHVILLE ALERT FORM FOR SAMPLE LOGIN

This form is to be emailed only to the appropriate parties. The email will serve as the document control of the date and time received/sent.

ALERT INFORMATION

Project TAT **1 DAY** **Documentation Level: II III IV**

Client Name:	**CPI Environmental**
Client Number:	**14244**
Project Name:	**CPI Environmental**
Project Number:	
Date to receive cooler:	**12/06/2006**
How many samples are there?	**4**
Matrix?	**SOIL**
What tests will be on the COC?	**8082 PCBs**
Will a copy of the COC be faxed?	YES or NO Please highlight or circle the appropriate answer.
Is this Project TAT Pre-Approved?	YES or NO Please highlight/circle the appropriate answer. Login, for pre-approved projects, please answer demographic "Approved Rush (YES)?" (60271) for every sample

PURPOSE OF THIS ALERT:

Heads up for incoming project: **Samples expire on date received 12/6. Pre-approved 1 day turn. See Matt Ricke.**

Or

Project changes prior to sample login:

LOGIN: REMEMBER TO ALWAYS PRINT CLIENT NOTES, WHEN APPLICABLE.

Project Manager & Extension: **Kenyatta Thompson** **1166**

End of Form

The appended laboratory reports have been modified from their original format: non-PCB analytical results have been detached. Select First Environmental Laboratory results were re-reported on January 10, 2002 to exclude non-PCB analytical results.

First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IEPA Certification #100292

September 13, 2000

Mr. Frank Santella
CPI ENVIRONMENTAL SERVICES, INC.
799 Roosevelt Road, Building 6
Suite 110
Glen Ellyn, IL 60137

Project ID: Cometco
First Environmental File ID: 15045
Date Received: September 1, 2000

Dear Mr. Santella:

The above referenced sample was analyzed as directed on the enclosed chain of custody record.

All analyses were performed in accordance with the methods found in the USEPA publication: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, December 1996. Specific method references are listed on the analytical report. Results have been expressed on a dry weight basis per method protocol.

I thank you for the opportunity to be of service and look forward to working with you again in the future. Should you have any questions regarding the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

William H. Mottashed
Project Manager

First Environmental Laboratories, Inc.
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IEPA Certification #100292

Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15004	Date Taken:	09/01/00
Sample Description:	S-118	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 200	ug/kg	
Aroclor 1221	< 200	ug/kg	
Aroclor 1232	< 200	ug/kg	
Aroclor 1242	< 200	ug/kg	
Aroclor 1248	< 200	ug/kg	
Aroclor 1254	< 200	ug/kg	
Aroclor 1260	< 200	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15005	Date Taken:	09/01/00
Sample Description:	S-119	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/11/00			
Aroclor 1016	< 200	ug/kg	
Aroclor 1221	< 200	ug/kg	
Aroclor 1232	< 200	ug/kg	
Aroclor 1242	< 200	ug/kg	
Aroclor 1248	< 200	ug/kg	
Aroclor 1254	< 200	ug/kg	
Aroclor 1260	< 200	ug/kg	

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Environmental
Laboratories, Inc.
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IEPA Certification #100292

Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15006	Date Taken:	09/01/00
Sample Description:	S-120	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	71.23	%	
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/11/00			
Aroclor 1016	< 200	ug/kg	
Aroclor 1221	< 200	ug/kg	
Aroclor 1232	< 200	ug/kg	
Aroclor 1242	< 200	ug/kg	
Aroclor 1248	< 200	ug/kg	
Aroclor 1254	< 200	ug/kg	
Aroclor 1260	< 200	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15007	Date Taken:	09/01/00
Sample Description:	S-121	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 200	ug/kg	
Aroclor 1221	< 200	ug/kg	
Aroclor 1232	< 200	ug/kg	
Aroclor 1242	< 200	ug/kg	
Aroclor 1248	< 200	ug/kg	
Aroclor 1254	< 200	ug/kg	
Aroclor 1260	< 200	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15008	Date Taken:	09/01/00
Sample Description:	S-122	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/11/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15009	Date Taken:	09/01/00
Sample Description:	S-123	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	60.84	%	
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15010	Date Taken:	09/01/00
Sample Description:	S-124	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/11/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15011	Date Taken:	09/01/00
Sample Description:	S-125	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	83.77	%	
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15012	Date Taken:	09/01/00
Sample Description:	S-126	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	78.78	%	
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15013	Date Taken:	09/01/00
Sample Description:	S-127	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15014	Date Taken:	09/01/00
Sample Description:	S-128	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15015	Date Taken:	09/01/00
Sample Description:	S-129	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	4,300	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	1,680	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15016	Date Taken:	09/01/00
Sample Description:	S-130	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	85.33	%	
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15017	Date Taken:	09/01/00
Sample Description:	S-131	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	80.97	%	
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15018	Date Taken:	09/01/00
Sample Description:	S-132	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	78.89	%	
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15019	Date Taken:	09/01/00
Sample Description:	S-133	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	307	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	1,980	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15020	Date Taken:	09/01/00
Sample Description:	S-134	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15021	Date Taken:	09/01/00
Sample Description:	S-135	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CONTINENTAL PLACER		
Project ID:	E-05-06-25-185	Date Received:	09/05/00
Sample Number:	15022	Date Taken:	09/01/00
Sample Description:	S-136	Time Taken:	Not Provided
Lab File ID:	15004-24	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	83.37	%	
PCBs Method 3540C/8082			
Preparation Date: 09/06/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15029	Date Taken:	08/31/00
Sample Description:	S-101 Fill	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15030	Date Taken:	08/31/00
Sample Description:	S-102	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15031	Date Taken:	08/31/00
Sample Description:	S-103	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	85.56	%	
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15032	Date Taken:	08/31/00
Sample Description:	S-104	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	83.21	%	
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15033	Date Taken:	08/31/00
Sample Description:	S-105	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	82.86	%	
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	2,280	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	8,970	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15034	Date Taken:	08/31/00
Sample Description:	S-106	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	84.35	%	
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15035	Date Taken:	08/31/00
Sample Description:	S-107	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15036	Date Taken:	08/31/00
Sample Description:	S-108	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	83.51	%	
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15037	Date Taken:	08/31/00
Sample Description:	S-109	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	3,110	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15038	Date Taken:	08/31/00
Sample Description:	S-110	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	79.76	%	
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

First
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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15039	Date Taken:	08/31/00
Sample Description:	S-111	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15040	Date Taken:	08/31/00
Sample Description:	S-112	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15041	Date Taken:	08/31/00
Sample Description:	S-113	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	80.38	%	
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	318	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15042	Date Taken:	08/31/00
Sample Description:	S-114	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	84.18	%	
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15044	Date Taken:	08/31/00
Sample Description:	S-116	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Received:	09/06/00
Sample Number:	15043	Date Taken:	08/31/00
Sample Description:	S-117	Time Taken:	Not Provided
Lab File ID:	15029-44	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 250	ug/kg	
Aroclor 1221	< 250	ug/kg	
Aroclor 1232	< 250	ug/kg	
Aroclor 1242	< 250	ug/kg	
Aroclor 1248	< 250	ug/kg	
Aroclor 1254	< 250	ug/kg	
Aroclor 1260	< 250	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL		
Project ID:	E05-06-25-185	Date Relogged:	09/06/00
Sample Number:	15045	Date Taken:	08/31/00
Sample Description:	Composite*	Time Taken:	Not Provided
Lab File ID:	15045	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 09/07/00			
Analysis Date: 09/12/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

*Composite includes samples S-101, S-103, S-105, S-107, S-109, S-111, S-116, S-118, S-121, S-124, S-127, S-129, S-133 and S-135

Compose pl Only
15045

CPI ENVIRONMENTAL SERVICES, INC.

Chain of Custody Record

ROOSEVELT GLEN
CORPORATE CENTER
BUILDING 6, SUITE 110
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

Project Name:	Project No.:	Location:	Laboratory conducting analysis:
Cometro	E05-06-25-185	Chicago, IL	First Environmental
Sampled by:	**Contact Person:**		**Turnaround Time:**
F. Santello & C. Lisek	Frank Santello		

Analysis Requested: PCB, SVOC, RCRA METAL

Sample ID No.	Date	Time	No. of containers	Matrix	Preserved (Y/N)	PCB	SVOC	RCRA METAL							Comments
4oz. S-105	08 31 00		2	soil	y	X	X	X							COMPOSITE SAMPLES, S-101,
4oz. S-106			2	soil	y	X									S-103; S-105; S-107; S-109;
4oz. S-107			2	soil	y	X	X	X							S-111; S-117; S-118; S-121;
4oz. S-108			2	soil	y	X									S-124; S-127; S-129; S-133
4oz. S-109			2	soil	y	X	X	X							AND S-135 AND ANALYZE
4oz. S-110			2	soil	y	X									FOR: PAINT FILTER, OPEN CUP FLASH
4oz. S-111			2	soil	y	X	X	X							pH (10% soc), % ACIDITY/ALKALINITY,
4oz. S-112			2	soil	y	X	X	X							TOTAL SOLIDS, ASH CONTENT, TOTAL
4oz. S-113			2	soil	y	X									CYANIDE, TOTAL PHENOL, REACTIVE
4oz. S-114			2	soil	y	X									SULFIDE, TCLP METALS, TCLP ORGANICS
															WATER REACTIVITY, PCBs AND
															F-CODE SOLVENTS (100 %).

Relinquished by: (Signature)	Date:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Received by: (Signature)
M. Place	09/01/2K	[signature]			
(Printed) M. Place	Time: 2:12	(Printed) F. Hentschel	(Printed)	Time:	(Printed)

Relinquished by: (Signature)	Date:	Received for laboratory by: (Signature)	Date:	Remarks:
(Printed)	Time:	(Printed)	Time:	Report results to ph: 630/469-6340 -- fax: 630/469-6470

CPI ENVIRONMENTAL SERVICES, INC.

Chain of Custody Record

ROOSEVELT GLEN
CORPORATE CENTER
BUILDING 8, SUITE 110
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

Project Name	Project No.	Location	Laboratory conducting analysis
Cometco	E05.06.25.185	Chicago, IL	First Environmental
Sampled by	**Contact Person**		**Turnaround Time**
F. Santella & C. Lisek	Frank Santella		

Sample ID No.	Date	Time	No. of containers	Matrix	Preserved (Y/N)	Analysis Requested: VOCs									Comments
VOA S-113	083100		3	soil	y										
VOA S-112			3	soil	y		X								
VOA S-111			3	soil	y		X								
VOA S-110			3	soil	y										
VOA S-109			3	soil	y		X								
VOA S-108			3	soil	y										
VOA S-107			3	soil	y		X								
VOA S-106			3	soil	y										
VOA S-105			3	soil	y		X								
VOA S-104			3	soil	y		X								

Relinquished by: (Signature)	Date:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Received by: (Signature)
[signature]	09/1/2K	[signature]			
(Printed) M. Plane	Time: 2:12	(Printed) F. Hentschel	(Printed)	Time:	(Printed)

Relinquished by: (Signature)	Date:	Received for laboratory by: (Signature)	Date:	Remarks:
				Report results to ph: 630/469-6340 – fax: 630/469-6470
(Printed)	Time:	(Printed)	Time:	

CPI ENVIRONMENTAL SERVICES, INC.

ROOSEVELT GLEN
CORPORATE CENTER
BUILDING 6, SUITE 110
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

Chain of Custody Record

Project Name	Project No.	Location	Laboratory conducting analysis
Cometro	EOS-06-25-185	Chicago, IL	First Environmental
Sampled by:	**Contact Person:**		**Turnaround Time:**
F. Santella & C. Lisek	Frank Santella		

Analysis Requested

Sample ID No.	Date	Time	No. of containers	Matrix	Preserved (Y/N)		PCBs	SVOCs	RCRA METALS							Comments
4oz. S-105	083100		2	Soil	y		X	X	X						*	COMPOSIT SAMPLES, S-101;
4oz. S-106			2	Soil	y		X									S-103; S-105; S-107; S-109;
4oz. S-107			2	Soil	y		X	X	X							S-111; S-116; S-118; S-121;
4oz. S-108			2	Soil	y		X									S-124; S-127; S-129; S-133
4oz. S-109			2	Soil	y		X	X	X							AND S-135 AND ANALYZE
4oz. S-110			2	Soil	y		X									FOR: PAINT FILTER, OPEN CUP FLASH
4oz. S-111			2	Soil	y		X	X	X							pH (10% SOL), % ACIDITY/ALKALINITY,
4oz. S-112			2	Soil	y		X	X	X							TOTAL SOLIDS, ASH CONTENT, TOTAL
4oz. S-113			2	Soil	y		X									CYANIDE, TOTAL PHENOL, REACTIVE SULFIDE, TCLP METALS, TCLP ORGANICS,
4oz. S-114			2	Soil	y		X									WATER REACTIVITY, PCBs AND F-CODE SOLVENTS (100 ppm).

Relinquished by: (Signature)	Date:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Received by: (Signature)
[signature]	09/01/2K	[signature]			
(Printed) M. Place	Time: 2:12	(Printed) F. Hentschel	(Printed)	Time:	(Printed)

Relinquished by: (Signature)	Date:	Received for laboratory by: (Signature)	Date:	Remarks:
				Report results to ph: 630/469-6340 -- fax: 630/469-6470
(Printed)	Time:	(Printed)	Time:	

CPI ENVIRONMENTAL SERVICES, INC.

Chain of Custody Record

ROOSEVELT GLEN
CORPORATE CENTER
BUILDING 6, SUITE 110
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

Project Name:	Project No.	Location:	Laboratory conducting analysis:
Cometro	EOS-06-25-185	Chicago, IL	First Environmental
Sampled by:	**Contact Person:**		**Turnaround Time:**
F. Santella & C. Lisek	Frank Santella		

Analysis Requested

Sample ID No:	Date	Time	No. of containers	Matrix	Preserved (Y/N)	PCBs	VOCs	SVOCs	RCRA METALS						Comments
VOA S-103	083100		3	soil	Y		X								
VOA S-102			3	soil	Y		X								
VOA S-114			3	soil	Y										
VOA S-115			3	soil	Y										
VOA S-116			3	soil	Y		X								
VOA S-117			3	soil	Y		X								
4oz. Fill (S-101)			2	soil	Y	X		X	X						
4oz. S-102			2	soil	Y	X									
4oz. S-103			2	soil	Y	X		X	X						
4oz. S-104			2	soil	Y	X		X	X						

Relinquished by: (Signature)	Date:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Received by: (Signature)
M. Blake	09/01/2K				
(Printed) M. BLAKE	Time: 2:12	(Printed) F. Hontsch	(Printed)	Time:	(Printed)

Relinquished by: (Signature)	Date:	Received for laboratory by: (Signature)	Date:	Remarks:
(Printed)	Time:	(Printed)	Time:	Report results to ph: 630/469-6340 – fax: 630/469-6470

CPI ENVIRONMENTAL SERVICES, INC.

Chain of Custody Record

ROOSEVELT GLEN
CORPORATE CENTER
BUILDING 6, SUITE 110
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

Project Name	Project No.	Location	Laboratory conducting analysis
Cometco	E05.06.25.105	Chicago, IL	First Environmental
Sampled by:	**Contact Person**		**Turnaround Time**
F. Santella & C. Lisec	Frank Santella		

Analysis Requested

Sample ID No.	Date	Time	No. of containers	Matrix	Preserved (Y/N)	PCBs	VOCs	SVOCs	RCRA Metals						Comments
4oz. S-117	083100		2	soil	Y		X		X	X					
4oz. S-116							X		X	X					

Relinquished by: (Signature)	Date:	Received by: (Signature)	Relinquished by: (Signature)	Date:	Received by: (Signature)
	09/01/00				
(Printed) M. Place	Time: 2:12	(Printed) F. Santella	(Printed)	Time:	(Printed)

Relinquished by: (Signature)	Date:	Received for laboratory by: (Signature)	Date:	Remarks
				Report results to ph: 630/469-6340 -- fax: 630/469-6470
(Printed)	Time:	(Printed)	Time:	

CHAIN OF C TODY RECORD

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24 Hr. Pager (708) 569-7507
E-mail: firstenv@mcs.com
IEPA Certification #100292

COMPANY NAME: CPI
ADDRESS: 799 ROOSEVELT RD., BLD. 6, SUITE 110
PHONE: 630 469-6340 FAX: 630 469-6870
CONTACT NAME: F. SANZOLA
SAMPLED BY: F. SANZOLA / C. CISEK

Project I.D. E-05-06-25-185
Send Report To: F. SANZOLA

ANALYSES

DATE/TIME TAKEN	SAMPLE DESCRIPTION	MATRIX	PCB	VOC	S VOC	RCRA METALS			COMMENTS	LAB I.D.
09/01/00	S-118	S	X	X	X	X				05004
	S-119		X	X	X	X				005
	S-120		X							006
	S-121		X	X	X	X				007
	S-122		X	X	X	X				008
	S-123		X							009
	S-124		X	X	X	X				010
	S-125		X							011
	S-126		X							012
	S-127		X	X	X	X				013
	S-128		X	X	X	X				014
	S-129		X	X	X	X				015
	S-130		X							016

Matrix Codes: S = Soil W = Water O = Other

Preserved in: Lab ☐ Field ☐ Cooler Temperature: ~ 4 °C (Pulp)

Notes and Special Instructions:

Relinquished By: F. Sanzola Date/Time 09/05/00 9:40 Received By: [signature] Date/Time 9/5/00 9:40 AM
Relinquished By: Date/Time Received By: Date/Time
Relinquished By: Date/Time Received By: Date/Time

CHAIN C[illegible] TODY RECORD

First Environmental Laboratories, Inc.
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Phone (630) 778-1200 • Fax (630) 778-1233
24 Hr. Pager (708) 569-7507
E-mail: firstenv@mcs.com
IEPA Certification #100292

COMPANY NAME: CPI
ADDRESS: 799 ROOSEVELT RD. BLD. 6 SUITE 110
PHONE: 630 469-6340 FAX: 630 469-6470
CONTACT NAME F. SANTELLA
SAMPLED BY: F. SANTELLA / C. LIBEX

Project I.D. E-05-06-25-185
Send Report To: F. SANTELLA

ANALYSES

DATE/TIME TAKEN	SAMPLE DESCRIPTION	MATRIX	PCB	VOC	SVOC	RCRA METALS			COMMENTS	LAB I.D.
09/01/00	S-131	S	X							15017
	S-132		X							018
	S-133		X	X	X	X				019
	S-134		X	X	X	X				020
	S-135		X	X	X	X				021
	S-136		X							022
	W-101	W							~~[illegible]~~ Composite	
	W-102								See ATTACHED	15023
	W-103								~~See ATTACHED~~ HOLD	~~024~~
	W-104								See ATTACHED	15024

Matrix Codes: S = Soil W = Water O = Other

Preserved in: Lab ☐ Field ☐ Cooler Temperature: ~4 °C (Ruby)

Notes and Special Instructions:

Relinquished By: [signature] Date/Time 09/05/00 940 Received By: [signature] Date/Time 9/5/00 940
Relinquished By: Date/Time Received By: Date/Time
Relinquished By: Date/Time Received By: Date/Time

First Environmental Laboratories, Inc.
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October 19, 2000

Ms. Sarah Schlichtholz
CONTINENTAL PLACER, INC.
799 Roosevelt Road, 6-110
Glen Ellyn, IL 60137

Project ID: Cometco
First Environmental File ID: 17497-500
Date Received: October 12, 2000

Dear Ms. Schlichtholz:

The above referenced samples were analyzed as directed on the enclosed chain of custody record.

PROJECT SUMMARY

Analyses were performed in accordance with the methods found in the USEPA publications: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, December 1996. Specific method references are listed on the Analytical Report. Results have been expressed on a dry weight basis per method protocol.

NOTE: Some reporting limits have been elevated due to matrix interferences.

All analyses were performed within established holding times, and all Quality Control criteria as outlined in the methods have been met.

I thank you for the opportunity to be of service and look forward to working with you again in the future. Should you have any questions regarding the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

W. Mottashed

William H. Mottashed
Project Manager

First
Environmental
Laboratories, Inc.
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17481	Date Taken:	10/11/00
Sample Description:	B-201	Time Taken:	8:00
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/17/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17482	Date Taken:	10/11/00
Sample Description:	B-202	Time Taken:	8:20
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/17/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	1,650	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17484	Date Taken:	10/11/00
Sample Description:	B-204	Time Taken:	9:10
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/18/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17485	Date Taken:	10/11/00
Sample Description:	B-205	Time Taken:	9:30
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/18/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

First
Environmental
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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17486	Date Taken:	10/11/00
Sample Description:	B-206	Time Taken:	9:45
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/18/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17487	Date Taken:	10/11/00
Sample Description:	B-207	Time Taken:	10:40
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/18/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17488	Date Taken:	10/11/00
Sample Description:	B-208	Time Taken:	11:00
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/18/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17489	Date Taken:	10/11/00
Sample Description:	B-209	Time Taken:	12:45
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/18/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17490	Date Taken:	10/11/00
Sample Description:	B-210	Time Taken:	13:00
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte		Result	Units	Flags
PCBs Method 3540C/8082				
Preparation Date:	10/16/00			
Analysis Date:	10/18/00			
Aroclor 1016		< 80.0	ug/kg	
Aroclor 1221		< 80.0	ug/kg	
Aroclor 1232		< 80.0	ug/kg	
Aroclor 1242		< 80.0	ug/kg	
Aroclor 1248		< 80.0	ug/kg	
Aroclor 1254		< 160	ug/kg	
Aroclor 1260		< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17491	Date Taken:	10/11/00
Sample Description:	B-211	Time Taken:	13:30
Lab File ID:	17481-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/18/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/12/00
Sample Number:	17497	Date Taken:	10/12/00
Sample Description:	B-212	Time Taken:	8:50
Lab File ID:	17497-00	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	85.74	%	
PCBs Method 3540C/8082			
Preparation Date: 10/16/00			
Analysis Date: 10/17/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

CHAIN OF CUSTODY RECORD

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24 Hr. Pager (708) 569-7507
E-mail: info@firstenv.com
IEPA Certification# 100292

Name: ~~Sarah~~ CPI Environmental Services, Inc.
Address: 799 Roosevelt Rd. Bldg. 6 Ste. 110 State IL Zip 60137
Phone: 630 469 6340 Fax: 630 469 6470
Contact Name: Sarah Schlichtholz
Sampled By: Sarah Schlichtholz

Project I.D.: Cometco
Send Report To: Sarah Schlichtholz

Matrix Codes: S = Soil W = Water O = Other

Date/Time Taken	Sample Description	Matrix		PCBs	VOCs	SVOCs	RCRA Total Metals	pH			Comments	Lab I.D.
10/11/00 800	B-201	S		✓	✓	✓	✓	✓				17481
820	B-202			✓	✓	✓	✓	✓				482
855	B-203				✓	✓	✓	✓				483
910	B-204			✓	✓	✓	✓	✓				484
930	B-205			✓		✓	✓	✓				485
945	B-206			✓	✓	✓	✓	✓				486
1040	B-207			✓	✓	✓	✓	✓				487
1100	B-208			✓	✓	✓	✓	✓				488
1245	B-209			✓	✓	✓	✓	✓				489
1300	B-210			✓		✓	✓	✓				490
1330	B-211			✓	✓	✓	✓	✓				491

Sample Acceptance Criteria Met? Yes ☐ No ☐ (exception noted below)
Documentation _____
Condition _____
Chemical Preservation _____
Thermal Preservation _____
Holding Time _____

Cooler Temperature: ~4 °C
Received within 6 hrs. of collection: _____

Notes and Special Instructions: _____

Relinquished By: [signature] Date/Time 10/11/00 4:00pm Received By: [signature] Date/Time 10/12/00 9:45 AM
Relinquished By: _____ Date/Time _____ Received By: _____ Date/Time _____

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October 30, 2000

Ms. Sarah Schlichtholz
CONTINENTAL PLACER, INC.
799 Roosevelt Road, 6-110
Glen Ellyn, IL 60137

Project ID: Cometco
First Environmental File ID: 17988-99
Date Received: October 19, 2000

Dear Ms. Schlichtholz:

The above referenced samples were analyzed as directed on the enclosed chain of custody record.

PROJECT SUMMARY

Analyses were performed in accordance with the methods found in the USEPA publications: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, December 1996. Specific method references are listed on the Analytical Report. Results have been expressed on a dry weight basis per method protocol.

NOTE: Some reporting limits have been elevated due to matrix interferences.

All analyses were performed within established holding times, and all Quality Control criteria as outlined in the methods have been met.

I thank you for the opportunity to be of service and look forward to working with you again in the future. Should you have any questions regarding the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

W. Mottashed

William H. Mottashed
Project Manager

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17988	Date Taken:	10/17/00
Sample Description:	TP-301	Time Taken:	09:30
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	3,120	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	2,020	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17989	Date Taken:	10/17/00
Sample Description:	TP-302	Time Taken:	09:45
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	86.61	%	
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	76,900	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17990	Date Taken:	10/17/00
Sample Description:	TP-303	Time Taken:	10:40
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	998	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17991	Date Taken:	10/17/00
Sample Description:	TP-303S	Time Taken:	10:35
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	87.92	%	
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	568	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17993	Date Taken:	10/17/00
Sample Description:	TP-306S	Time Taken:	14:00
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	95.45	%	
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	786	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17994	Date Taken:	10/18/00
Sample Description:	TP-308	Time Taken:	09:30
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	896	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	608	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17995	Date Taken:	10/18/00
Sample Description:	TP-309	Time Taken:	10:00
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	4,990	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17996	Date Taken:	10/18/00
Sample Description:	TP-310	Time Taken:	10:45
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	87.73	%	
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	198,000	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	16,800	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17997	Date Taken:	10/18/00
Sample Description:	TP-311	Time Taken:	11:40
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	2,190	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	527	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17998	Date Taken:	10/18/00
Sample Description:	TP-312S	Time Taken:	12:15
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	82.98	%	
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/24/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	18,300	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	23,000	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES		
Project ID:	Cometco	Date Received:	10/19/00
Sample Number:	17999	Date Taken:	10/18/00
Sample Description:	TP-313	Time Taken:	14:00
Lab File ID:	17988-99	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	81.94	%	
PCBs Method 3540C/8082			
Preparation Date: 10/23/00			
Analysis Date: 10/25/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	16,000	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	1,500	ug/kg	

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E-mail: info@firstenv.com
IEPA Certification# 100292

Name: CPI Environmental Services Inc.
Address: 799 Roosevelt Rd., Glen Ellyn State IL Zip 60137
Phone: 630-469-6340 Fax: 630-469-6970
Contact Name: Sarah Schlichtholz
Sampled By: Sarah Schlichtholz

Project I.D.: Cometco
Send Report To: Sarah Schlichtholz

X = analyses requested 11/6/2000

Matrix Codes: S = Soil W = Water O = Other

Date/Time Taken	Sample Description	Matrix	PCBs	Total RCRA Metals	pH	SVOCs	VOCs	TCLP RCRA Metals		Comments	Lab I.D.
10/17/00 930	TP-301	S	✓	✓	✓	✓	✓		X		[illegible]
945	TP-302	S	✓						X		[illegible]
1040	TP-303		✓	✓	✓	✓	✓				990
1035	TP-303S		✓	✓	✓						991
115	TP-305					✓					992
200	TP-306S		✓	✓	✓						993
10/18/00 930	TP-308		✓	✓	✓	✓	✓				994
1000	TP-309		✓	✓	✓	✓	✓				995
1045	TP-310		✓								996
1140	TP-311		✓	✓	✓	✓	✓				997
1215	TP-312S		✓								998
200	TP-313		✓	✓	✓						999

Sample Acceptance Criteria Met? Yes ☑ No ☐ (exception noted below)
Documentation _____
Condition _____
Chemical Preservation _____
Thermal Preservation _____
Holding Time _____

Cooler Temperature: 4 °C
Received within 6 hrs. of collection: [illegible]

Notes and Special Instructions: _____

Relinquished By: [illegible] Date/Time 10/19/00 10:20 Received By: [illegible] Date/Time [illegible]
Relinquished By: _____ Date/Time _____ Received By: _____ Date/Time _____

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November 2, 2000

Ms. Sarah Schlichtholz
CONTINENTAL PLACER, INC.
799 Roosevelt Road, 6-110
Glen Ellyn, IL 60137

Project ID: Cometco
First Environmental File ID: 19334
Date Received: October 12, 2000

Dear Ms. Schlichtholz:

The above referenced sample was analyzed as per your request on October 31, 2000.

PROJECT SUMMARY

Analysis was performed in accordance with the methods found in the USEPA publication: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, December 1996. Specific method references are listed on the Analytical Report. Results have been expressed on a dry weight basis per method protocol.

I thank you for the opportunity to be of service and look forward to working with you again in the future. Should you have any questions regarding the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

William H. Mottashed
Project Manager

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Relogged:	10/31/00
Sample Number:	19334	Date Taken:	10/12/00
Sample Description:	B-214	Time Taken:	10:45
Lab File ID:	19334	Date Reported:	01/10/02

Relog of #17500

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 11/01/00			
Analysis Date: 11/02/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

CHAIN OF CU[illegible]DY RECORD

First Environmental Laboratories, Inc.

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1600 Shore Road
Naperville, Illinois 60563
Phone: (630) 778-1200 • Fax: (630) 778-1233
24 Hr. Pager (708) 569-7507
E-mail: info@firstenv.com
IEPA Certification# 100292

Name: CPI Environmental Services, Inc.
Address: 799 Roosevelt Rd., 6-110, Glen Ellyn State IL Zip 60137
Phone: 630-469-6340 Fax: 630-469-6470
Contact Name: Sarah Schlichtholz
Sampled By: Sarah Schlichtholz

Project I.D.: Cometco
Send Report To: Sarah Schlichtholz

Matrix Codes: S = Soil W = Water O = Other

Date/Time Taken	Sample Description	Matrix	Analyses: PCBS	SVOCs	VOCs	Total RCRA Metals	pH			Comments	Lab I.D.
10/12/00 850	B-212	S	✓								~~17497~~
	~~B-213~~ SS										
1040	B-214		✓	✓	✓	✓	✓			✓ = additional 19334	~~17498~~
1215	B-215			✓	✓	✓	✓			analysis requested	~~499~~
1240	B-216			✓	✓	✓	✓			10/31/2000	~~500~~

Sample Acceptance Criteria Met? Yes ☒ No ☐ (exception noted below)
Documentation _____
Condition _____
Chemical Preservation _____
Thermal Preservation _____
Holding Time _____

Cooler Temperature: _____ °C
Received within 6 hrs. of collection: ✓

Notes and Special Instructions: _____

Relinquished By: [signature] Date/Time 10/12/00 4:00 Received By: Irene R. Plogge Date/Time 10-12-00 4:00
Relinquished By: _____ Date/Time _____ Received By: _____ Date/Time _____

Rev. 3/00

OCT. 31. 2000 9:03AM CONTINENTAL PLACER INC NO. 4049 P. 2/2

First Environmental Laboratories, Inc.
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March 7, 2002

Ms. Sarah Schlichtholz
CONTINENTAL PLACER, INC.
799 Roosevelt Road, 6-110
Glen Ellyn, IL 60137

Project ID: Pond
First Environmental File ID: 52920
Date Received: February 28, 2002

Dear Ms. Schlichtholz:

The above referenced samples were analyzed as requested on the enclosed chain of custody record.

PROJECT SUMMARY

Analyses were performed in accordance with the methods found in the USEPA publications: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, December 1996, and Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020. Specific method references are listed on the Analytical Report.

All analyses were performed within established holding times, and all Quality Control criteria as outlined in the methods have been met. QA/QC documentation and raw data will remain on file for future reference.

I thank you for the opportunity to be of service and look forward to working with you again in the future. Should you have any questions regarding the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

William H. Mottashed
Project Manager

First Environmental Laboratories, Inc.
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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Pond	Date Received:	02/28/02
Sample Number:	52920	Date Taken:	02/28/02
Sample Description:	PW022802T	Time Taken:	1005
Lab File ID:	52920	Date Reported:	03/07/02

Analyte	Result	Units	Flags
Dissolved PCBs Method 3510C/8082			
Preparation Date: 03/06/02			
Analysis Date: 03/06/02			
Aroclor 1016	< 0.50	ug/L	
Aroclor 1221	< 0.50	ug/L	
Aroclor 1232	< 0.50	ug/L	
Aroclor 1242	< 0.50	ug/L	
Aroclor 1248	< 0.50	ug/L	
Aroclor 1254	< 0.50	ug/L	
Aroclor 1260	< 0.50	ug/L	

CHAIN OF CUSTODY RECORD

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COMPANY NAME: CPI Environmental Services, Inc.
ADDRESS: 799 Roosevelt Rd., Bldg. 6, Ste. 110, Glen Ellyn 60137
PHONE: 630-469-6340 FAX: 630-469-6470
CONTACT NAME: Sarah Schlichtholz
SAMPLED BY: Carl Lisek

Project I.D. Pond
Send Report To: Sarah Schlichtholz

ANALYSES

DATE/TIME TAKEN	SAMPLE DESCRIPTION	MATRIX	BOD	Suspended Solids	pH	FOG (Total) (2)	FOG (Emulsified Only) (1)	Cyanide	COMMENTS	LAB I.D.
2/28/02 1005	PW022802T	W	✓	✓	✓	✓	✓	✓	2 containers	52920
2/28/02 1000	PW022802B	W							HOLD	

Matrix Codes: S = Soil W = Water O = Other

Preserved in: Lab ☐ Field ☐ Cooler Temperature: _____ °C

Notes and Special Instructions: (1) obtain sample from middle of jar excluding bottom- and top-phased oil
(2) include phased portion – mix before analysis

Relinquished By: _____ Date/Time _____ Received By: _____ Date/Time 5/28/02 1235
Relinquished By: _____ Date/Time _____ Received By: _____ Date/Time _____
Relinquished By: _____ Date/Time _____ Received By: _____ Date/Time _____

CHAIN OF CUSTODY RECORD

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COMPANY NAME:
ADDRESS:
PHONE: FAX:
CONTACT NAME
SAMPLED BY:

PAGE 2 OF 2

Project I.D. Pond
Send Report To: Sarah Schlichtholz

ANALYSES

DATE/TIME TAKEN	SAMPLE DESCRIPTION	MATRIX	Total RCRA Metals (Non-Filtered)	Total RCRA Metals (Filtered) (3)	Hexavalent Chromium (Non-Filtered)	Iron, Copper, Nickel, Zinc (Non-Filtered)	PCBS (2) (Filtered) (3)		COMMENTS	LAB I.D.
2/28/02 1005	PW022802T (continued)	W	✓	✓	✓	✓	✓		2 containers	52920
2/28/02 1000	PW022802B (continued)	W							HOLD	

Matrix Codes: S = Soil W = Water O = Other

Preserved in: Lab ☐ Field ☐ Cooler Temperature: _____ °C

Notes and Special Instructions: (2) SQL of <0.005 mg/L, if possible (3) lab filter sample before analysis

Relinquished By: _____ Date/Time _____ Received By: [signature] Date/Time 2/28/02 1235
Relinquished By: _____ Date/Time _____ Received By: [signature] Date/Time _____
Relinquished By: _____ Date/Time _____ Received By: _____ Date/Time _____

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November 3, 2000

Ms. Sarah Schlichtholz
CONTINENTAL PLACER, INC.
799 Roosevelt Road, 6-110
Glen Ellyn, IL 60137

Project ID: Cometco
First Environmental File ID: 18575-91
Date Received: October 25, 2000

Dear Ms. Schlichtholz:

The above referenced samples were analyzed as directed on the enclosed chain of custody record.

PROJECT SUMMARY

Analyses were performed in accordance with the methods found in the USEPA publications: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, December 1996. Specific method references are listed on the Analytical Report. Results have been expressed on a dry weight basis per method protocol.

NOTE: Some reporting limits have been elevated due to matrix interferences.

All analyses were performed within established holding times, and all Quality Control criteria as outlined in the methods have been met.

I thank you for the opportunity to be of service and look forward to working with you again in the future. Should you have any questions regarding the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

W. Mottashed

William H. Mottashed
Project Manager

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18575	Date Taken:	10/24/00
Sample Description:	B-314	Time Taken:	0730
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/31/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18576	Date Taken:	10/24/00
Sample Description:	B-315	Time Taken:	0745
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/31/00		
Analysis Date:	11/01/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18577	Date Taken:	10/24/00
Sample Description:	B-316	Time Taken:	0805
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/31/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18578	Date Taken:	10/24/00
Sample Description:	B-317	Time Taken:	0835
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/31/00		
Analysis Date:	11/01/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	613	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	2,390	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18579	Date Taken:	10/24/00
Sample Description:	B-318	Time Taken:	0855
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/31/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	878	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18580	Date Taken:	10/24/00
Sample Description:	B-319	Time Taken:	0920
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/31/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	26,900	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	1,280	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18581	Date Taken:	10/24/00
Sample Description:	B-320	Time Taken:	0940
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/31/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18582	Date Taken:	10/24/00
Sample Description:	B-321 (0.5')	Time Taken:	1005
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/31/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	3,790	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	1,170	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18583	Date Taken:	10/24/00
Sample Description:	B-321 (2.5')	Time Taken:	1015
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/31/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18584	Date Taken:	10/24/00
Sample Description:	B-322	Time Taken:	1045
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/31/00		
Analysis Date:	11/01/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	19,400	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18585	Date Taken:	10/24/00
Sample Description:	B-323	Time Taken:	1200
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/31/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	21,200	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	1,960	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18586	Date Taken:	10/24/00
Sample Description:	B-324	Time Taken:	1220
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/31/00		
Analysis Date:	11/02/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	594	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18587	Date Taken:	10/24/00
Sample Description:	B-325	Time Taken:	1235
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/31/00		
Analysis Date:	11/02/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18588	Date Taken:	10/24/00
Sample Description:	B-327	Time Taken:	1320
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/31/00		
Analysis Date:	11/02/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18589	Date Taken:	10/24/00
Sample Description:	B-328	Time Taken:	1400
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/31/00		
Analysis Date:	11/02/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18590	Date Taken:	10/24/00
Sample Description:	B-329	Time Taken:	1415
Lab File ID:	18575-91	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/31/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18701	Date Taken:	10/25/00
Sample Description:	B-330	Time Taken:	8:00
Lab File ID:	18701-11	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/30/00		
Analysis Date:	11/01/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	490	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	201	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18703	Date Taken:	10/25/00
Sample Description:	B-332	Time Taken:	8:45
Lab File ID:	18701-11	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/30/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18705	Date Taken:	10/25/00
Sample Description:	B-335	Time Taken:	9:35
Lab File ID:	18701-11	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/30/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18706	Date Taken:	10/25/00
Sample Description:	B-336	Time Taken:	9:50
Lab File ID:	18701-11	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/30/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	< 80.0	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18707	Date Taken:	10/25/00
Sample Description:	B-337	Time Taken:	10:25
Lab File ID:	18701-11	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/30/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	1,010	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	< 160	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18708	Date Taken:	10/25/00
Sample Description:	B-338	Time Taken:	10:35
Lab File ID:	18701-11	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/30/00		
Analysis Date:	11/01/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	2,390	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	805	ug/kg	

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Analytical Report

Client:	CPI		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18709	Date Taken:	10/25/00
Sample Description:	B-339	Time Taken:	10:50
Lab File ID:	18701-11	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date:	10/30/00		
Analysis Date:	11/01/00		
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	1,960	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	991	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18710	Date Taken:	10/25/00
Sample Description:	B-340	Time Taken:	11:00
Lab File ID:	18701-11	Date Reported:	01/10/02

Analyte	Result	Units	Flags
PCBs Method 3540C/8082			
Preparation Date: 10/30/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	935	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	691	ug/kg	

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Analytical Report

Client:	CPI ENVIRONMENTAL SERVICES, INC.		
Project ID:	Cometco	Date Received:	10/25/00
Sample Number:	18711	Date Taken:	10/25/00
Sample Description:	B-341	Time Taken:	11:10
Lab File ID:	18701-11	Date Reported:	01/10/02

Analyte	Result	Units	Flags
Solids, Total	95.64	%	
PCBs Method 3540C/8082			
Preparation Date: 10/30/00			
Analysis Date: 11/01/00			
Aroclor 1016	< 80.0	ug/kg	
Aroclor 1221	< 80.0	ug/kg	
Aroclor 1232	< 80.0	ug/kg	
Aroclor 1242	2,300	ug/kg	
Aroclor 1248	< 80.0	ug/kg	
Aroclor 1254	< 160	ug/kg	
Aroclor 1260	405	ug/kg	

CHAIN OF CUSTODY RECORD

pg. 1 of .

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24 Hr. Pager (708) 569-7507
E-mail: info@firstenv.com
IEPA Certification# 100292

Name: CPI Environmental Services, Inc.
Address: 799 Roosevelt Rd., Glen Ellyn State IL Zip 60137
Phone: 630-469-6340 Fax: 630-469-6470
Contact Name: Sarah Schlichtholz
Sampled By: Sarah Schlichtholz

Project I.D.: Cometco
Send Report To: Sarah Schlichtholz

Matrix Codes: S = Soil W = Water O = Other

Date/Time Taken	Sample Description	Matrix	VOCs	SVOCs	Total RCRA Metals	pH	PCBs	Total Lead	X	Comments	Lab I.D.
10/24 —	HO-1	O								HOLD SAMPLE	
10/24 —	WC-1	S								HOLD SAMPLE	
10/24 —	B-326 / WC-1	S								HOLD SAMPLE	
10/25 800	B-330					✓	✓	✓			18701
930	B-334			✓							02
945	B-332			✓	✓	✓	✓	✓			03
900	B-333			✓			✓		✓		04
935	B-335			✓				✓			05
950	B-336			✓	✓	✓	✓	✓			06
1025	B-337			✓	✓	✓	✓	✓			07
1035	B-338					✓	✓	✓			08
↓ 1050	B-339	↓				✓	✓	✓			09

Sample Acceptance Criteria Met? Yes ☐ No ☐ (exception noted below)
Documentation _____
Condition _____
Chemical Preservation _____
Thermal Preservation _____
Holding Time _____

Cooler Temperature: _____ °C
Received within 6 hrs. of collection: _____

Notes and Special Instructions: _____

Relinquished By: [signature] Date/Time 10/25/00 4:24 pm
Received By: [signature] Date/Time 10/25/00 4:20 pm
Relinquished By: _____ Date/Time _____
Received By: _____ Date/Time _____

Rev. 3/00

CHAIN OF CUSTODY RECORD
(continued)

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E-mail: info@firstenv.com
IEPA Certification# 100292

Name:
Address: State Zip
Phone: Fax:
Contact Name: SEE PAGE 1
Sampled By:

Project I.D.: Cometo
Send Report To: Sarah Sulichtholz

Matrix Codes: S = Soil W = Water O = Other

Date/Time Taken	Sample Description	Matrix	VOCs	SVOCs	Total RCRA Metal	pH	PCBs				Comments	Lab I.D.
10/25 1100	B-340	S		✓	✓	✓	✓	✓				18710
10/25 1110	B-341	S						✓				11

Sample Acceptance Criteria Met? Yes ☐ No ☐ (exception noted below)
Documentation
Condition
Chemical Preservation
Thermal Preservation
Holding Time

Cooler Temperature: °C
Received within 6 hrs. of collection:

Notes and Special Instructions:

Relinquished By: Date/Time 10/25/00 4:24pm
Received By: Date/Time 10/25/00 4:24pm
Relin[illegible]y: Date/Time
[illegible]ved By: Date/Time

Rev. 3/00

First Environmental Laboratories, Inc.

IL ELAP / NELAC Accreditation # 100292

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January 12, 2007

Ms. Sarah Schlichtholz
CONTINENTAL PLACER
1123 Wheaton Oaks Ct.
Wheaton IL 60187

Dear Ms. Sarah Schlichtholz:

The following data package includes the supporting quality control information and chromatograms for the following samples: 17996 and 17989. These analyses were performed 10/24/2000.

All analyses were performed within established holding times, and all quality control criteria, as outlined in the methods, have been met except as noted here or noted on the submitted QC forms. Two copies of the chromatograms have been provided. The first indicates the retention time, the second indicates the analyte.

The second surrogate for sample 17996 is outside QC limits (slightly low bias) due to sample matrix.

MS/MSD data is not included. The MS/MSD for the extraction batch was performed on another client's sample and the MS/MSD spikes were not recovered due to high concentrations of analyte in the sample.

Reviewed By: Lorrie Franklin
Lorrie Franklin (QAO)

Date: 01/12/07

1B
PCB ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

SBLK01

Lab Name: FIRST ENVIRONMENTAL Contract: CPI

Project No.: 17989, 17996 Site: Location: Group:

Matrix: (soil/water) soil Lab Sample ID: BLANK

Sample wt/vol: 30 (g/mL) g Lab File ID: D23700.D

Level: (low/med) LOW Date Received: N/A

% Moisture: 0 decanted: (Y/N): N Date Extracted: 10/23/00

Concentrated Extract Volume: 10,000 (uL) Date Analyzed: 10/24/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/Kg	Q
	Aroclor 1016	80.0	U
	Aroclor 1221	80.0	U
	Aroclor 1232	80.0	U
	Aroclor 1242	80.0	U
	Aroclor 1248	80.0	U
	Aroclor 1254	160	U
	Aroclor 1260	160	U

2F
SOIL PCB SURROGATE RECOVERY

Lab Name: FIRST ENVIRONMENTAL Contract: CPI

Project No.: 17989, 17996 Site: Location: Group:

GC Column (1) : SPB-608 ID: 0.25 (mm) GC Column (2): PTE - 5 ID: 0.25 (mm)

	Lab I.D.	SAMPLE NO.	TCX (1) %	#	#	DCB (1) %	#	#	TOT OUT
01	PBLANK		89			135			0
02	LCS		93			134			0
03	17989		100			74			0
04	17996		92			57	*		0
05	17989DL		D	##		D	##		0
06	17996DL		D	##		D	##		0
07	MS18256		90			79			0
08	MSD18256		89			95			0
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

	QC LIMITS
TCX(1) = Tetrachloro-m-xylene	60 - 150
DCB(1) = Decachlorobiphenyl	60 - 150

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

Page 1 of 1

3F
SOIL PCB LCS RECOVERY

Lab Name: FIRST ENVIRONMENTAL Contract: Envision

Project No.: 17989, 17996 Site: _____ Location: _____ Group: _____

Matrix Spike - Sample No.: LCS

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Arochlor 1016	250	0	240	96	70-135
Arochlor 1254					
Arochlor 1260	250	0	262	105	70-135

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
Arochlor 1016					25	70-135
Arochlor 1254						
Arochlor 1260					25	70-135

Column to be used to flag recovery and RPD values with an asterisk

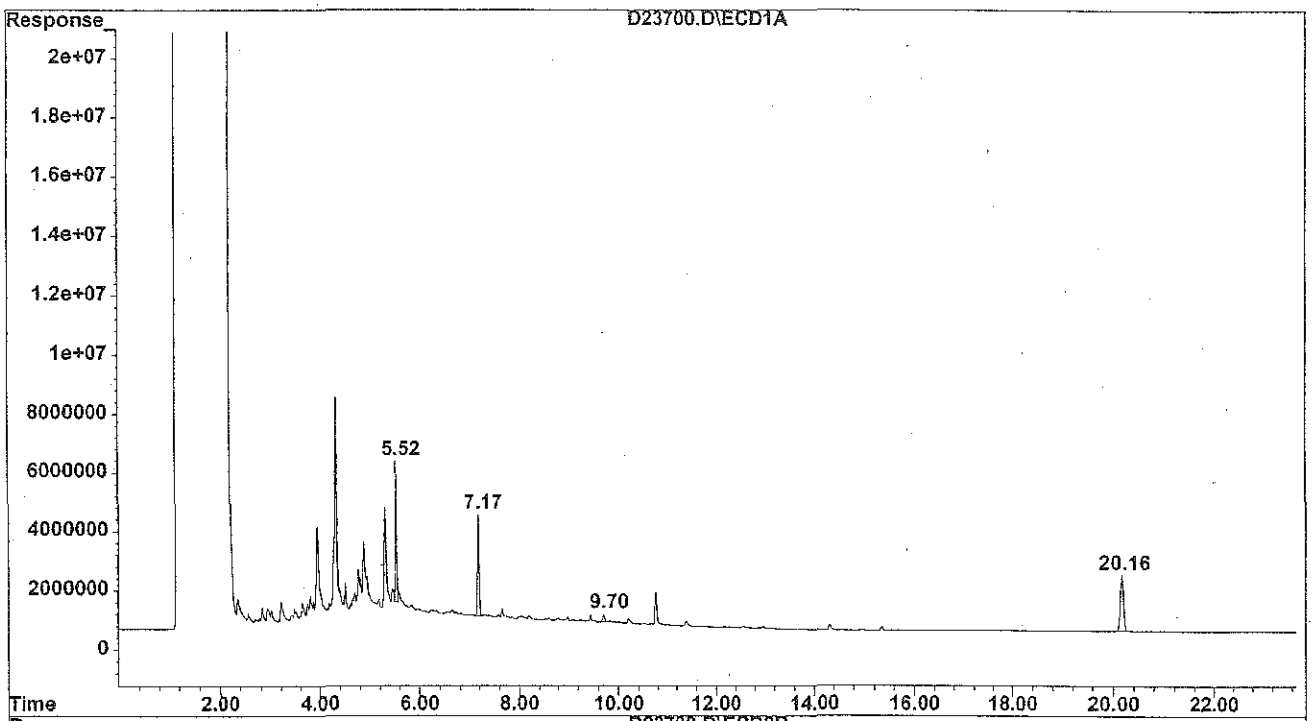
* Values outside of QC limits

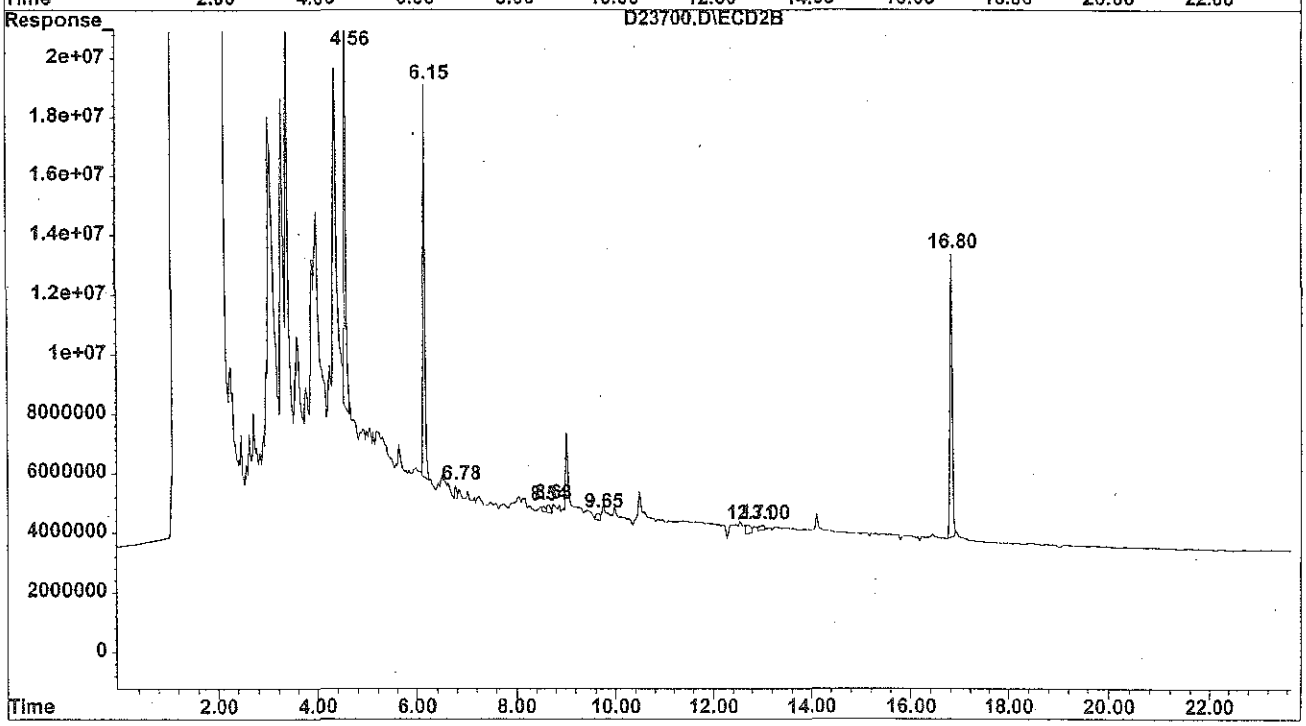
RPD: NA out of NA outside limits

Spike Recovery: 0 out of 2 outside limits

Comments: _____

File : C:\HPCHEM\1\DATA\CPIDATA\D23700.D
Operator : RAH
Acquired : 10-24-00 6:36:58 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: BLANK PCBSOX 10/23/00
Misc Info : 30.00g/10mL, 25ul#4177/1mL
Vial Number: 8





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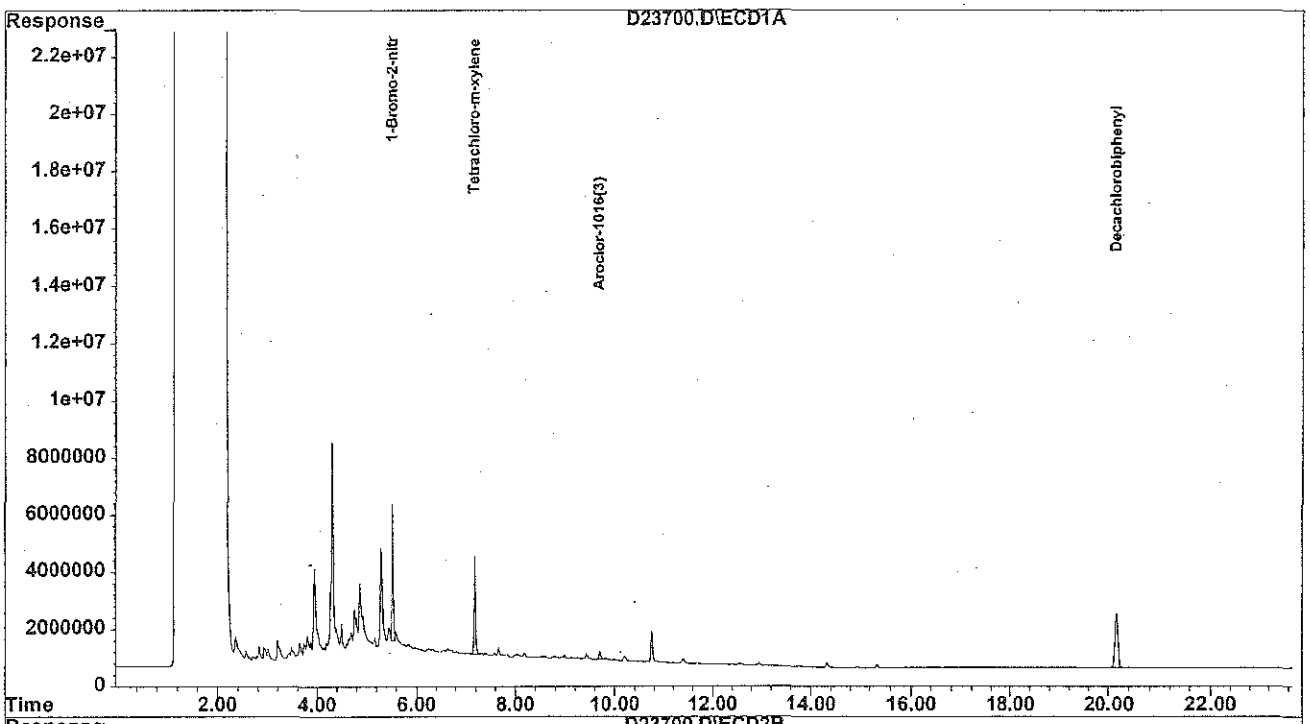
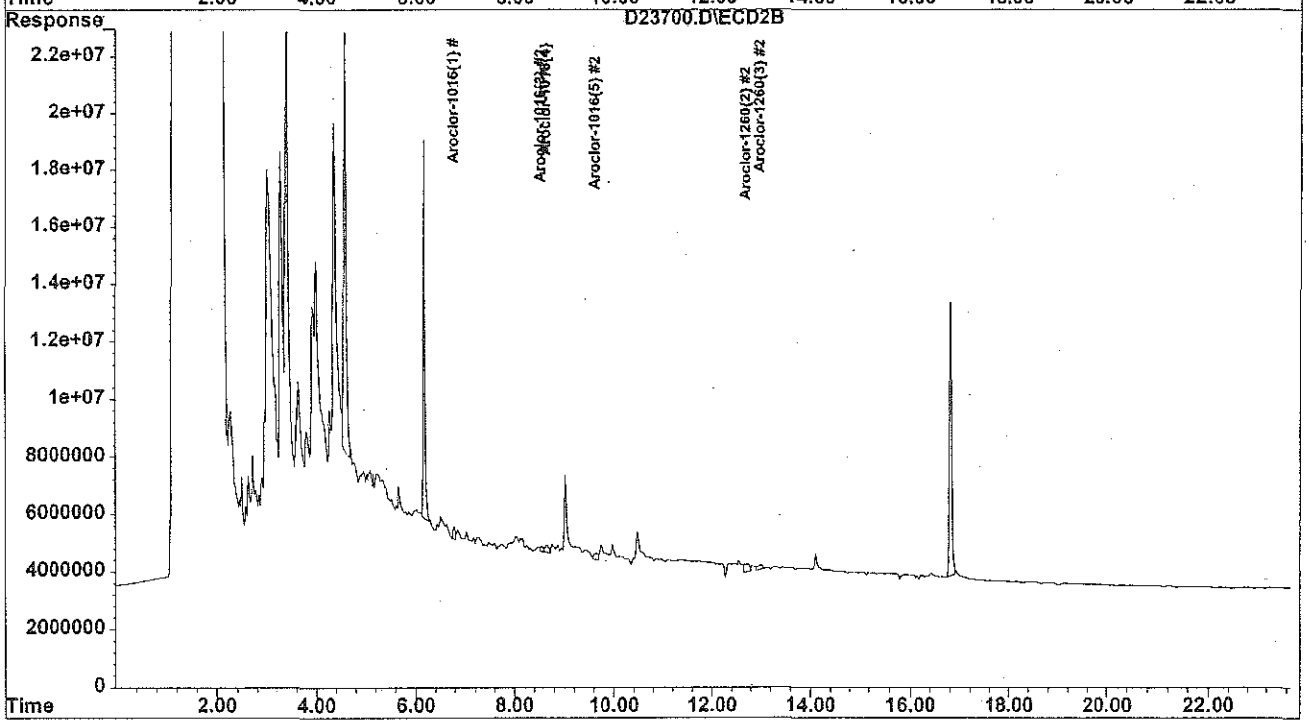
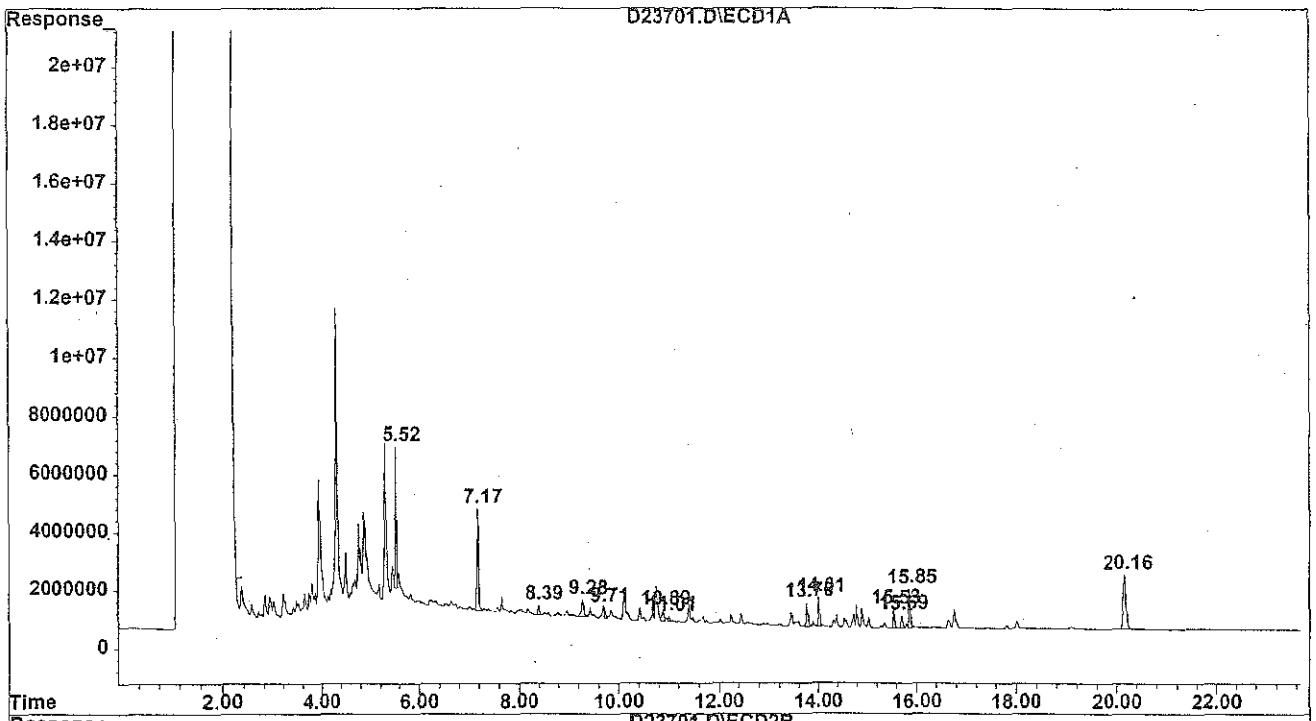
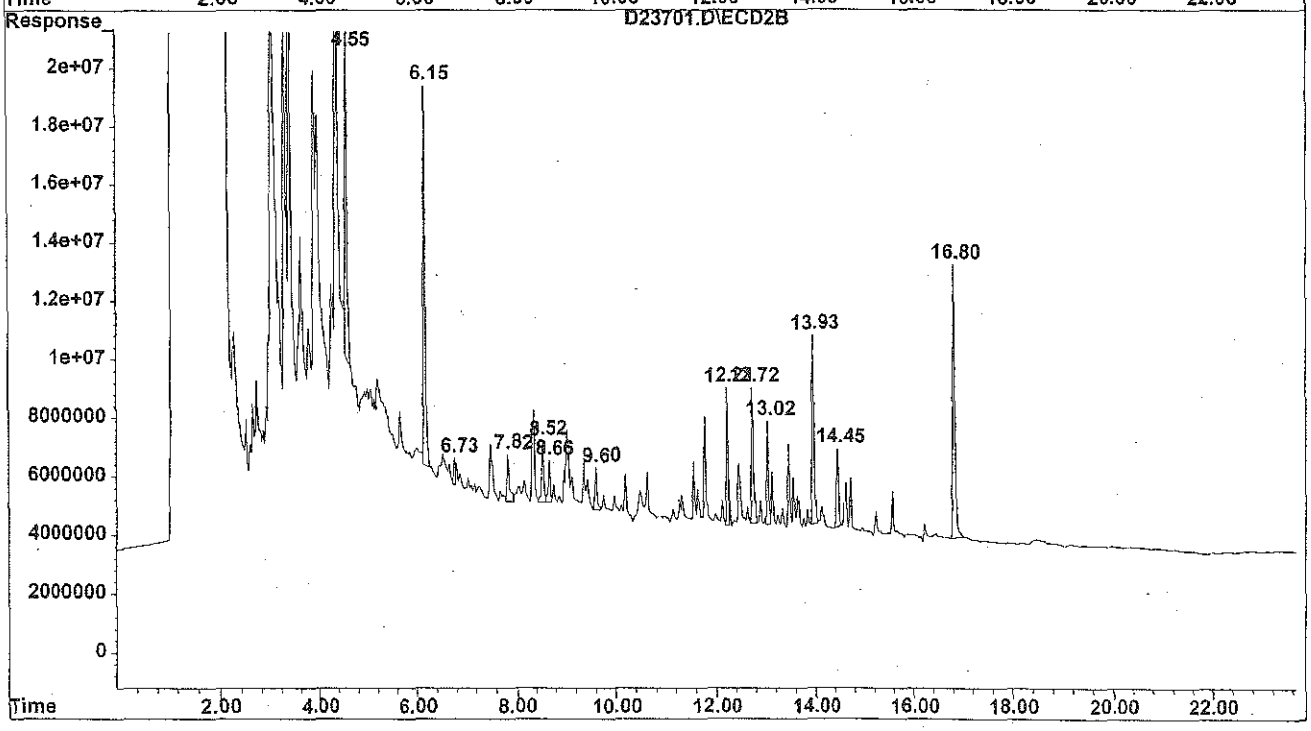
Operator : RAH
Acquired : 10-24-00 6:36:58 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: BLANK PCBSOX 10/23/00
Misc Info : 30.00g/10mL, 25ul#4177/1mL
Vial Number: 8





File : C:\HPCHEM\1\DATA\CPIDATA\D23701.D
Operator : RAH
Acquired : 10-24-00 7:04:50 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: LCS PCBSOX 10/23/00
Misc Info : 30.00g/10mL, 25ul#4177/1mL
Vial Number: 9





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Operator : RAH
Acquired : 10-24-00 7:04:50 PM using AcqMethod D_PCB3.M
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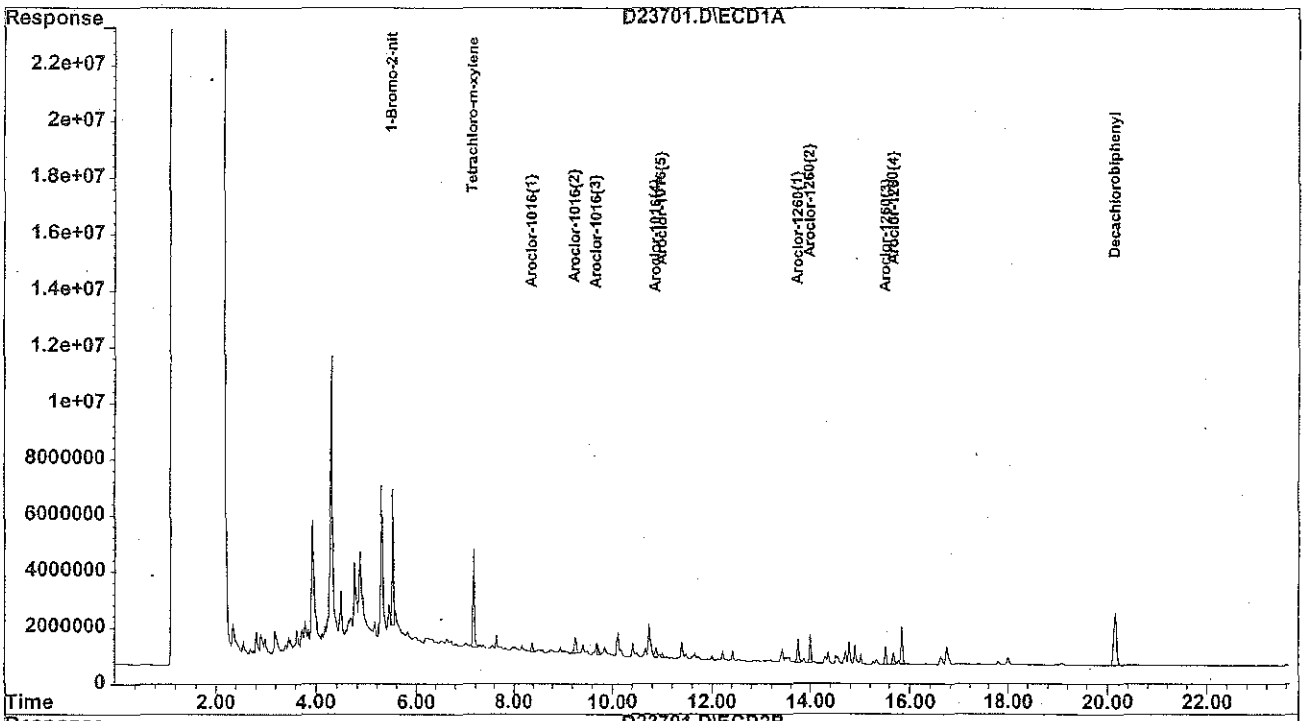
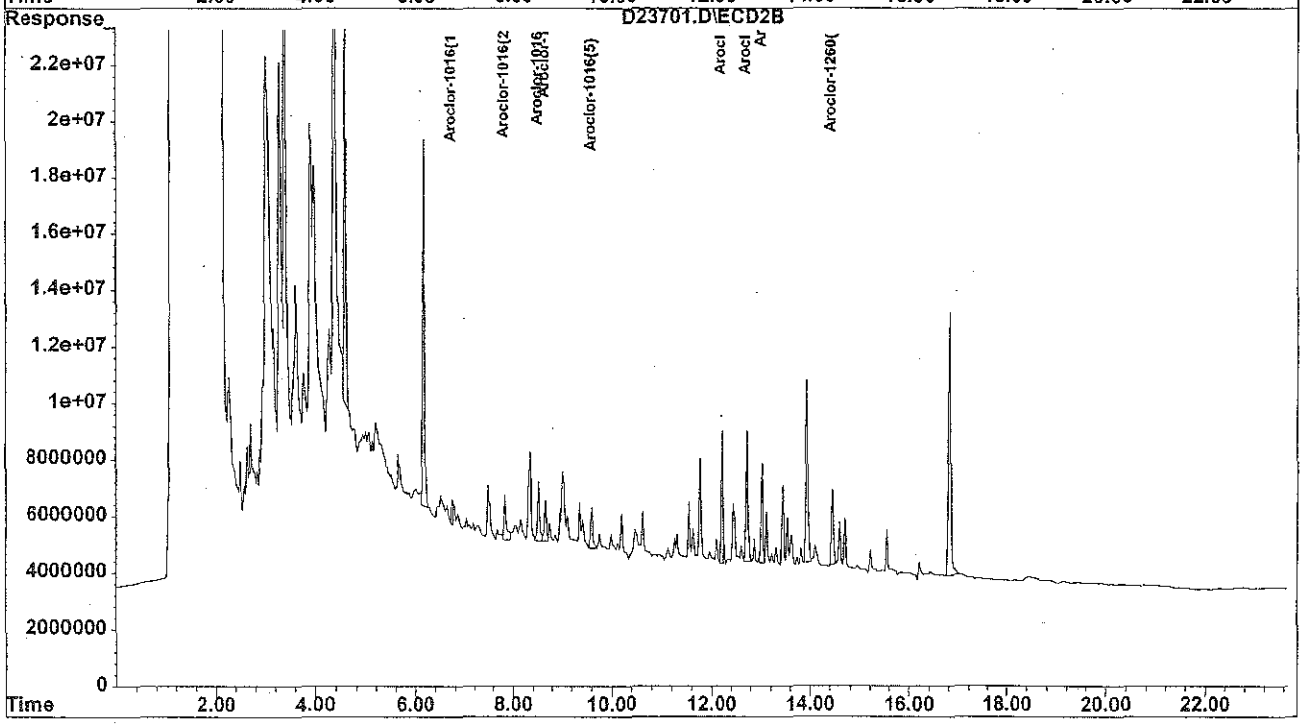
Vial Number: 9





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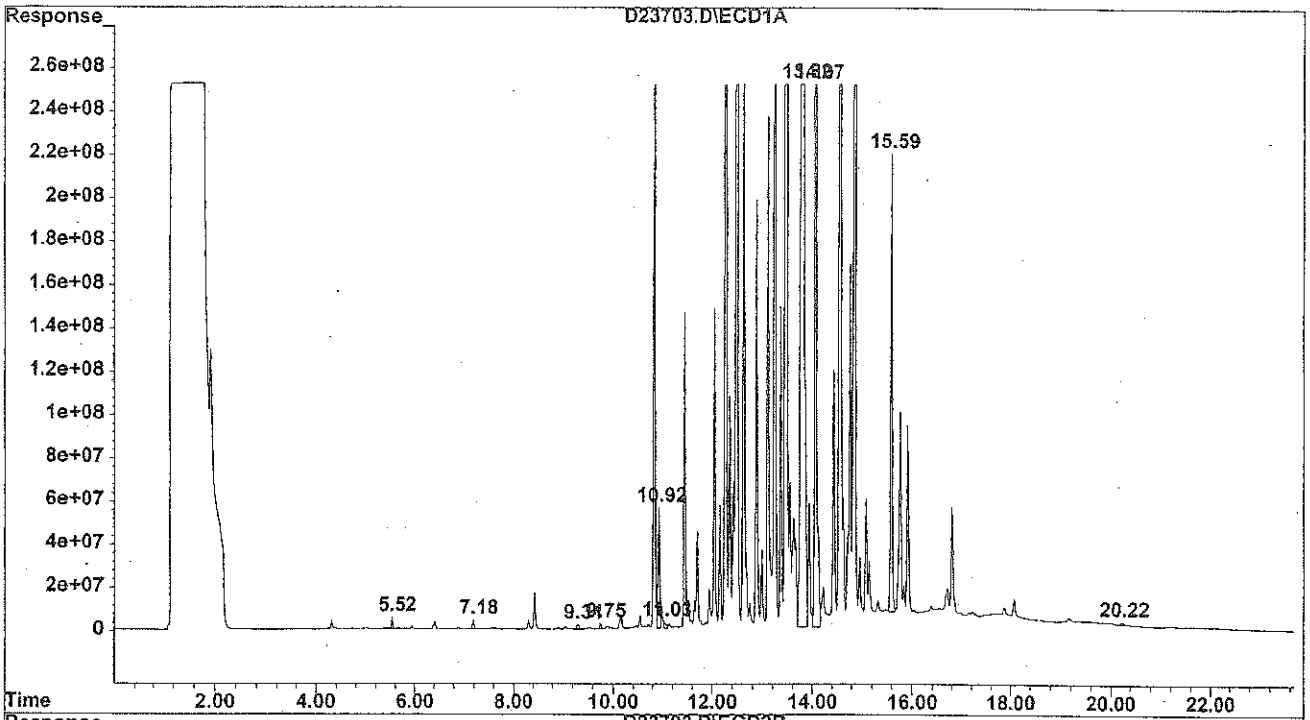
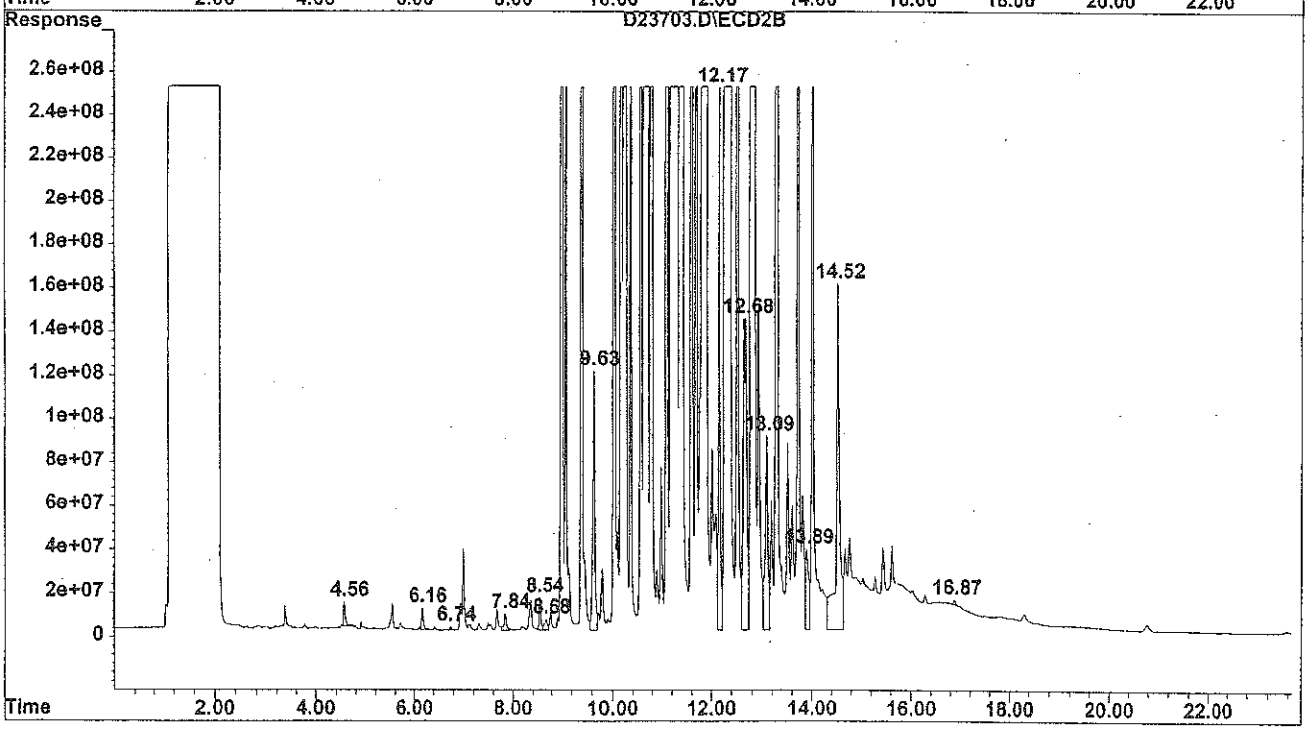
Operator : RAH
Acquired : 10-24-00 8:00:31 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: 17989 CPI PCBSOX 10/23/00
Misc Info : 30.02g/10mL, 25ul#4177/1mL
Vial Number: 11





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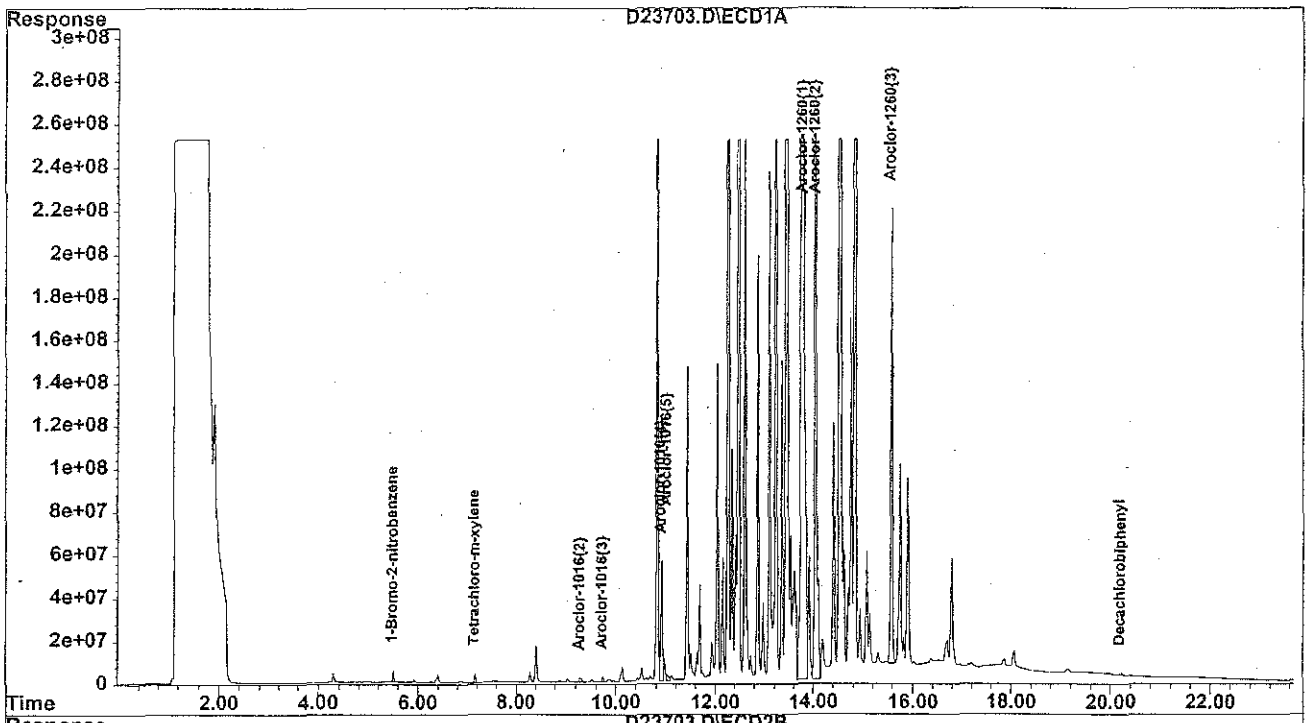
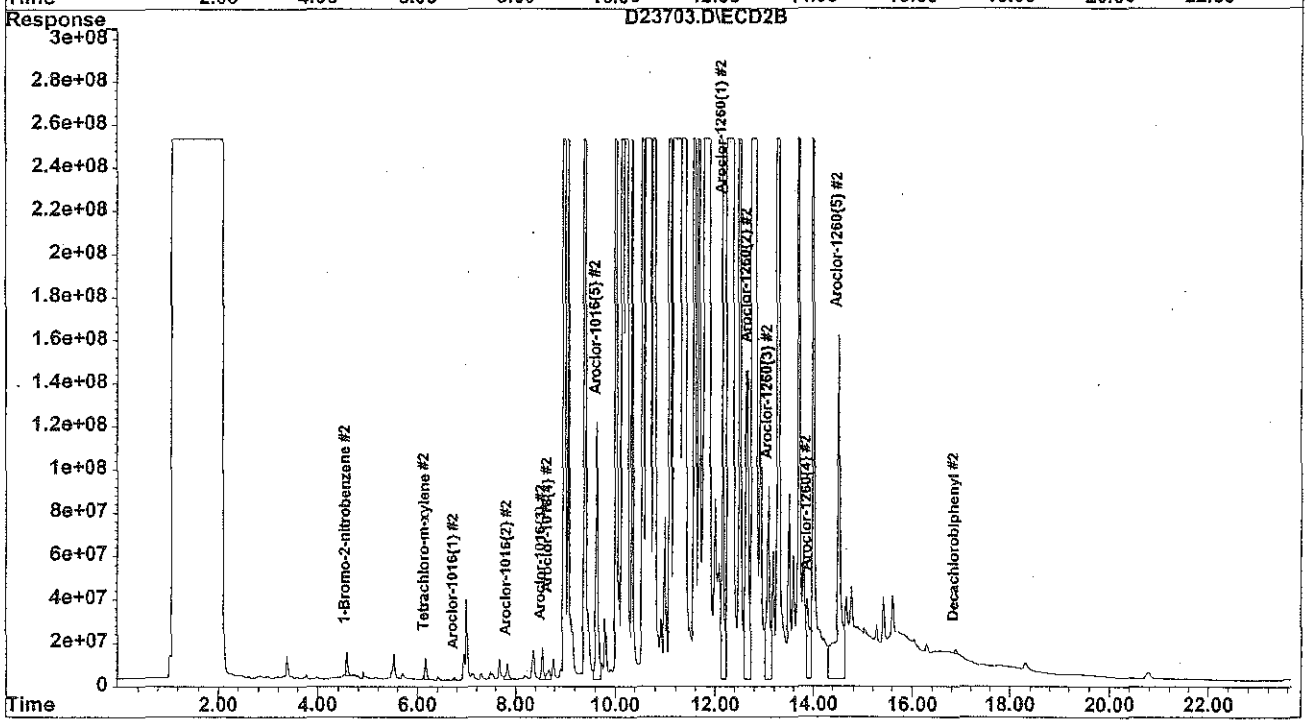
Misc Info : 30.02g/10mL, 25ul#4177/1mL
Vial Number: 11





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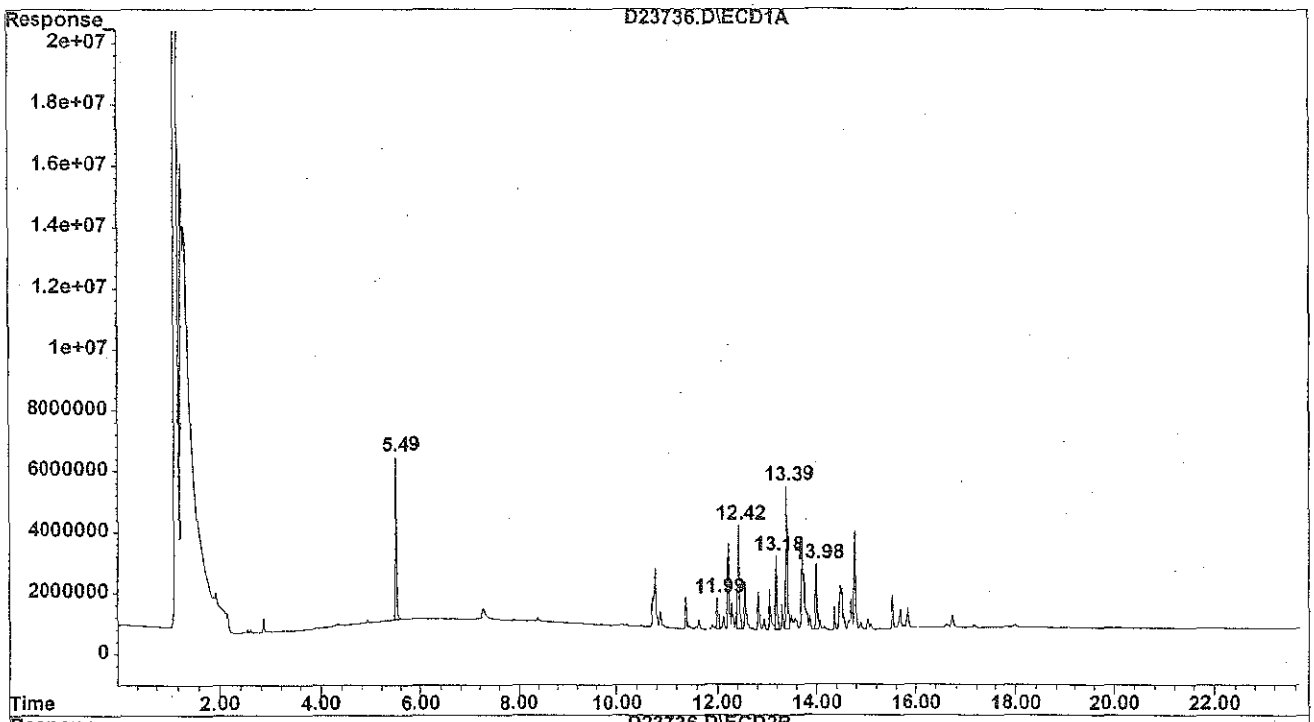
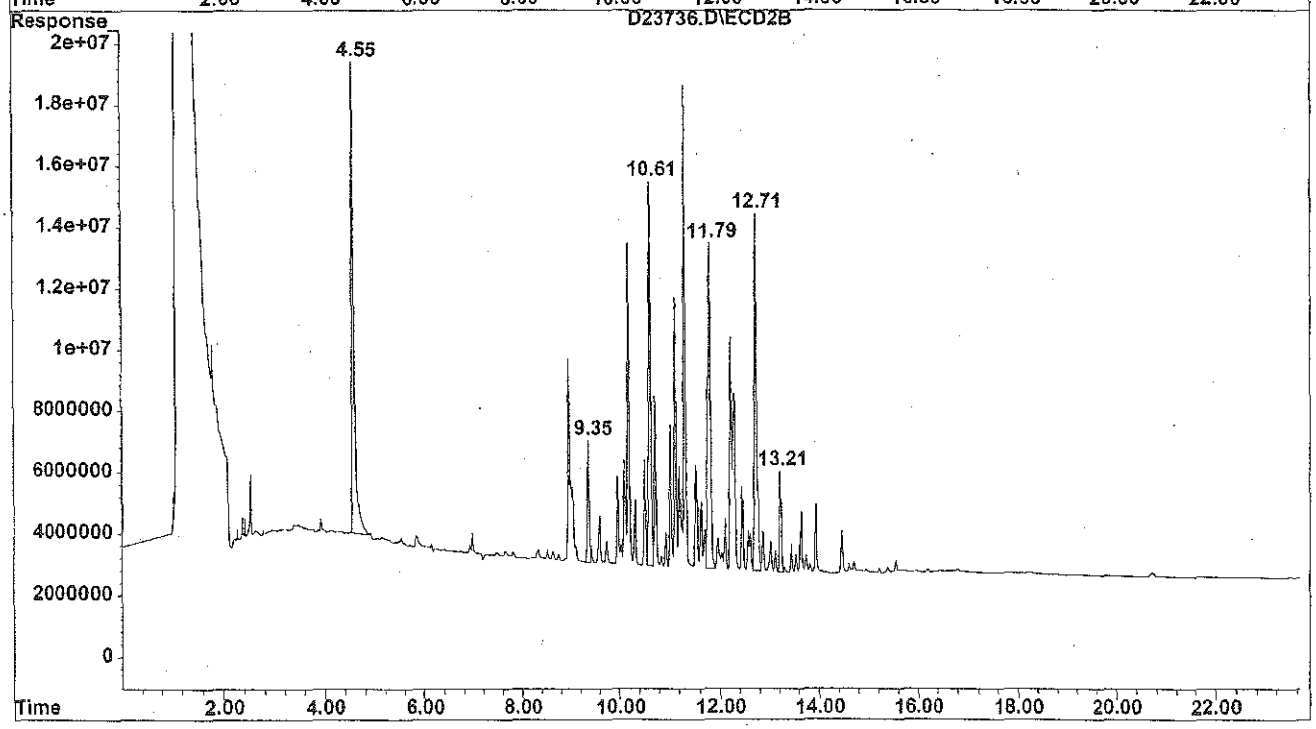
Operator : RAH
Acquired : 10-25-00 12:02:03 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: 17989DL CPI PCBSOX 10/23/00
Misc Info : 30.02g/2000mL, 25ul#4177/1mL
Vial Number: 8





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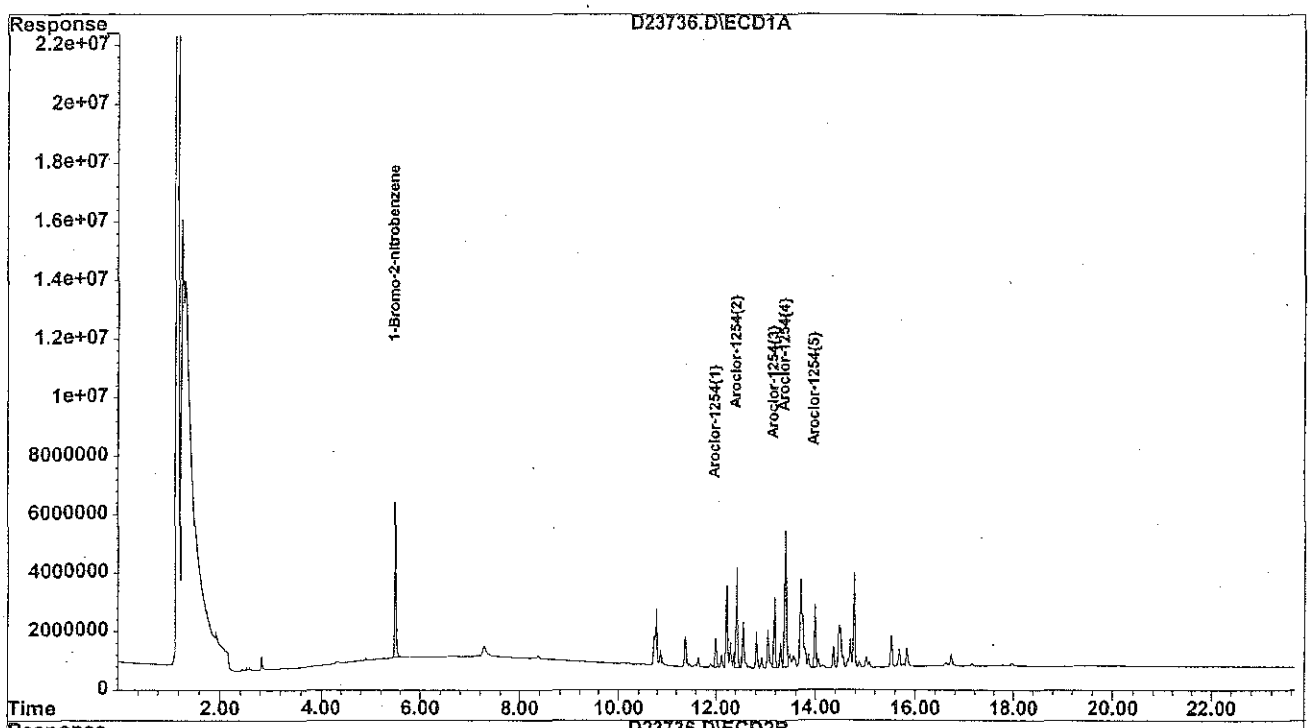
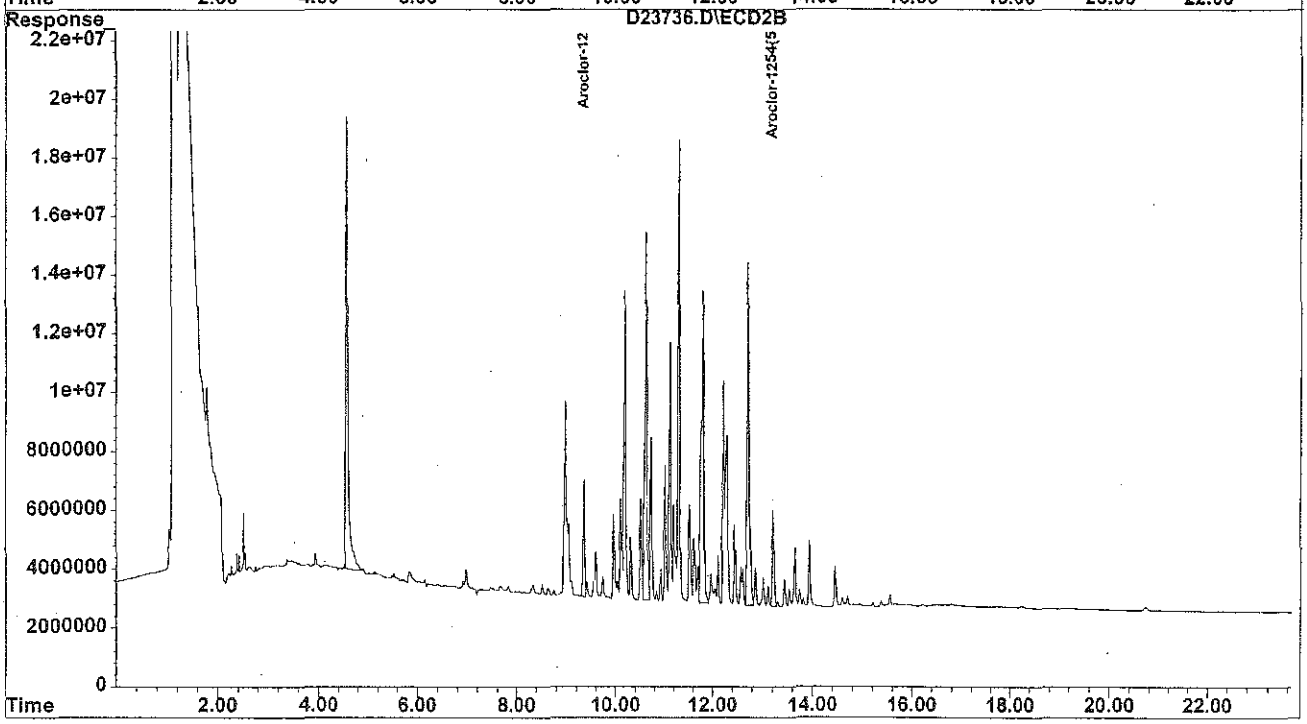
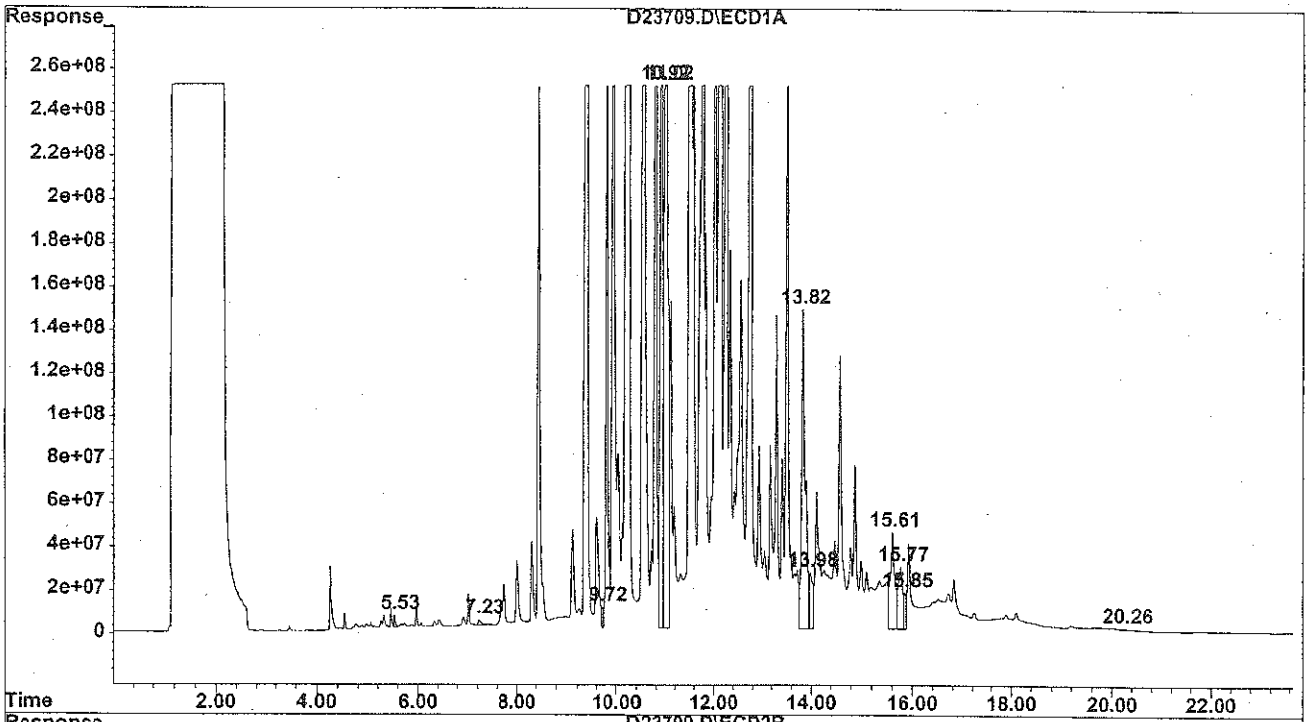
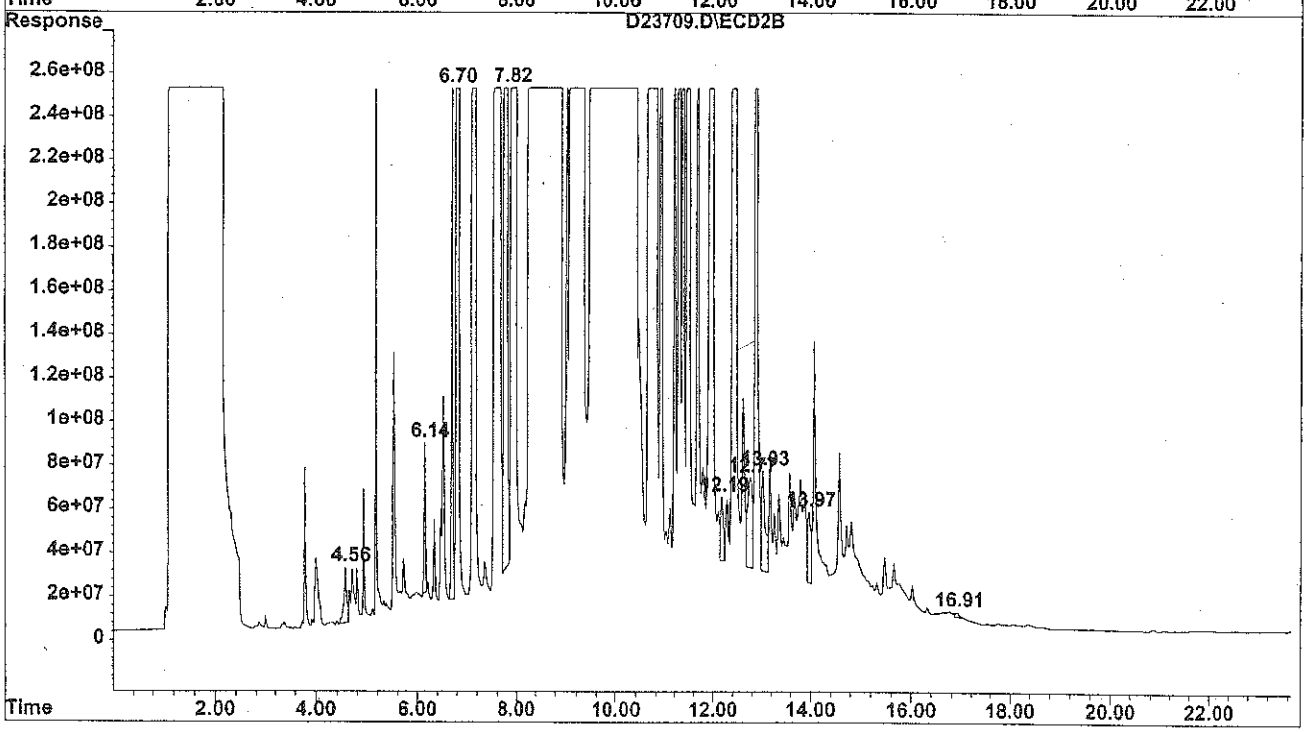
Operator : RAH
Acquired : 10-25-00 12:02:03 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: 17989DL CPI PCBSOX 10/23/00
Misc Info : 30.02g/2000mL, 25ul#4177/1mL
Vial Number: 8



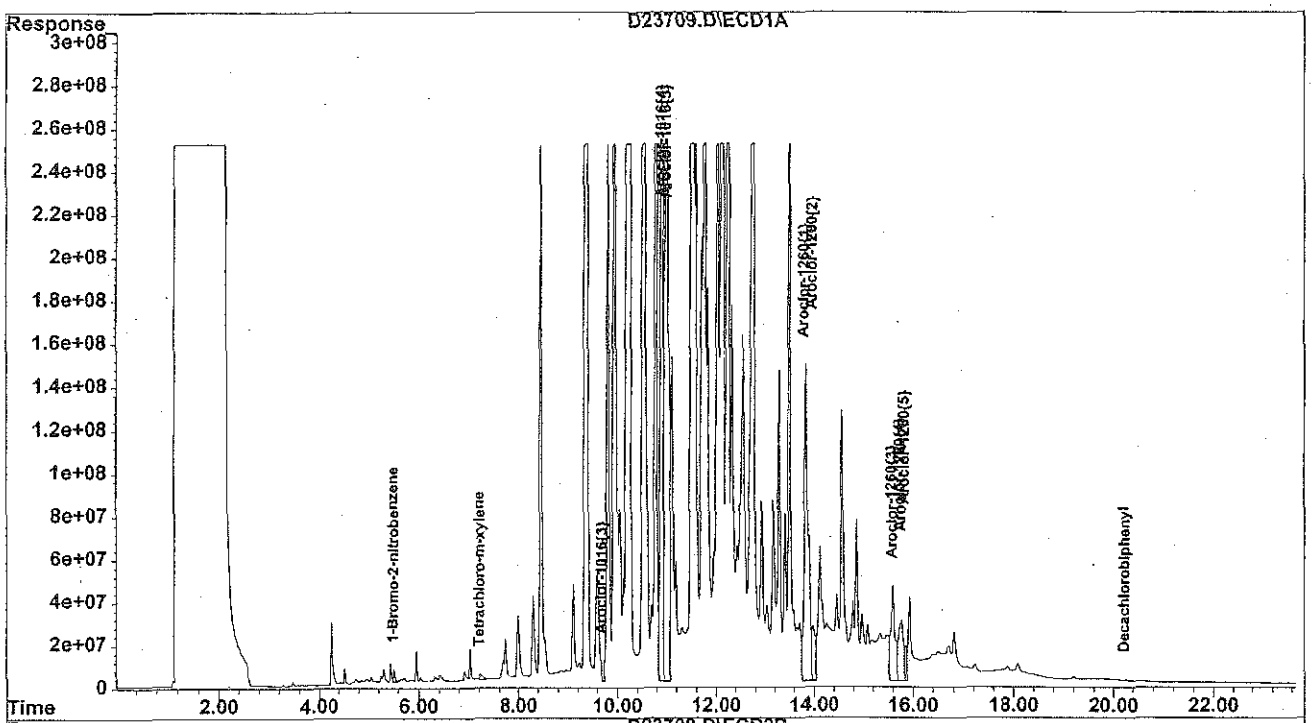


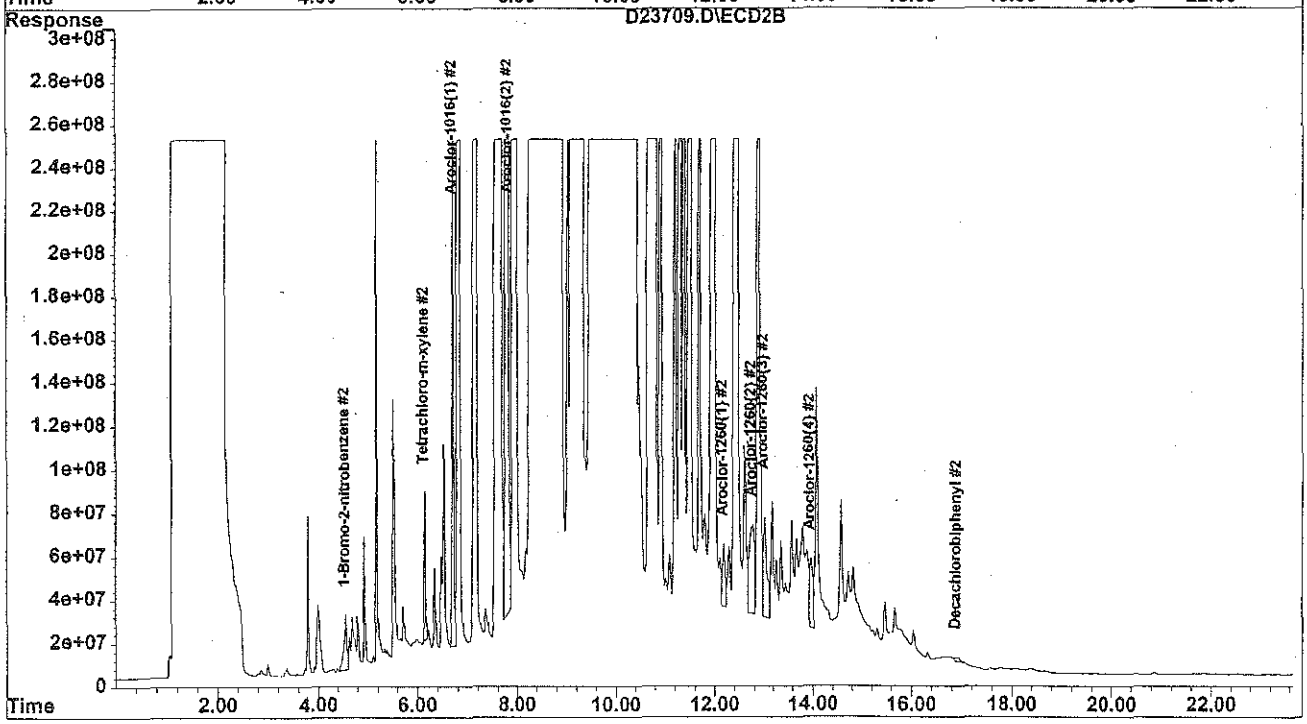
File : C:\HPCHEM\1\DATA\CPIDATA\D23709.D
Operator : RAH
Acquired : 10-24-00 10:48:40 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: 17996 CPI PCBSOX 10/23/00
Misc Info : 30.32g/10mL, 25ul#4177/1mL
Vial Number: 17



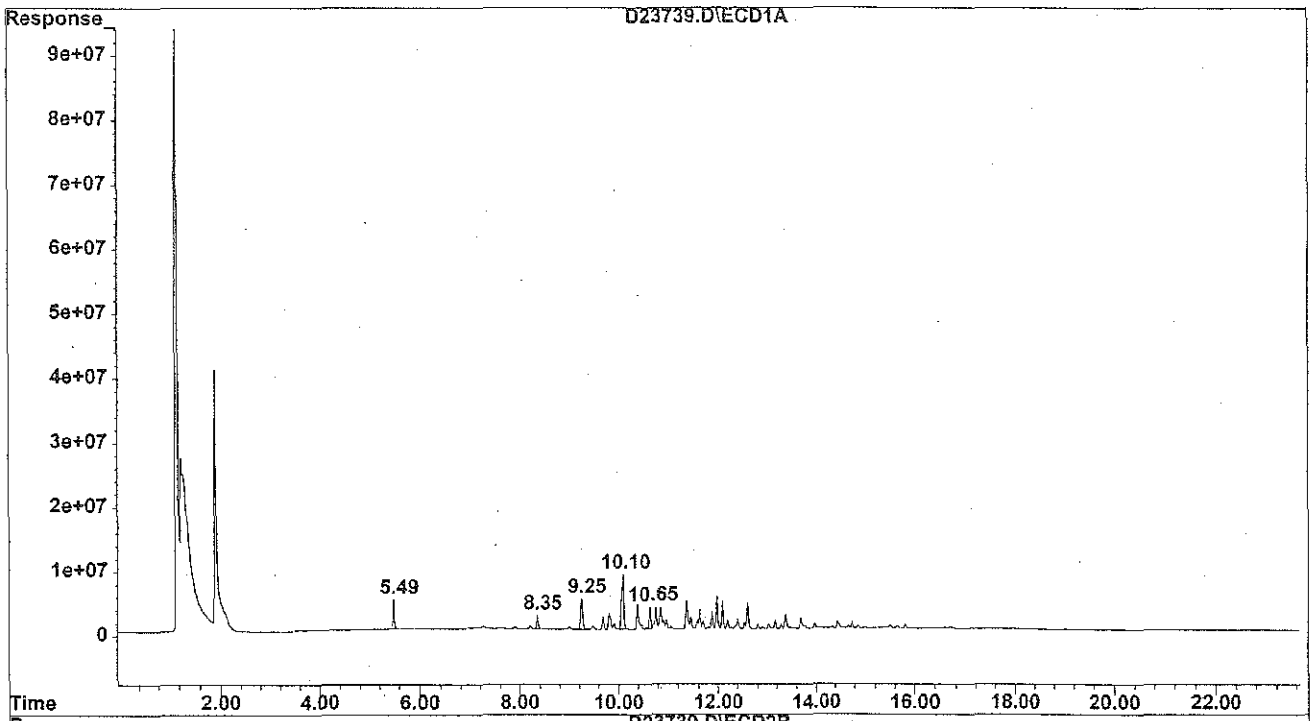


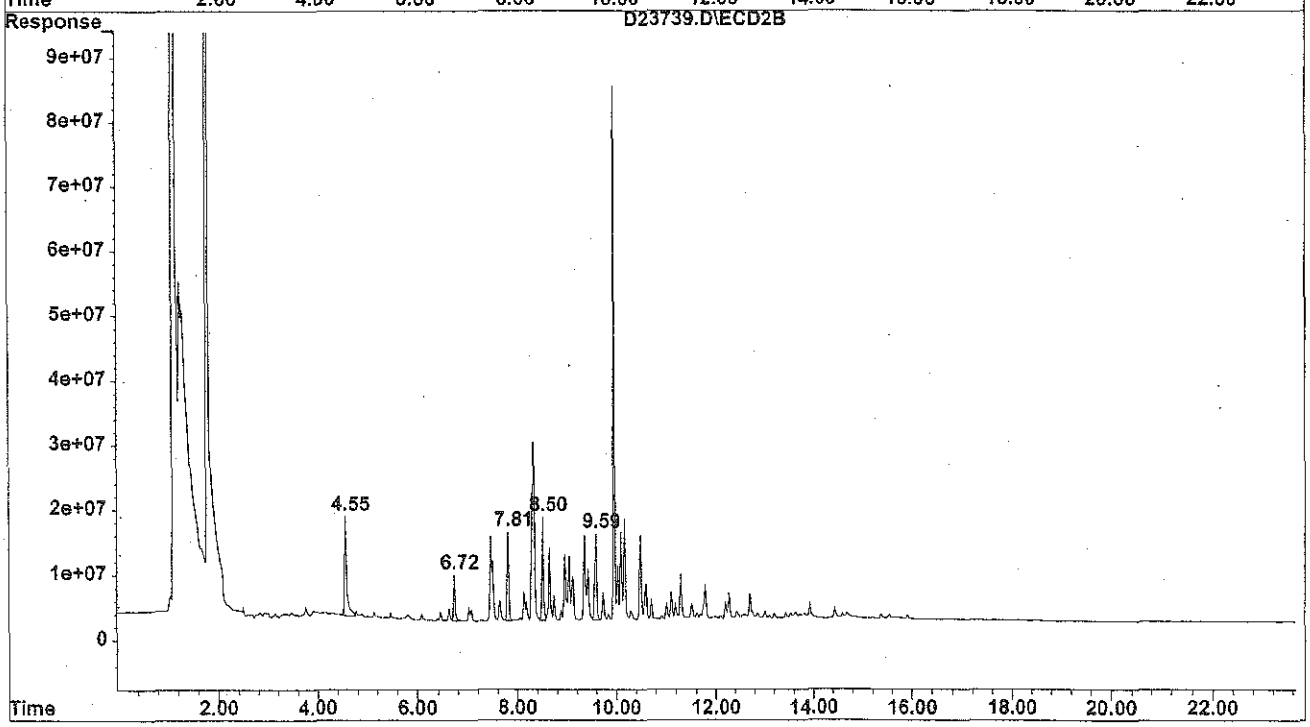
File : C:\HPCHEM\1\DATA\CPIDATA\D23709.D
Operator : RAH
Acquired : 10-24-00 10:48:40 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: 17996 CPI PCBSOX 10/23/00
Misc Info : 30.32g/10mL, 25ul#4177/1mL
Vial Number: 17



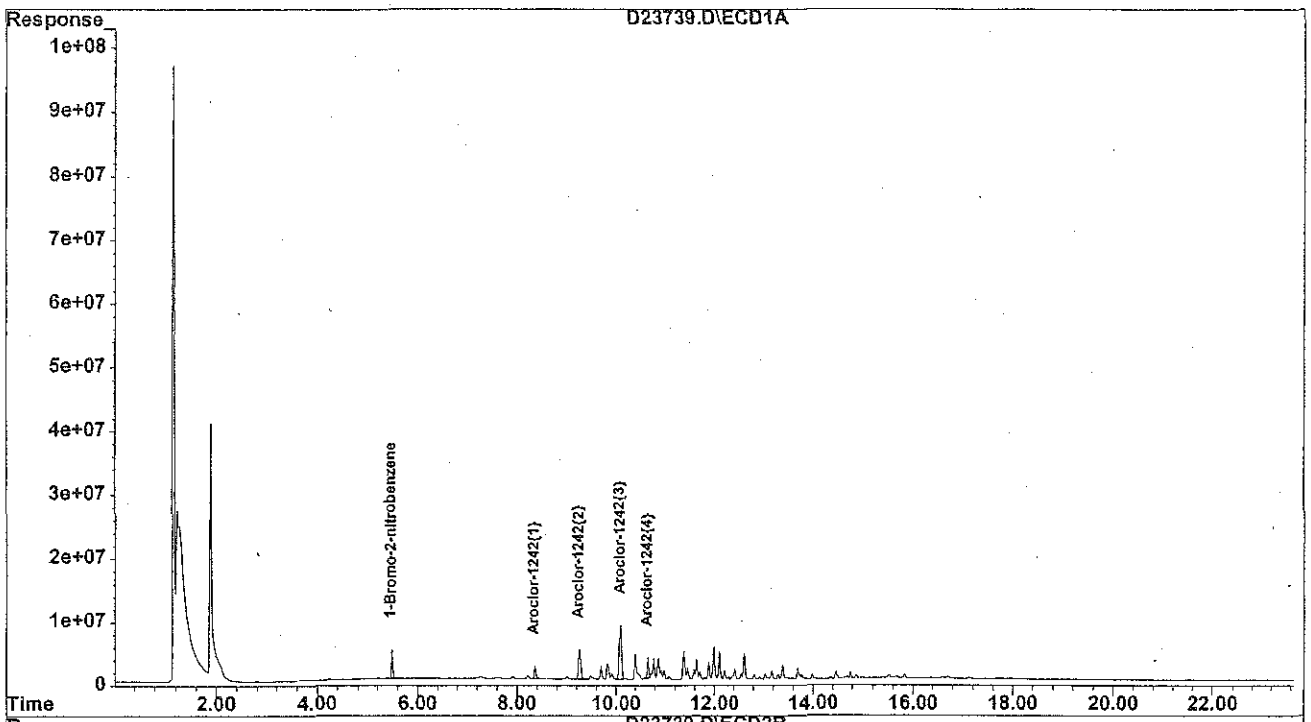


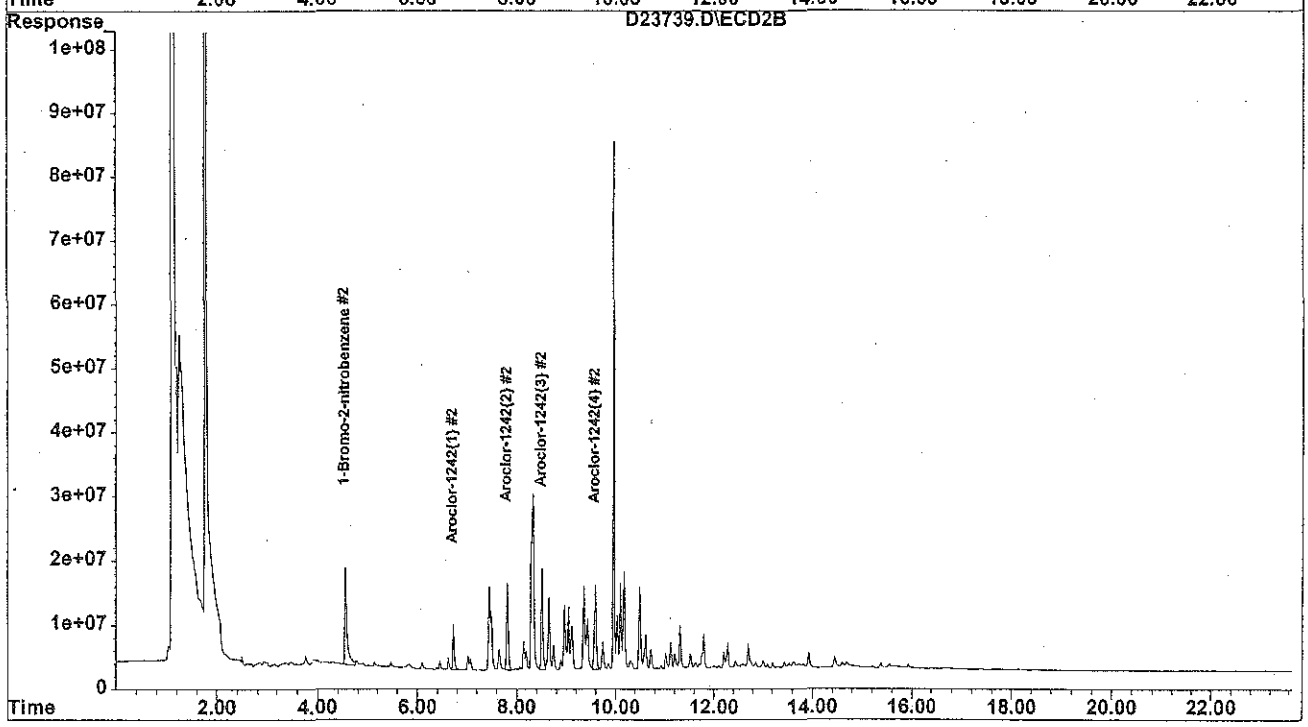
File : C:\HPCHEM\1\DATA\CPIDATA\D23739.D
Operator : RAH
Acquired : 10-25-00 1:28:40 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: 17996DL CPI PCBSOX 10/23/00
Misc Info : 30.32g/2000mL, 25ul#4177/1mL
Vial Number: 11





File : C:\HPCHEM\1\DATA\CPIDATA\D23739.D
Operator : RAH
Acquired : 10-25-00 1:28:40 PM using AcqMethod D_PCB3.M
Instrument : GC Instru
Sample Name: 17996DL CPI PCBSOX 10/23/00
Misc Info : 30.32g/2000mL, 25ul#4177/1mL
Vial Number: 11





First
Environmental
Laboratories, Inc.
IL ELAP / NELAC Accreditation # 100292
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

February 1, 2007

Ms. Sarah Schlichtholz
CPI ENVIRONMENTALS SERVICES, INC.
1123 Wheaton Oaks Court
Wheaton IL 60187

Dear Ms. Schlichtholz:

Attached is the additional QC information requested for QC Data Package for lab samples 17996 & 17989. The following is included:

- Initial Calibration report for Aroclor 1016/1260
- Continuing Calibration report for Aroclor 1016/1260
- Single Point Calibration for Aroclor 1242
- Organic Prep Log
- Injection Log

Should you have any questions regarding any of the enclosed information or need additional information, please contact me at (630) 778-1200.

Sincerely,

Lorrie Franklin

Lorrie Franklin
Director of Quality Assurance

Response Factor Report GC Instru
Initial Calibration

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000

Calibration Files
1 =D23261.D 2 =D23262.D 3 =D23263.D
4 =D23264.D 5 =D23265.D 6 =D23266.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	IA,	B1-Bromo-2-nitrobenzen	----------	----------	----------	ISTD	----------	----------	----------		
2)	SA	Tetrachloro-m-xylen	0.965	0.949	0.951	0.971	0.965	0.967	0.960	0	1.00
3)	SA	Decachlorobiphenyl		0.603	0.599		0.719	0.786	0.677	0	13.52
4)	L1	Aroclor-1016{1}	0.032	0.026	0.024	0.021	0.020	0.019	0.023	0	23.21
5)	L1	Aroclor-1016{2}	0.074	0.061	0.055	0.049	0.045	0.041	0.052	0	24.92
6)	L1	Aroclor-1016{3}	0.017	0.016	0.014	0.014	0.013	0.012	0.014	0	13.99
7)	L1	Aroclor-1016{4}		0.030	0.030	0.029	0.026	0.024	0.027	0	11.74
8)	L1	Aroclor-1016{5}		0.011	0.011	0.011	0.010	0.009	0.010	0	11.61
9)	L2	Aroclor-1221{1}							0.000	0	-1.00
10)	L2	Aroclor-1221{2}							0.000	0	-1.00
11)	L2	Aroclor-1221{3}							0.000	0	-1.00
12)	L2	Aroclor-1221{4}							0.000	0	-1.00
13)	L2	Aroclor-1221{5}							0.000	0	-1.00
14)	L3	Aroclor-1232{1}							0.000	0	-1.00
15)	L3	Aroclor-1232{2}							0.000	0	-1.00
16)	L3	Aroclor-1232{3}							0.000	0	-1.00
17)	L3	Aroclor-1232{4}							0.000	0	-1.00
18)	L3	Aroclor-1232{5}							0.000	0	-1.00
19)	L4	Aroclor-1242{1}							0.000	0	-1.00
20)	L4	Aroclor-1242{2}							0.000	0	-1.00
21)	L4	Aroclor-1242{3}							0.000	0	-1.00
22)	L4	Aroclor-1242{4}							0.000	0	-1.00
23)	L4	Aroclor-1242{5}							0.000	0	-1.00
24)	L5	Aroclor-1248{1}							0.000	0	-1.00
25)	L5	Aroclor-1248{2}							0.000	0	-1.00
26)	L5	Aroclor-1248{3}							0.000	0	-1.00
27)	L5	Aroclor-1248{4}							0.000	0	-1.00
28)	L5	Aroclor-1248{5}							0.000	0	-1.00
29)	L6	Aroclor-1254{1}							0.000	0	-1.00
30)	L6	Aroclor-1254{2}							0.000	0	-1.00
31)	L6	Aroclor-1254{3}							0.000	0	-1.00
32)	L6	Aroclor-1254{4}							0.000	0	-1.00
33)	L6	Aroclor-1254{5}							0.000	0	-1.00
34)	L7	Aroclor-1260{1}		0.053	0.047	0.052	0.043	0.040	0.046	0	11.73
35)	L7	Aroclor-1260{2}		0.052	0.045	0.053	0.043	0.041	0.047	0	10.78
36)	L7	Aroclor-1260{3}		0.036	0.033	0.044	0.034	0.033	0.036	0	11.53
37)	L7	Aroclor-1260{4}		0.025	0.023	0.032	0.025	0.024	0.026	0	12.60
38)	L7	Aroclor-1260{5}		0.061	0.057	0.086	0.064	0.063	0.068	0	16.51

Signal #2 Calibration Files
1 =D23261.D 2 =D23262.D 3 =D23263.D
4 =D23264.D 5 =D23265.D 6 =D23266.D

		Compound	1	2	3	4	5	6	Avg		%RSD
1)	IA,	B1-Bromo-2-nitrobenzen	----------	----------	----------	ISTD	----------	----------	----------		
2)	SA	Tetrachloro-m-xylen	0.686	0.737	0.710	0.727	0.756	0.803	0.732	0	5.23
3)	SA	Decachlorobiphenyl	0.331	0.345	0.359		0.332		0.352	0	7.51
4)	L1	Aroclor-1016{1}	0.021	0.022	0.019	0.017	0.016	0.016	0.018	0	16.48

5)	L1	Aroclor-1016{2}	0.033	0.031	0.028	0.024	0.022	0.020	0.026	0	19.76
6)	L1	Aroclor-1016{3}	0.036	0.039	0.033	0.028	0.026	0.025	0.031	0	18.37
7)	L1	Aroclor-1016{4}	0.026		0.024	0.020	0.020	0.019	0.021	0	18.31
8)	L1	Aroclor-1016{5}	0.029	0.031	0.028	0.026	0.023	0.024	0.026	0	16.33
9)	L2	Aroclor-1221{1}							0.000	0	-1.00
10)	L2	Aroclor-1221{2}							0.000	0	-1.00
11)	L2	Aroclor-1221{3}							0.000	0	-1.00
12)	L2	Aroclor-1221{4}							0.000	0	-1.00
13)	L2	Aroclor-1221{5}							0.000	0	-1.00
14)	L3	Aroclor-1232{1}							0.000	0	-1.00
15)	L3	Aroclor-1232{2}							0.000	0	-1.00
16)	L3	Aroclor-1232{3}							0.000	0	-1.00
17)	L3	Aroclor-1232{4}							0.000	0	-1.00
18)	L3	Aroclor-1232{5}							0.000	0	-1.00
19)	L4	Aroclor-1242{1}							0.000	0	-1.00
20)	L4	Aroclor-1242{2}							0.000	0	-1.00
21)	L4	Aroclor-1242{3}							0.000	0	-1.00
22)	L4	Aroclor-1242{4}							0.000	0	-1.00
23)	L4	Aroclor-1242{5}							0.000	0	-1.00
24)	L5	Aroclor-1248{1}							0.000	0	-1.00
25)	L5	Aroclor-1248{2}							0.000	0	-1.00
26)	L5	Aroclor-1248{3}							0.000	0	-1.00
27)	L5	Aroclor-1248{4}							0.000	0	-1.00
28)	L5	Aroclor-1248{5}							0.000	0	-1.00
29)	L6	Aroclor-1254{1}							0.000	0	-1.00
30)	L6	Aroclor-1254{2}							0.000	0	-1.00
31)	L6	Aroclor-1254{3}							0.000	0	-1.00
32)	L6	Aroclor-1254{4}							0.000	0	-1.00
33)	L6	Aroclor-1254{5}							0.000	0	-1.00
34)	L7	Aroclor-1260{1}	0.060	0.059	0.054	0.053	0.045	0.047	0.051	0	14.98
35)	L7	Aroclor-1260{2}	0.052	0.050	0.047	0.047	0.043	0.045	0.046	0	9.17
36)	L7	Aroclor-1260{3}	0.050	0.051	0.044	0.041	0.033	0.039	0.041	0	18.60
37)	L7	Aroclor-1260{4}	0.069	0.064	0.065	0.070	0.055		0.063	0	9.32
8)	L7	Aroclor-1260{5}	0.027	0.027	0.028	0.029	0.021		0.026	0	12.36

(#) = Out of Range ### Number of calibration levels exceeded format ###

D_PCB4.M Wed Jan 31 15:24:30 2007 RICK

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\CPIDATA\D23696.D\ECD1A.CH Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\CPIDATA\D23696.D\ECD2B.CH
Acq On : 10-24-00 3:50:33 PM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile Signal #1: DPCB1.E IntFile Signal #2: DPCB2.E

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)	
1	IA,	B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	106	-0.04	
2	SA	Tetrachloro-m-xylene	50.000	47.273	5.5	99	-0.07	
3	SA	Decachlorobiphenyl	50.000	67.814	-35.6#	0	-0.19	
4	L1	Aroclor-1016{1}	500.000	458.330	8.3	94	-0.08	
5	L1	Aroclor-1016{2}	500.000	465.499	6.9	93	-0.08	
6	L1	Aroclor-1016{3} Avg 458.498 / 500.000 / 41.502	500.000	429.017	14.2	95	-0.08	OK
7	L1	Aroclor-1016{4} -8% D	500.000	479.088	4.2	94	-0.09	
8	L1	Aroclor-1016{5}	500.000	460.557	7.9	90	-0.09	
34	L7	Aroclor-1260{1}	500.000	492.409	1.5	93	-0.09	
35	L7	Aroclor-1260{2}	500.000	572.788	-14.6	107	-0.09	
36	L7	Aroclor-1260{3} 565.141 / 500.000 / 65.141	500.000	573.933	-14.8	101	-0.09	OK
37	L7	Aroclor-1260{4} 13% D	500.000	578.673	-15.7#	101	-0.09	
38	L7	Aroclor-1260{5}	500.000	607.904	-21.6#	103	-0.09	

Signal #2

1	IA,	B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	112	-0.04
2	SA	Tetrachloro-m-xylene	50.000	56.288	-12.6	127	-0.07
3	SA	Decachlorobiphenyl	50.000	99.840	-99.7#	0	-0.12
4	L1	Aroclor-1016{1}	500.000	496.322	0.7	116	-0.08
5	L1	Aroclor-1016{2}	500.000	447.798	10.4	111	-0.09
6	L1	Aroclor-1016{3}	500.000	443.048	11.4	112	-0.09
7	L1	Aroclor-1016{4}	500.000	466.059	6.8	107	-0.09
8	L1	Aroclor-1016{5}	500.000	478.841	4.2	106	-0.10
34	L7	Aroclor-1260{1}	500.000	552.060	-10.4	120	-0.10
35	L7	Aroclor-1260{2}	500.000	671.112	-34.2#	149	-0.10
36	L7	Aroclor-1260{3}	500.000	561.655	-12.3	127	-0.10
37	L7	Aroclor-1260{4}	500.000	812.189	-62.4#	165	-0.10
38	L7	Aroclor-1260{5}	500.000	834.742	-66.9#	166	-0.10

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\CPIDATA\D23719.D\ECD1A.CH Vial: 2
Acq On : 10-25-00 3:27:59 AM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile : DPCB1.E

Data File : C:\HPCHEM\1\DATA\CPIDATA\D23719.D\ECD2B.CH Vial: 2
Acq On : 10-25-00 3:27:58 AM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile : DPCB2.E

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)	
1	IA,B1	-Bromo-2-nitrobenzene	50.000	50.000	0.0	106	-0.03	
2	SA	Tetrachloro-m-xylene	50.000	48.449	3.1	102	-0.05	
3	SA	Decachlorobiphenyl	50.000	58.173	-16.3#	0	-0.14	
4	L1	Aroclor-1016{1}	500.000	445.478	10.9	91	-0.06	
5	L1	Aroclor-1016{2}	500.000	436.357	12.7	88	-0.06	
6	L1	Aroclor-1016{3}	500.000	421.467	15.7#	93	-0.07	OK
7	L1	Aroclor-1016{4}	500.000	450.223	10.0	89	-0.07	
8	L1	Aroclor-1016{5}	500.000	478.391	4.3	94	-0.07	
4	L7	Aroclor-1260{1}	500.000	484.838	3.0	92	-0.07	
35	L7	Aroclor-1260{2}	500.000	583.350	-16.7#	109	-0.07	
36	L7	Aroclor-1260{3}	500.000	518.360	-3.7	91	-0.07	
37	L7	Aroclor-1260{4}	500.000	531.648	-6.3	93	-0.07	OK
38	L7	Aroclor-1260{5}	500.000	575.762	-15.2#	98	-0.07	

Avg 446.383 / 500.000 / -53.617 -11% D

538.792 / 500.000 / 38.792 8% D

Signal #2

1	IA,B1	-Bromo-2-nitrobenzene	50.000	50.000	0.0	66	-0.03
2	SA	Tetrachloro-m-xylene	50.000	63.760	-27.5#	85	-0.05
3	SA	Decachlorobiphenyl	50.000	54.413	-8.8	0	-0.09
4	L1	Aroclor-1016{1}	500.000	537.358	-7.5	74	-0.07
5	L1	Aroclor-1016{2}	500.000	505.398	-1.1	74	-0.07
6	L1	Aroclor-1016{3}	500.000	561.883	-12.4	84	-0.07
7	L1	Aroclor-1016{4}	500.000	582.129	-16.4#	79	-0.07
8	L1	Aroclor-1016{5}	500.000	517.847	-3.6	67	-0.08
34	L7	Aroclor-1260{1}	500.000	496.677	0.7	64	-0.07
35	L7	Aroclor-1260{2}	500.000	422.989	15.4#	55	-0.07
36	L7	Aroclor-1260{3}	500.000	394.894	21.0#	53	-0.07
37	L7	Aroclor-1260{4}	500.000	421.683	15.7#	50	-0.07
38	L7	Aroclor-1260{5}	500.000	469.363	6.1	55	-0.07

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\CPIDATA\D23733.D\ECD1A.CH Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\CPIDATA\D23733.D\ECD2B.CH
Acq On : 10-25-00 10:37:34 AM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile Signal #1: DPCB1.E IntFile Signal #2: DPCB2.E

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)	
1	IA,B1	-Bromo-2-nitrobenzene	50.000	50.000	0.0	79	-0.06	
2	SA	Tetrachloro-m-xylene	50.000	51.182	-2.4	80	-0.09	
3	SA	Decachlorobiphenyl	50.000	62.616	-25.2#	0	-0.22	
4	L1	Aroclor-1016{1}	500.000	465.476	6.9	71	-0.09	
5	L1	Aroclor-1016{2}	500.000	473.369	5.3	71	-0.09	
6	L1	Aroclor-1016{3}	500.000	438.863	12.2	72	-0.10	OK
7	L1	Aroclor-1016{4}	500.000	477.936	4.4	70	-0.10	
8	L1	Aroclor-1016{5}	500.000	453.986	9.2	66	-0.10	
34	L7	Aroclor-1260{1}	500.000	449.338	10.1	63	-0.10	
35	L7	Aroclor-1260{2}	500.000	520.030	-4.0	73	-0.10	
36	L7	Aroclor-1260{3}	500.000	453.628	9.3	59	-0.10	OK
37	L7	Aroclor-1260{4}	500.000	494.502	1.1	64	-0.10	
38	L7	Aroclor-1260{5}	500.000	504.845	-1.0	64	-0.10	

Signal #2

1	IA,B1	-Bromo-2-nitrobenzene	50.000	50.000	0.0	55	-0.05
2	SA	Tetrachloro-m-xylene	50.000	54.521	-9.0	61	-0.08
3	SA	Decachlorobiphenyl	50.000	54.189	-8.4	0	-0.13
4	L1	Aroclor-1016{1}	500.000	513.162	-2.6	59	-0.10
5	L1	Aroclor-1016{2}	500.000	509.669	-1.9	62	-0.10
6	L1	Aroclor-1016{3}	500.000	490.226	2.0	61	-0.10
7	L1	Aroclor-1016{4}	500.000	505.542	-1.1	57	-0.11
8	L1	Aroclor-1016{5}	500.000	490.034	2.0	53	-0.11
34	L7	Aroclor-1260{1}	500.000	489.765	2.0	52	-0.10
35	L7	Aroclor-1260{2}	500.000	465.232	7.0	51	-0.10
36	L7	Aroclor-1260{3}	500.000	319.690	36.1#	36	-0.10
37	L7	Aroclor-1260{4}	500.000	387.284	22.5#	39	-0.10
38	L7	Aroclor-1260{5}	500.000	430.493	13.9	42	-0.11

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\CPIDATA\D23746.D\ECD1A.CH Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\CPIDATA\D23746.D\ECD2B.CH
Acq On : 10-25-00 6:08:48 PM Operator: RAH
Sample : AR1016/1260 500ppb Inst : GC Instru
Misc : #4172, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile Signal #1: DPCB1.E IntFile Signal #2: DPCB2.E

Method : D:\METHODS2\D_PCB4.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Mon Oct 02 10:13:36 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)	
1	IA,B1	-Bromo-2-nitrobenzene	50.000	50.000	0.0	108	-0.08	
2	SA	Tetrachloro-m-xylene	50.000	48.784	2.4	104	-0.12	
3	SA	Decachlorobiphenyl	50.000	60.231	-20.5#	0	-0.28	
4	L1	Aroclor-1016{1}	500.000	450.712	9.9	94	-0.12	
5	L1	Aroclor-1016{2}	500.000	482.489	3.5	98	-0.12	
6	L1	Aroclor-1016{3}	500.000	453.201	9.4	102	-0.13	OK
7	L1	Aroclor-1016{4}	500.000	473.417	5.3	95	-0.13	
8	L1	Aroclor-1016{5}	500.000	452.425	9.5	90	-0.13	
34	L7	Aroclor-1260{1}	500.000	478.970	4.2	92	-0.13	
35	L7	Aroclor-1260{2}	500.000	533.691	-6.7	102	-0.13	
36	L7	Aroclor-1260{3}	500.000	451.456	9.7	81	-0.13	OK
37	L7	Aroclor-1260{4}	500.000	496.625	0.7	88	-0.13	
38	L7	Aroclor-1260{5}	500.000	497.128	0.6	86	-0.13	

Signal #2

40	IA,B1	-Bromo-2-nitrobenzene #2	50.000	50.000	0.0	87	-0.06
41	SA	Tetrachloro-m-xylene #2	50.000	56.904	-13.8	100	-0.09
42	SA	Decachlorobiphenyl #2	50.000	55.575	-11.2	0	-0.14
43	L1	Aroclor-1016{1} #2	500.000	495.454	0.9	90	-0.11
44	L1	Aroclor-1016{2} #2	500.000	460.555	7.9	89	-0.11
45	L1	Aroclor-1016{3} #2	500.000	437.812	12.4	86	-0.11
46	L1	Aroclor-1016{4} #2	500.000	470.310	5.9	84	-0.11
47	L1	Aroclor-1016{5} #2	500.000	466.688	6.7	80	-0.12
73	L7	Aroclor-1260{1} #2	500.000	473.152	5.4	80	-0.11
74	L7	Aroclor-1260{2} #2	500.000	526.991	-5.4	91	-0.11
75	L7	Aroclor-1260{3} #2	500.000	386.508	22.7#	68	-0.11
76	L7	Aroclor-1260{4} #2	500.000	444.182	11.2	70	-0.11
77	L7	Aroclor-1260{5} #2	500.000	504.485	-0.9	78	-0.11

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\CPIDATA\D23734.D\ECD1A.CH Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\CPIDATA\D23734.D\ECD2B.CH
Acq On : 10-25-00 11:05:43 AM Operator: RAH
Sample : AR1242 500ppb Single pt. calibration Inst : GC Instru
Misc : #3444, #3471surr, 25ul#4177/1mL Multiplr: 1.00
IntFile Signal #1: DPCB1.E IntFile Signal #2: DPCB2.E

Method : C:\HPCHEM\1\METHODS\D_1242.M (Chemstation Integrator)
Title : D-PCBS
Last Update : Thu Jun 29 10:20:35 2000
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	IA,B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	96	0.06
2	SA Tetrachloro-m-xylene	50.000	48.763	2.5	100	0.08
3	SA Decachlorobiphenyl	50.000	48.763	2.5	98	0.18
4	L4 Aroclor-1242{1}	500.000	467.673	6.5	84	0.07
5	L4 Aroclor-1242{2}	500.000	487.632	2.5	85	0.08
6	L4 Aroclor-1242{3}	500.000	487.632	2.5	95	0.09
7	L4 Aroclor-1242{4}	500.000	487.632	2.5	89	0.09
8	L4 Aroclor-1242{5}	500.000	487.632	2.5	83	0.10

Signal #2

1	IA,B1-Bromo-2-nitrobenzene	50.000	50.000	0.0	707	-0.10
2	SA Tetrachloro-m-xylene	50.000	46.702	6.6	698	-0.17
3	SA Decachlorobiphenyl	50.000	46.702	6.6	387	-0.28
4	L4 Aroclor-1242{1}	500.000	664.252	-32.9#	699	-0.19
5	L4 Aroclor-1242{2}	500.000	605.392	-21.1#	744	-0.21
6	L4 Aroclor-1242{3}	500.000	546.418	-9.3	621	-0.20
7	L4 Aroclor-1242{4}	500.000	497.297	0.5	705	-0.21
8	L4 Aroclor-1242{5}	500.000	448.017	10.4	547	-0.21

(#) = Out of Range SPCC's out = 0 CCC's out = 0

rst
Environmental
Laboratories

O. _ .nic Prep
Sonic Sep F Sox
3550C 3510C 3540C

E 8270C
PNA 8270C
TPH 8015B
PEST/PCB 8081C/8082

Extn Date	Fraction	Split?	Sample ID	Initial Wt/ Volume	Surrogate Amt/ID	Spike Amt/ID	Comments	Final Vol	ISTD ID
10/23/00	BNA SOX	N	BLANK	30.00	1.0ml 4119			1mL	25uL4190
10/23/00	BNA SOX	N	LCS	30.00	1.0ml 4119	1.0 ml4120		1mL	25uL4190
10/23/00	BNA SOX	N	ms17994	30.00	1.0ml 4119	1.0 ml4120		2mL	25uL4190
10/23/00	BNA SOX	N	msd17994	30.01	1.0ml 4119	1.0 ml4120		3mL	25uL4190
10/23/00	BNA SOX	N	17988	30.00	1.0ml 4119		CPI	5mL	25uL4190
10/23/00	BNA SOX	N	17990	30.15	1.0ml 4119		CPI	5mL	25uL4190
10/23/00	BNA SOX	N	17994	30.08	1.0ml 4119		CPI	3mL	25uL4190
10/23/00	BNA SOX	N	17995	30.45	1.0ml 4119		CPI	5mL	25uL4190
10/23/00	BNA SOX	N	17997	30.30	1.0ml 4119		CPI	3mL	25uL4190
10/23/00	PCB SOX	N	BLANK	30.00	100uL 4176			10mL	25uL4177/1mL
10/23/00	PCB SOX	N	LCS	30.00	100uL 4176	100uL 4118		10mL	25uL4177/1mL
10/23/00	PCB SOX	N	ms18256	30.12	100uL 4176	100uL 4118		10mL	25uL4177/1mL
10/23/00	PCB SOX	N	msd18256	30.19	100uL 4176	100uL 4118		10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17988	30.16	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17989	30.02	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17990	30.12	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17991	30.05	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17993	30.00	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17994	30.26	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17995	30.25	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17996	30.32	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17997	30.10	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17998	30.04	100uL 4176		CPI	10mL	25uL4177/1mL
10/23/00	PCB SOX	N	17999	30.08	100uL 4176		CPI	10mL	25uL4177/1mL

Analyst's Initials_____

Extended QA_____

Revised 05 May 00:

Tied QA meets 24 hour batch criteria; See page ____

Page #_____

Injection Log

Directory: d:\0010\001024

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	3	D23694.d	1.	ENDRIN/DDT 100ppb	#3448, 25ul#4177/1mL	24 Oct 2000 10:26
2	4	D23695.d	1.	PEST CAL STD MIX AB	#4091, #3471surr,...	24 Oct 2000 15:22
3	2	D23696.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	24 Oct 2000 15:50
4	5	D23697.d	1.	AR1242 500ppb	#3444, #3471surr,...	24 Oct 2000 17:09
5	6	D23698.d	1.	AR1248 500ppb	#3445, #3471surr,...	24 Oct 2000 17:41
6	7	D23699.d	1.	AR1221/1254 500ppb	#3442, #3471surr,...	24 Oct 2000 18:09
7	8	D23700.d	1.	BLANK PCBSOX 10/23/00	30.00g/10mL, 25ul...	24 Oct 2000 18:36
8	9	D23701.d	1.	LCS PCBSOX 10/23/00	30.00g/10mL, 25ul...	24 Oct 2000 19:04
9	10	D23702.d	1.	17988DL CPI PCBSOX 10/23/00	30.16g/100mL, 25u...	24 Oct 2000 19:32
10	11	D23703.d	1.	17989 CPI PCBSOX 10/23/00	30.02g/10mL, 25ul...	24 Oct 2000 20:00
11	12	D23704.d	1.	17990 CPI PCBSOX 10/23/00	30.12g/10mL, 25ul...	24 Oct 2000 20:28
12	13	D23705.d	1.	17991 CPI PCBSOX 10/23/00	30.05g/10mL, 25ul...	24 Oct 2000 20:56
13	14	D23706.d	1.	17993DL CPI PCBSOX 10/23/00	30.00g/100mL, 25u...	24 Oct 2000 21:24
14	15	D23707.d	1.	17994 CPI PCBSOX 10/23/00	30.26g/10mL, 25ul...	24 Oct 2000 21:52
15	16	D23708.d	1.	17995 CPI PCBSOX 10/23/00	30.25g/10mL, 25ul...	24 Oct 2000 22:20
16	17	D23709.d	1.	17996 CPI PCBSOX 10/23/00	30.32g/10mL, 25ul...	24 Oct 2000 22:48
17	18	D23710.d	1.	17997 CPI PCBSOX 10/23/00	30.10g/10mL, 25ul...	24 Oct 2000 23:16
18	19	D23711.d	1.	17998DL CPI PCBSOX 10/23/00	30.04g/10mL, 25ul...	24 Oct 2000 23:44
19	20	D23712.d	1.	17999DL CPI PCBSOX 10/23/00	30.08g/100mL, 25u...	25 Oct 2000 00:12
20	21	D23713.d	1.	18246 ROUX PCBSOX 10/23/00	30.07g/10mL, 25ul...	25 Oct 2000 00:40
21	22	D23714.d	1.	18247DL ROUX PCBSOX 10/23/00	30.25g/100mL, 25u...	25 Oct 2000 01:07
22	23	D23715.d	1.	18248 ROUX PCBSOX 10/23/00	30.14g/10mL, 25ul...	25 Oct 2000 01:36
23	24	D23716.d	1.	18249 ROUX PCBSOX 10/23/00	30.13g/10mL, 25ul...	25 Oct 2000 02:04
24	25	D23717.d	1.	18250 ROUX PCBSOX 10/23/00	30.15g/10mL, 25ul...	25 Oct 2000 02:32
25	26	D23718.d	1.	18251 ROUX PCBSOX 10/23/00	30.07g/10mL, 25ul...	25 Oct 2000 03:00
26	2	D23719.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 03:27
27	5	D23720.d	1.	AR1242 500ppb	#3444, #3471surr,...	25 Oct 2000 03:55
28	6	D23721.d	1.	AR1248 500ppb	#3445, #3471surr,...	25 Oct 2000 04:24
29	7	D23722.d	1.	AR1221/1254 500ppb	#3442, #3471surr,...	25 Oct 2000 04:52
30	27	D23723.d	1.	18252 ROUX PCBSOX 10/23/00	30.13g/10mL, 25ul...	25 Oct 2000 05:20
31	28	D23724.d	1.	18253 ROUX PCBSOX 10/23/00	30.25g/10mL, 25ul...	25 Oct 2000 05:48
32	29	D23725.d	1.	18254 ROUX PCBSOX 10/23/00	30.18g/10mL, 25ul...	25 Oct 2000 06:16
33	30	D23726.d	1.	18255 ROUX PCBSOX 10/23/00	30.00g/10mL, 25ul...	25 Oct 2000 06:44
34	31	D23727.d	1.	18256 ROUX PCBSOX 10/23/00	30.22g/10mL, 25ul...	25 Oct 2000 07:12
35	32	D23728.d	1.	MS18256 ROUX PCBSOX 10/23/00	30.12g/10mL, 25ul...	25 Oct 2000 07:40
36	33	D23729.d	1.	MSD18256 ROUX PCBSOX 10/23/00	30.19g/10mL, 25ul...	25 Oct 2000 08:08
37	34	D23730.d	1.	18257 ROUX PCBSOX 10/23/00	30.00g/10mL, 25ul...	25 Oct 2000 08:37
38	35	D23731.d	1.	18047DL BEST PCBSOX 10/23/00	30.29g/100mL, 25u...	25 Oct 2000 09:05
39	2	D23732.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 09:33

Injection Log

Directory: D:\0010\001025

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
	2	D23733.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 10:37
2	5	D23734.d	1.	AR1242 500ppb	#3444, #3471surr,...	25 Oct 2000 11:05
3	7	D23735.d	1.	AR1221/1254 500ppb	#3442, #3471surr,...	25 Oct 2000 11:33
4	8	D23736.d	1.	17989DL CPI PCBSOX 10/23/00	30.02g/2000mL, 25...	25 Oct 2000 12:02
5	9	D23737.d	1.	17990DL CPI PCBSOX 10/23/00	30.12g/100mL, 25u...	25 Oct 2000 12:30
6	10	D23738.d	1.	17991DL CPI PCBSOX 10/23/00	30.05g/100mL, 25u...	25 Oct 2000 12:58
7	11	D23739.d	1.	17996DL CPI PCBSOX 10/23/00	30.32g/2000mL, 25...	25 Oct 2000 13:28
8	12	D23740.d	1.	17995DL CPI PCBSOX 10/23/00	30.25g/100mL, 25u...	25 Oct 2000 13:59
9	13	D23741.d	1.	17994DL CPI PCBSOX 10/23/00	30.26g/100mL, 25u...	25 Oct 2000 14:27
10	14	D23742.d	1.	17997DL CPI PCBSOX 10/23/00	30.10g/100mL, 25u...	25 Oct 2000 14:55
11	15	D23743.d	1.	17998DL CPI PCBSOX 10/23/00	30.04g/1000mL, 25...	25 Oct 2000 15:24
12	16	D23744.d	1.	17999DL CPI PCBSOX 10/23/00	30.08g/1000mL, 25...	25 Oct 2000 15:52
13	5	D23745.d	1.	AR1242 500ppb	#3444, #3471surr,...	25 Oct 2000 17:40
14	2	D23746.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 18:08
15	7	D23747.d	1.	AR1221/1254 500ppb	#3442, #3471surr,...	25 Oct 2000 18:36
16	17	D23748.d	1.	18246DL ROUX PCBSOX 10/23/00	30.07g/100mL, 25u...	25 Oct 2000 19:05
17	18	D23749.d	1.	18247DL2 ROUX PCBSOX 10/23/00	30.25g/1000mL, 25...	25 Oct 2000 19:33
18	19	D23750.d	1.	18248DL ROUX PCBSOX 10/23/00	30.14g/2000mL, 25...	25 Oct 2000 20:01
19	20	D23751.d	1.	18249DL ROUX PCBSOX 10/23/00	30.13g/100mL, 25u...	25 Oct 2000 20:29
20	21	D23752.d	1.	18250DL ROUX PCBSOX 10/23/00	30.15g/1000mL, 25...	25 Oct 2000 20:57
21	22	D23753.d	1.	18252DL ROUX PCBSOX 10/23/00	30.13g/1000mL, 25...	25 Oct 2000 21:26
22	23	D23754.d	1.	18254DL ROUX PCBSOX 10/23/00	30.18g/100mL, 25u...	25 Oct 2000 21:54
23	24	D23755.d	1.	18255DL ROUX PCBSOX 10/23/00	30.00g/2000mL, 25...	25 Oct 2000 22:22
24	25	D23758.d	1.	18256DL ROUX PCBSOX 10/23/00	30.22g/1000mL, 25...	25 Oct 2000 22:50
25	26	D23759.d	1.	18257DL ROUX PCBSOX 10/23/00	30.00g/500mL, 25u...	25 Oct 2000 23:19
26	2	D23760.d	1.	AR1016/1260 500ppb	#4172, #3471surr,...	25 Oct 2000 23:47

An Analytical
Testing Laboratory

Prairie Analytical Systems, INCORPORATED

1210 Capital Airport Drive
Springfield, Illinois 62707
Phone: 217-753-1148
Fax: 217-753-1152
www.prairieanalytical.com

February 2, 2007

Ms. Sarah A. Schlichtholz
Continental Placer, Inc.
CPI Environmental Services, Inc.
1123 Wheaton Oaks Court
Wheaton, IL 60187

RE: First Environmental PCB data for samples 17996 and 17989

Dear Sarah:

On your request, Prairie Analytical has evaluated the raw data generated by First Environmental for the PCB analysis of samples 17996 and 17989 in 2000.
The raw data of samples, QC samples and standards of various aroclors were reviewed. Aroclors in samples were correctly identified. The quality of the data is satisfactory.

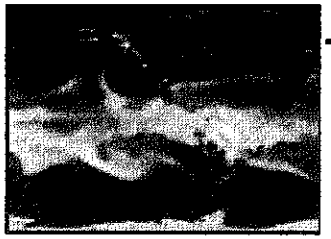
Please feel free to contact me should you have any questions.

Sincerely,

Jean-Pierre C. Rouanet
Laboratory Director

APPENDIX 5

Appendix 5. ProUCL EPC Calculations



The Risk Assessment Information System

Search!

RAIS Risk Concentrations

Enter concentrations and select Landuse(s) for each media

Media	Contaminant & Concentration Chemicals (mg/kg, mg/L) Radionuclides (pCi/g, pCi/L)	Landuse
Soil	3.07 Aroclor 1242 0.805 Aroclor 1254 0.439 Aroclor 1260	☐ Agricultural ☑ Construction/Excavation Worker ☐ Indoor Industrial Worker ☑ Outdoor Industrial Worker ☐ Residential

○ Use Default Parameters
◉ Prompt for Parameters

○ Display CDIs
◉ Do Not Display CDIs

○ Display Toxicity Values (WARNING: This will result in very wide output.)
◉ Do Not Display Toxicity Values

Select one of the following output options

◉ View on Screen
○ Tab delimited file

RETRIEVE | clear selection

For information or technical assistance, please contact Fred Dolislager.

Last updated on Tuesday, October 24th, 2006
URL: http://rais.ornl.gov/cgi-bin/prg/for_search

The Risk Assessment Information System

Search!

RAIS Risk Concentrations

Enter concentrations and select Landuse(s) for each media

Media	Contaminant & Concentration Chemicals (mg/kg, mg/L) Radionuclides (pCi/g, pCi/L)	Landuse
Soil	26.9 Aroclor 1242 0.92 Aroclor 1254 0.61 Aroclor 1260	☐ Agricultural ☑ Construction/Excavation Worker ☐ Indoor Industrial Worker ☑ Outdoor Industrial Worker ☐ Residential

○ Use Default Parameters
◉ Prompt for Parameters

○ Display CDIs
◉ Do Not Display CDIs

○ Display Toxicity Values (WARNING: This will result in very wide output.)
◉ Do Not Display Toxicity Values

Select one of the following output options

◉ View on Screen
○ Tab delimited file

RETRIEVE | clear selection

For information or technical assistance, please contact Fred Dolislager.

Last updated on Tuesday, October 24th, 2006
URL: http://rais.ornl.gov/cgi-bin/prg/for_search

The Risk Assessment Information System

Search!

RAIS Site-specific Risk Parameters

Your **Landuse** choices are:
Construction Outdoor_Industrial
Your **Media** choices are:
Soil Soil

Construction/Excavation Soil
Outdoor Industrial Soil

Particulate Emission Factor

$$PEF = Q/C \times \frac{3600 s/h}{0.036 \times (1-V) \times \left(U_m/U_t\right)^3 \times F(x)}$$

where

$$\frac{Q}{C} = A \times \exp\left[\frac{\left(\ln A_s - B\right)^2}{C}\right]$$

Parameters Definition (units)	Default Value

City	Most Likely **Climatic Zone**	Chicago, IL (7)
A_s	Surface Area of Site **(acres)**	2
Q/C	inverse of the ratio of the geometric mean air concentration to the emission flux at center of a square source **(g/m^2-s per kg/m^3)**	77.26019
V	fraction of vegetative cover **(unitless)**	0.0
U_m	mean annual wind speed **(m/s)**	4.65
U_t	equivalent threshold value of windspeed at 7m **(m/s)**	11.32
F(x)	function dependenet on U_m/U_t derived using Cowherd et al. (1985) **(unitless)**	0.182

NOTES:

1. Default city is Minneapolis and default size is 0.5 acre
2. Default PEF is 1.36E+09 **(m3/kg)**
3. A, B and C are constants based on air dispersion modeling for specific climatic zones

Volatilization Factor

$$VF = \frac{Q/C \times \left(3.14 \times D_A \times T\right)^{1/2} \times 10^{-4} \left(m^2/cm^2\right)}{2 \times \rho_b \times D_A}$$

where

$$\frac{Q}{C} = A \times \exp\left[\frac{\left(\ln A_s - B\right)^2}{C}\right]$$

$$D_A = \frac{\left[\left(\theta_a^{10/3} \times D_i \times H' + \theta_w^{10/3} \times D_w\right)/n^2\right]}{\rho_b \times K_d + \theta_w + \theta_a \times H'}$$

Parameters	Definition (units)	Default Value
City	Most Likely **Climatic Zone**	Chicago, IL (7)
A_s	Surface Area of Site **(acres)**	2
Q/C	inverse of the geometric mean air concentration to the volatilization flux at center of a square source **(g/m^2-s per kg/m^3)**	77.26019
T	exposure interval **(s)**	9.5e08
foc	fraction organic carbon in soil **(g/g)**	0.006
ρ_b	dry soil bulk density **(g/cm^3)**	1.5
ρ_s	soil particle density **(g/cm^3)**	2.65
θ_w	water-filled soil porosity **(L_{water}/L_{soil})**	0.15

NOTES:

1. Default city is Los Angeles and default size is 0.5 acre
2. A, B and C are constants based on air dispersion modeling for specific climatic zones
3. θ_a air-filled soil porosity **(L_{air}/L_{soil})** = $n - \theta_w$
4. H' (dimensionless Henry's law constant) - chemical-specific
5. n (total soil porosity) L_{pore}/L_{soil} = 1-(ρ_b / ρ_s)
6. K_d (soil-water partition coefficient) **L/kg** = K_{oc} x f_{oc} (organics) - chemical-specific
7. K_{oc} (soil organic carbon/water partition coefficient) **L/kg** - chemical specific

Excavator Exposure to Soil

Combined Ingestion, Inhalation, Dermal[1], and External Exposure[2]

Chemicals:

$$\text{CDI (mg/kg-d)} = \frac{CS \times IR \times EF \times ED}{BW \times AT}$$

$$\text{CDI (mg/m}^3\text{)} = \frac{CS \times EF \times ED \times \left(\frac{1}{PEF} + \frac{1}{VF}\right)}{AT}$$

$$\text{CDI (mg/kg-d)} = \frac{CS \times EF \times ED \times \left(\frac{kg}{1{,}000{,}000\ mg}\right) \times \left(\frac{10{,}000\ cm^2}{m^2}\right) \times SA \times AF \times ABS}{BW \times AT}$$

Radionuclides:

$$\text{Intake (pCi)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times IR \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

$$\text{Intake (pCi)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times HR \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

$$\text{Intake (pCi-year/g)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times EF \times ED \times GSF \times ETF \times ACF \times \left(\frac{1\ year}{365\ days}\right)}{t \times \lambda}$$

Parameters	Definition (units)	Default Value
AF	adult adherence factor **(mg/cm^2)**	0.3
ACF	area correctin factor **(unitless)**	0.9
BW	adult body weight **(kg)**	70
DF_i	indor dilution factor **(unitless)**	0.4
ED	adult exposure duration **(yr)**	1
EF	exposure frequency **(day/yr)**	20
ET	exposure time outdoor **(hour/hour)**	0.333
GSF	gamma shielding factor **(unitless)**	0.4
HR	inhalation rate for adult **(m^3/day)**	20
IR	soil ingestion rate for adult **(kg/day)**	0.00033
SA	adult surface area (head, hands, forearms) **(m^2/day)**	0.33

NOTES:

1. Chemicals only.

2. Radionuclides only.
3. ABS=absorption factor **(unitless)**, chemical-specific
4. AT=averaging time **(yr x day/yr)**, 70 x 365 (carcinogen)
5. PEF=particulate emission factor **(m^3/kg)**. Default is 1.36×10^9
6. SF_{ad}=absorbed dose slope factor **$(mg/kg\text{-}day)^{-1}$**, chemical-specific
7. SF_o=oral slope factor **$(mg/kg\text{-}day)^{-1}$**, chemical-specific
8. SF_s=soil ingestion slope factor **$(risk/pCi)^{-1}$**. radionuclide-specific
9. SF_x=external exposure slope factor **$(risk/yr\ per\ pCi/g)^{-1}$**. radionuclide-specific
10. λ=decay constant. radionuclide-specific
11. RfD_{ad}=absorbed chronic reference dose **(mg/kg-day)**, chemical-specific
12. RfC_i=inhalation chronic reference concentration **(mg/m^3)**, chemical-specific
13. RfD_o=oral chronic reference dose **(mg/kg-day)**, chemical-specific
14. TV_{ad}=absorbed toxicity value, **SF_{ad} (carcinogen), $1/RfD_{ad}$ (noncarcinogen)**
15. TV_i=inhalation toxicity value, **URF (carcinogen), $1/RfC_i$ (noncarcinogen)**
16. TV_o=oral toxicity value, **SF_o (carcinogen), $1/RfD_o$ (noncarcinogen)**
17. URF=inhalation unit risk factor **$(mg/m^3)^{-1}$**, chemical-specific
18. **VF**=volatilization factor (volatile organics only) **(m^3/kg)**, chemical-specific (calculated)

Outdoor Industrial Exposure to Soil

Combined Ingestion, Inhalation, Dermal[1], and External Exposure[2]

Chemicals:

$$CDI\ (mg/kg\text{-}d) = \frac{CS \times IR \times EF \times ED}{BW \times AT}$$

$$\text{CDI } (mg/m^3) = \frac{CS \times EF \times ED \times \left(\frac{1}{VF} + \frac{1}{PEF}\right)}{AT}$$

$$\text{CDI } (mg/kg\text{-}d) = \frac{CS \times EF \times ED \times SA \times AF \times ABS \times \left(\frac{kg}{1{,}000{,}000\ mg}\right) \times \left(\frac{10{,}000\ cm^2}{m^2}\right)}{BW \times AT}$$

Radionuclides:

$$\text{Intake } (pCi) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times \left(\frac{1000\ g}{kg}\right) \times IR \times EF \times ED}{t \times \lambda}$$

$$\text{Intake } (pCi) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times HR \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

$$\text{Intake } (pCi\text{-}yeaar/g) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times EF \times ED \times \left(\frac{1\ year}{365\ days}\right) \times ACF \times ETF}{t \times \lambda}$$

Parameters	Definition (units)	Default Value
AF	adult adherence factor **(mg/cm^2)**	0.2
ACF	area correctin factor **(unitless)**	0.9
BW	adult body weight **(kg)**	70
DF_i	indor dilution factor **(unitless)**	0.4
ED	adult exposure duration **(yr)**	25
EF	exposure frequency **(day/yr)**	225

ET_o	exposure time outdoor **(hour/hour)**	0.333
GSF	gamma shielding factor **(unitless)**	0.4
HR	inhalation rate for adult **(m^3/day)**	20
IR	soil ingestion rate for adult **(kg/day)**	0.0001
SA	adult surface area (head, hands, forearms) **(m^2/day)**	0.33

NOTES:

1. Chemicals only.
2. Radionuclides only.
3. ABS=absorption factor **(unitless)**, chemical-specific
4. AT=averaging time **(yr x day/yr)**, 70 x 365 (carcinogen)
5. PEF=particulate emission factor **(m^3/kg)**. Default is 1.36×10^9
6. SF_{ad}=absorbed dose slope factor **$(mg/kg\text{-}day)^{-1}$**, chemical-specific
7. SF_o=oral slope factor **$(mg/kg\text{-}day)^{-1}$**, chemical-specific
8. SF_s=soil ingestion slope factor **$(risk/pCi)^{-1}$**. radionuclide-specific
9. SF_x=external exposure slope factor **$(risk/yr\ per\ pCi/g)^{-1}$**. radionuclide-specific
10. λ=decay constant. radionuclide-specific
11. RfD_{ad}=absorbed chronic reference dose **(mg/kg-day)**, chemical-specific
12. RfC_i=inhalation chronic reference concentration **(mg/m^3)**, chemical-specific
13. RfD_o=oral chronic reference dose **(mg/kg-day)**, chemical-specific
14. TV_{ad}=absorbed toxicity value, **SF_{ad} (carcinogen), $1/RfD_{ad}$ (noncarcinogen)**
15. TV_i=inhalation toxicity value, **URF (carcinogen), $1/RfC_i$ (noncarcinogen)**
16. TV_o=oral toxicity value, **SF_o (carcinogen), $1/RfD_o$ (noncarcinogen)**
17. URF=inhalation unit risk factor **$(mg/m^3)^{-1}$**, chemical-specific
18. **VF**=volatilization factor (volatile organics only) **(m^3/kg)**, chemical-specific (calculated)

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The Risk Assessment Information System

Search!

RAIS Site-specific Risk Parameters

Your **Landuse** choices are:
Construction Outdoor_Industrial
Your **Media** choices are:
Soil Soil

Construction/Excavation Soil
Outdoor Industrial Soil

Particulate Emission Factor

$$PEF = Q/C \times \frac{3600 s/h}{0.036 \times (1-V) \times \left(U_m/U_t\right)^3 \times F(x)}$$

where

$$\frac{Q}{C} = A \times \exp\left[\frac{\left(\ln A_s - B\right)^2}{C}\right]$$

Parameters Definition (units)	Default Value

City	Most Likely **Climatic Zone**	Chicago, IL (7)
A_s	Surface Area of Site **(acres)**	2
Q/C	inverse of the ratio of the geometric mean air concentration to the emission flux at center of a square source **(g/m^2-s per kg/m^3)**	77.26019
V	fraction of vegetative cover **(unitless)**	0.0
U_m	mean annual wind speed **(m/s)**	4.65
U_t	equivalent threshold value of windspeed at 7m **(m/s)**	11.32
F(x)	function dependenet on U_m/U_t derived using Cowherd et al. (1985) **(unitless)**	0.182

NOTES:

1. Default city is Minneapolis and default size is 0.5 acre
2. Default PEF is 1.36E+09 **(m3/kg)**
3. A, B and C are constants based on air dispersion modeling for specific climatic zones

Volatilization Factor

$$VF = \frac{Q/C \times \left(3.14 \times D_A \times T\right)^{1/2} \times 10^{-4} \left(m^2/cm^2\right)}{2 \times \rho_b \times D_A}$$

where

$$\frac{Q}{C} = A \times \exp\left[\frac{\left(\ln A_s - B\right)^2}{C}\right]$$

$$D_A = \frac{\left[\left(\theta_a^{10/3} \times D_i \times H' + \theta_w^{10/3} \times D_w\right)/n^2\right]}{\rho_b \times K_d + \theta_w + \theta_a \times H'}$$

Parameters	Definition (units)	Default Value
City	Most Likely **Climatic Zone**	Chicago, IL (7)
A_s	Surface Area of Site **(acres)**	2
Q/C	inverse of the geometric mean air concentration to the volatilization flux at center of a square source **(g/m^2-s per kg/m^3)**	77.26019
T	exposure interval **(s)**	9.5e08
foc	fraction organic carbon in soil **(g/g)**	0.006
ρ_b	dry soil bulk density **(g/cm^3)**	1.5
ρ_s	soil particle density **(g/cm^3)**	2.65
θ_w	water-filled soil porosity **(L_{water}/L_{soil})**	0.15

NOTES:

1. Default city is Los Angeles and default size is 0.5 acre
2. A, B and C are constants based on air dispersion modeling for specific climatic zones
3. θ_a air-filled soil porosity **(L_{air}/L_{soil})** = $n - \theta_w$
4. H' (dimensionless Henry's law constant) - chemical-specific
5. n (total soil porosity) $L_{pore}/L_{soil} = 1-(\rho_b / \rho_s)$
6. K_d (soil-water partition coefficient) **L/kg** = K_{oc} x f_{oc} (organics) - chemical-specific
7. K_{oc} (soil organic carbon/water partition coefficient) **L/kg** - chemical specific

Excavator Exposure to Soil

Combined Ingestion, Inhalation, Dermal[1], and External Exposure[2]

Chemicals:

$$\text{CDI (mg/kg-d)} = \frac{CS \times IR \times EF \times ED}{BW \times AT}$$

$$\text{CDI } (mg/m^3) = \frac{CS \times EF \times ED \times \left(\frac{1}{PEF} + \frac{1}{VF}\right)}{AT}$$

$$\text{CDI (mg/kg-d)} = \frac{CS \times EF \times ED \times \left(\frac{kg}{1{,}000{,}000\ mg}\right) \times \left(\frac{10{,}000\ cm^2}{m^2}\right) \times SA \times AF \times ABS}{BW \times AT}$$

Radionuclides:

$$\text{Intake (pCi)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times IR \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

$$\text{Intake (pCi)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times HR \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

$$\text{Intake (pCi-year/g)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times EF \times ED \times GSF \times ETF \times ACF \times \left(\frac{1\ year}{365\ days}\right)}{t \times \lambda}$$

Parameters	Definition (units)	Default Value
AF	adult adherence factor **(mg/cm^2)**	0.3
ACF	area correctin factor **(unitless)**	0.9
BW	adult body weight **(kg)**	70
DF_i	indor dilution factor **(unitless)**	0.4
ED	adult exposure duration **(yr)**	1
EF	exposure frequency **(day/yr)**	20
ET	exposure time outdoor **(hour/hour)**	0.333
GSF	gamma shielding factor **(unitless)**	0.4
HR	inhalation rate for adult **(m^3/day)**	20
IR	soil ingestion rate for adult **(kg/day)**	0.00033
SA	adult surface area (head, hands, forearms) **(m^2/day)**	0.33

NOTES:

1. Chemicals only.

2. Radionuclides only.
3. ABS=absorption factor **(unitless)**, **chemical-specific**
4. AT=averaging time **(yr x day/yr)**, 70 x 365 (carcinogen)
5. PEF=particulate emission factor **(m^3/kg)**. Default is 1.36×10^9
6. SF_{ad}=absorbed dose slope factor **$(mg/kg\text{-}day)^{-1}$**, **chemical-specific**
7. SF_o=oral slope factor **$(mg/kg\text{-}day)^{-1}$**, **chemical-specific**
8. SF_s=soil ingestion slope factor **$(risk/pCi)^{-1}$**. radionuclide-specific
9. SF_x=external exposure slope factor **$(risk/yr\ per\ pCi/g)^{-1}$**. radionuclide-specific
10. λ=decay constant. radionuclide-specific
11. RfD_{ad}=absorbed chronic reference dose **(mg/kg-day)**, **chemical-specific**
12. RfC_i=inhalation chronic reference concentration **(mg/m^3)**, **chemical-specific**
13. RfD_o=oral chronic reference dose **(mg/kg-day)**, **chemical-specific**
14. TV_{ad}=absorbed toxicity value, **SF_{ad} (carcinogen), $1/RfD_{ad}$ (noncarcinogen)**
15. TV_i=inhalation toxicity value, **URF (carcinogen), $1/RfC_i$ (noncarcinogen)**
16. TV_o=oral toxicity value, **SF_o (carcinogen), $1/RfD_o$ (noncarcinogen)**
17. URF=inhalation unit risk factor **$(mg/m^3)^{-1}$**, **chemical-specific**
18. **VF**=volatilization factor (volatile organics only) **(m^3/kg)**, chemical-specific (calculated)

Outdoor Industrial Exposure to Soil

Combined Ingestion, Inhalation, Dermal[1], and External Exposure[2]

Chemicals:

$$CDI\ (mg/kg\text{-}d) = \frac{CS \times IR \times EF \times ED}{BW \times AT}$$

$$\text{CDI } (mg/m^3) = \frac{CS \times EF \times ED \times \left(\frac{1}{VF} + \frac{1}{PEF}\right)}{AT}$$

$$\text{CDI } (mg/kg\text{-}d) = \frac{CS \times EF \times ED \times SA \times AF \times ABS \times \left(\frac{kg}{1{,}000{,}000\ mg}\right) \times \left(\frac{10{,}000\ cm^2}{m^2}\right)}{BW \times AT}$$

Radionuclides:

$$\text{Intake } (pCi) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times \left(\frac{1000\ g}{kg}\right) \times IR \times EF \times ED}{t \times \lambda}$$

$$\text{Intake } (pCi) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times HR \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

$$\text{Intake } (pCi\text{-}yeaar/g) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times EF \times ED \times \left(\frac{1\ year}{365\ days}\right) \times ACF \times ETF}{t \times \lambda}$$

Parameters	Definition (units)	Default Value
AF	adult adherence factor **(mg/cm^2)**	0.2
ACF	area correctin factor **(unitless)**	0.9
BW	adult body weight **(kg)**	70
DF_i	indor dilution factor **(unitless)**	0.4
ED	adult exposure duration **(yr)**	25
EF	exposure frequency **(day/yr)**	225

ET_o	exposure time outdoor **(hour/hour)**	0.333
GSF	gamma shielding factor **(unitless)**	0.4
HR	inhalation rate for adult **(m^3/day)**	20
IR	soil ingestion rate for adult **(kg/day)**	0.0001
SA	adult surface area (head, hands, forearms) **(m^2/day)**	0.33

NOTES:

1. Chemicals only.
2. Radionuclides only.
3. ABS=absorption factor **(unitless)**, **chemical-specific**
4. AT=averaging time **(yr x day/yr)**, 70 x 365 (carcinogen)
5. PEF=particulate emission factor **(m^3/kg)**. Default is 1.36×10^9
6. SF_{ad}=absorbed dose slope factor **$(mg/kg\text{-}day)^{-1}$**, **chemical-specific**
7. SF_o=oral slope factor **$(mg/kg\text{-}day)^{-1}$**, **chemical-specific**
8. SF_s=soil ingestion slope factor **$(risk/pCi)^{-1}$**. radionuclide-specific
9. SF_x=external exposure slope factor **$(risk/yr\ per\ pCi/g)^{-1}$**. radionuclide-specific
10. λ=decay constant. radionuclide-specific
11. RfD_{ad}=absorbed chronic reference dose **(mg/kg-day)**, **chemical-specific**
12. RfC_i=inhalation chronic reference concentration **(mg/m^3)**, **chemical-specific**
13. RfD_o=oral chronic reference dose **(mg/kg-day)**, **chemical-specific**
14. TV_{ad}=absorbed toxicity value, **SF_{ad} (carcinogen), $1/RfD_{ad}$ (noncarcinogen)**
15. TV_i=inhalation toxicity value, **URF (carcinogen), $1/RfC_i$ (noncarcinogen)**
16. TV_o=oral toxicity value, **SF_o (carcinogen), $1/RfD_o$ (noncarcinogen)**
17. URF=inhalation unit risk factor **$(mg/m^3)^{-1}$**, **chemical-specific**
18. **VF**=volatilization factor (volatile organics only) **(m^3/kg)**, chemical-specific (calculated)

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The Risk Assessment Information System

RAIS Site-specific Risk Results

Site-specific parameter choices

eqname	af	acf	bwa	dfi	eda	ef	eto	gsf	hra	ira	sa
exc	0.3	0.9	70	0.4	1	20	0.333	0.4	20	0.00033	0.33

Site-specific VF and PEF parameter choices

citypef	sapef	qcpef	vpef	Umpef	Utpef	Fxpef	cityvf	savf	qcvf	Tvf	focvf	pbvf	psvf	theta_wv
Chicago, IL (7)	2	77.26019	0.0	4.65	11.32	0.182	Chicago, IL (7)	2	77.26019	9.5e08	0.006	1.5	2.65	0.15

Excavation Soil Risk and HI - Chemicals

Analyte's Name	CAS Number	Concentration in Soil (mg/kg)	Volatilization Factor (m^3/kg)	Particulate Emission Factor (m^3/kg)	Ingestion of Soil HI	Inhalation of Soil Particulates and Volatiles HI	Dermal Soil HI	Total Soil HI	Ingestion of Soil Risk	Inhalation of Soil Particulates and Volatiles Risk	Dermal Soil Risk	Total Soil Risk
Aroclor 1242	53469219	3.07	5.77E+05	6.12E+08	-	-	-	-	2.27E-08	2.38E-09	1.06E-08	3.56E-08
Aroclor 1254	11097691	0.805	9.63E+05	6.12E+08	4.16E-03	-	1.94E-03	6.10E-03	5.94E-09	3.74E-10	2.77E-09	9.09E-09
Aroclor 1260	11096825	0.439	1.56E+06	6.12E+08	-	-	-	-	3.24E-09	1.26E-10	1.51E-09	4.88E-09
Total Risk/HI	-	-	-	-	*4.16E-03*	-	*1.94E-03*	*6.10E-03*	*3.18E-08*	*2.88E-09*	*1.49E-08*	*4.96E-08*

Site-specific parameter choices

eqname	af	acf	bwa	dfl	eda	ef	eto	gsf	hra	ira	sa
ind	0.2	0.9	70	0.4	25	225	0.333	0.4	20	0.0001	0.33

Site-specific VF and PEF parameter choices

citypef	sapef	qcpef	vpef	Umpef	Utpef	Fxpef	cityvf	savf	qcvf	Tvf	focvf	pbvf	psvf	theta_wv
Chicago, IL (7)	2	77.26019	0.0	4.65	11.32	0.182	Chicago, IL (7)	2	77.26019	9.5e08	0.006	1.5	2.65	0.15

Outdoor Industrial Soil Risk and HI - Chemicals

Analyte's Name	CAS Number	Concentration in Soil (mg/kg)	Volatilization Factor (m^3/kg)	Particulate Emission Factor (m^3/kg)	Ingestion of Soil HI	Inhalation of Soil Particulates and Volatiles HI	Dermal Soil HI	Total Soil HI	Ingestion of Soil Risk	Inhalation of Soil Particulates and Volatiles Risk	Dermal Soil Risk	Total Soil Risk
Aroclor 1242	53469219	3.07	5.77E+05	6.12E+08	-	-	-	-	1.93E-06	6.70E-07	1.98E-06	4.58E-06
Aroclor 1254	11097691	0.805	9.63E+05	6.12E+08	3.54E-02	-	3.64E-02	7.18E-02	5.06E-07	1.05E-07	5.20E-07	1.13E-06
Aroclor 1260	11096825	0.439	1.56E+06	6.12E+08	-	-	-	-	2.76E-07	3.55E-08	2.84E-07	5.95E-07
Total Risk/HI	-	-	-	-	*3.54E-02*	-	*3.64E-02*	*7.18E-02*	*2.71E-06*	*8.11E-07*	*2.79E-06*	*6.31E-06*

*The linear risk equation is valid only at low risk levels (below estimated risks of 0.01). For sites where chemical intakes might be high (estimated risks above 0.01), an alternate calculation should be used. The one-hit equation, which is consistent with the linear low-dose model, should be used instead. *RAGS, part A, ch. 8* The results presented here use this rule

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RAIS Site-specific Risk Results

Site-specific parameter choices

eqname	af	acf	bwa	dfi	eda	ef	eto	gsf	hra	ira	sa
exc	0.3	0.9	70	0.4	1	20	0.333	0.4	20	0.00033	0.33

Site-specific VF and PEF parameter choices

citypef	sapef	qcpef	vpef	Umpef	Utpef	Fxpef	cityvf	savf	qcvf	Tvf	focvf	pbvf	psvf	theta_wv
Chicago, IL (7)	2	77.26019	0.5	4.65	11.32	0.182	Chicago, IL (7)	2	77.26019	9.5e08	0.006	1.5	2.65	0.15

Excavation Soil Risk and HI - Chemicals

Analyte's Name	CAS Number	Concentration in Soil (mg/kg)	Volatilization Factor (m^3/kg)	Particulate Emission Factor (m^3/kg)	Ingestion of Soil HI	Inhalation of Soil Particulates and Volatiles HI	Dermal Soil HI	Total Soil HI	Ingestion of Soil Risk	Inhalation of Soil Particulates and Volatiles Risk	Dermal Soil Risk	Total Soil Risk
Aroclor 1242	53469219	26.9	5.77E+05	1.22E+09	-	-	-	-	1.99E-07	2.09E-08	9.26E-08	3.12E-07
Aroclor 1254	11097691	0.92	9.63E+05	1.22E+09	4.75E-03	-	2.22E-03	6.97E-03	6.79E-09	4.28E-10	3.17E-09	1.04E-08
Aroclor 1260	11096825	0.61	1.56E+06	1.22E+09	-	-	-	-	4.50E-09	1.75E-10	2.10E-09	6.78E-09
Total Risk/HI	-	-	-	-	*4.75E-03*	-	*2.22E-03*	*6.97E-03*	*2.10E-07*	*2.15E-08*	*9.79E-08*	*3.29E-07*

Site-specific parameter choices

eqname	af	acf	bwa	dfi	eda	ef	eto	gsf	hra	ira	sa
ind	0.2	0.9	70	0.4	25	225	0.333	0.4	20	0.0001	0.33

Site-specific VF and PEF parameter choices

citypef	sapef	qcpef	vpef	Umpef	Utpef	Fxpef	cityvf	savf	qcvf	Tvf	focvf	pbvf	psvf	theta_wv
Chicago, IL (7)	2	77.26019	0.5	4.65	11.32	0.182	Chicago, IL (7)	2	77.26019	9.5e08	0.006	1.5	2.65	0.15

Outdoor Industrial Soil Risk and HI - Chemicals

Analyte's Name	CAS Number	Concentration in Soil (mg/kg)	Volatilization Factor (m^3/kg)	Particulate Emission Factor (m^3/kg)	Ingestion of Soil HI	Inhalation of Soil Particulates and Volatiles HI	Dermal Soil HI	Total Soil HI	Ingestion of Soil Risk	Inhalation of Soil Particulates and Volatiles Risk	Dermal Soil Risk	Total Soil Risk
Aroclor 1242	53469219	26.9	5.77E+05	1.22E+09	-	-	-	-	1.69E-05	5.87E-06	1.74E-05	4.02E-05
Aroclor 1254	11097691	0.92	9.63E+05	1.22E+09	4.05E-02	-	4.16E-02	8.21E-02	5.79E-07	1.20E-07	5.94E-07	1.29E-06
Aroclor 1260	11096825	0.61	1.56E+06	1.22E+09	-	-	-	-	3.84E-07	4.93E-08	3.94E-07	8.27E-07
Total Risk/HI	-	-	-	-	*4.05E-02*	-	*4.16E-02*	*8.21E-02*	*1.79E-05*	*6.04E-06*	*1.84E-05*	*4.23E-05*

*The linear risk equation is valid only at low risk levels (below estimated risks of 0.01). For sites where chemical intakes might be high (estimated risks above 0.01), an alternate calculation should be used. The one-hit equation, which is consistent with the linear low-dose model, should be used instead. *RAGS, part A, ch. 8* The results presented here use this rule

For information or technical assistance, please contact Fred Dolislager.

Last updated on Tuesday, October 24th, 2006
URL: http://rais.ornl.gov/cgi-bin/prg/for_search_results_site

APPENDIX 6

Appendix 6. RAIS Documentation

6-1. RAIS Models

Human Health Risk Exposure Model

The Toxicity Values used in the Risk calculations are current as of October 2006

Introduction

This risk assessment tool calculates doses and risks from exposure concentrations. Users of this tool can calculate the doses and risks by either supplying a data set of concentrations (*Limited Access*) or selecting chemicals and hand-entering exposure concentrations. In addition, to use this tool the land use and exposure combinations for a site must be selected and a sort order for the final output must be chosen. After selecting the land use and exposure combinations, the user may modify exposure parameters within the dose equations to develop site-specific doses and risks or may utilize the default exposure parameters provided. The results of these choices can be output to the screen or to a comma delimited file.

The dose equations utilized by this tool are based on guidance in *Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual (Part A - Baseline Risk Assessment)* (RAGS, Part A), *Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual (Part B - Development of Risk-based Preliminary Remediation Goals)* (RAGS, Part B)[1], and *Radiation Site Cleanup Regulations: Technical Support Document for the Development of Radiation Cleanup Levels for Soil* (EPA 402-R-96-011 A).

In addition, this tool contains some equations developed for assessment of sites on the Oak Ridge Reservation in Oak Ridge, Tennessee and approved by EPA, Region 4. (See **special cases** for a complete description of what may be specific to the Oak Ridge Reservation. Additional discussion of these special cases and the strategy used for risk assessment at the Oak Ridge Reservation is presented in *Guidance for Conducting Risk Assessments and Related Risk Activities for the DOE-ORO Environmental Management Program* PDF **[BJC/OR-271]**.)

It is suggested that all users read the special cases before viewing the equations.

Tutorial

Risk Equations (by land use and media)

- **CONSTRUCTION WORKER/EXCAVATION LAND USE; Exposure to Contaminants in Soil**
- **INDUSTRIAL LAND USE (INDOOR AND OUTDOOR WORKER); Exposure to Contaminants in Soil**
- **INDUSTRIAL LAND USE (INDOOR AND OUTDOOR WORKER); Exposure to Contaminants in Groundwater**
- **RECREATIONAL LAND USE; Exposure to Contaminants in Soil**
- **RECREATIONAL LAND USE; Exposure to Contaminants in Water**
- **RESIDENTIAL LAND USE; Exposure to Contaminants in Soil**

- RESIDENTIAL LAND USE; Exposure to Contaminants in Water
- AGRICULTURAL LAND USE; Exposure to Contaminants in Soil, Groundwater and Homegrown Produce

References

How Can I Calculate Risks?

- **Enter analytes and concentrations by hand to have risk calculated.**

For information or technical assistance, please contact Fred Dolislager.

Last updated on Tuesday, October 10th, 2006
URL: http://rais.ornl.gov/prg/for_sel_data.shtml

On-site construction worker / excavation scenario

Exposure to Soil Pathways

Consult *Guidance for Conducting Risk Assessments and Related Risk Activities for the DOE-ORO Environmental Management Program* **BJC/OR-271** for additional information about risk characterization and the following calculations:

Nonradionuclides:

Hazard Quotient (HQ) - ingestion and dermal = chronic daily intake (CDI) / reference dose (RfD)
Hazard Quotient (HQ) - inhalation = CDI / reference concentration (RfC)
Excess Lifetime Cancer Risk (ELCR) - ingestion and dermal = CDI x slope factor (SF)
Excess Lifetime Cancer Risk (ELCR) - inhalation = CDI x unit risk factor (URF)

Radionuclides:

Excess Lifetime Cancer Risk (ELCR) - ingestion, inhalation and external exposure = CDI x slope factor (SF)

References are from BJC/OR-271.

The RAIS is now using oral slope factors for radionuclides that have been calculated for adults only. These slope factors will be used for the indoor and outdoor worker scenarios as well as the construction/excavator scenarios.

Ingestion of soil pathway

$$\text{CDI (mg/kg-d)} = \frac{CS \times IR \times EF \times ED}{BW \times AT}$$

$$\text{Intake (pCi)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times IR \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

Variable	Value used	Explanation/source
AT = Averaging time	365 d/year ED	Averaging time for noncarcinogens (EPA 1989a, 1991b)
	365 d/year 70 years	Averaging time for carcinogens (EPA 1989a, 1991b)
BW = Body Weight	70 kg	Adult (EPA 1991b)
CS = Concentration in soil, or sediment	Chemical-specific (mg/kg; pCi/g)	Concentration is derived from sample data
ED = Exposure duration	1 year	OSWER Directive (EPA 1991b)

EF = Exposure frequency	20 days/year	1 worker month/year
IR = Ingestion rate	0.00033 kg/day	[SSL]
λ = Decay Constant	0.693/halflife	**radionuclide-specific**
t = Time	yr	equal to ED

Dermal contact with soil pathway

$$CDI\ (mg/kg\text{-}d) = \frac{CS \times EF \times ED \times \left(\frac{kg}{1{,}000{,}000\ mg}\right) \times \left(\frac{10{,}000\ cm^2}{m^2}\right) \times SA \times AF \times ABS}{BW \times AT}$$

Variable	Value used	Explanation/source
ABS = Absorption factor	0.001 (unitless) 0.01 (unitless) or chemical specific	Equivalent to 0.1% for inorganics and 1.0% for organics (EPA 1992b)
AF = Adherence factor	0.3 mg/cm^2	RAGs Part E
AT = Averaging time	365 days/year ED	Averaging time for noncarcinogens (EPA 1989a, 1991b)
	365 days/year 70 years	Averaging time for carcinogens (EPA 1989a, 1991b)
BW = Body Weight	70 kg	Adult (EPA 1991b)
CS = Concentration in soil or sediment	Chemical-specific (mg/kg)	Concentration is derived from sample data
ED = Exposure duration	1 year	OSWER Directive (EPA 1991b)
EF = Exposure frequency	20 days/year	1 worker month/year
SA = Available surface area	0.33 m^2/day	Average surface area for head, hands, forearms, for a male adult (RAGs Part E)

Inhalation of soil pathway

$$CDI\ (mg/m^3) = \frac{CS \times EF \times ED \times \left(\frac{1}{PEF} + \frac{1}{VF}\right)}{AT}$$

$$Intake\ (pCi) = \frac{CS \times (1 - e^{-\lambda t}) \times HR \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

Variable	Value used	Explanation/source
AT = Averaging time	365 days/year ED	Averaging time for noncarcinogens (EPA 1989a, 1991b)
	365 days/year 70 years	Averaging time for carcinogens (EPA 1989a, 1991b)
CS = Concentration in soil, or sediment	Chemical-specific (mg/kg; pCi/g)	Concentration is derived from sample data
ED = Exposure duration	1 years	OSWER Directive (EPA 1991b)

EF = Exposure frequency	20 days/year	1 worker month/year
HR = Inhalation rate	20 m^3/day	OSWER Directive (EPA 1991b)
λ = Decay Constant	0.693/halflife	**radionuclide-specific**
PEF = Particulate emission factor	Climate-specific (m^3/kg)	EPA 1996b
t = Time	yr	equal to ED
VF = Volatilization Factor	Chemical-specific (m^3/kg)	EPA 1996b

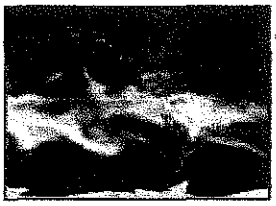
External exposure to soil pathway

$$\text{Intake (pCi-year/g)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times EF \times ED \times GSF \times ETF \times ACF \times \left(\frac{1\ \text{year}}{365\ \text{days}}\right)}{t \times \lambda}$$

Variable	Value used	Explanation/source
ACF = Area correction factor	0.9 (unitless)	U.S. **EPA 2000** (page 2-18)
CS = Concentration in soil or sediment	Chemical-specific (pCi/g)	Concentration is derived from sample data
ED = Exposure duration	1 year	(OSWER Directive, EPA 1991b)
EF = Exposure frequency	20 days/year	1 worker month/year
ETF = Gamma exposure time factor (hour/hour)	8/24	EPA 1991a
GSF = Gamma shielding factor (unitless)	0.4	U.S. **EPA 2000** (page 2-18)
λ = Decay Constant	0.693/halflife	**radionuclide-specific**
t = Time	yr	equal to ED

For information or technical assistance, please contact Fred Dolislager.

Last updated on Thursday, April 20th, 2006
URL: http://rais.ornl.gov/homepage/tm/for_exc_so.shtml



On-site industrial exposure scenario

(Outdoor and Indoor Worker)

Exposure to Soil Pathways

Consult *Guidance for Conducting Risk Assessments and Related Risk Activities for the DOE-ORO Environmental Management Program* ,**BJC/OR-271**, for additional information about risk characterization and the following calculations:

Nonradionuclides:

Hazard Quotient (HQ) - ingestion and dermal = chronic daily intake (CDI) / reference dose (RfD)
Hazard Quotient (HQ) - inhalation = CDI / reference concentration (RfC)
Excess Lifetime Cancer Risk (ELCR) - ingestion and dermal = CDI x slope factor (SF)
Excess Lifetime Cancer Risk (ELCR) - inhalation = CDI x unit risk factor (URF)

Radionuclides:

Excess Lifetime Cancer Risk (ELCR) - ingestion, inhalation and external exposure = CDI x slope factor (SF)

References are from BJC/OR-271.

In addition the oral, external exposure, and inhalation equations and parameters, for both Indoor and Outdoor workers, were taken from the **EPA's Radionuclide PRG calculator**. The RAIS is now using oral slope factors for radionuclides that have been calculated for adults only. These slope factors will be used for the indoor and outdoor worker scenarios as well as the construction/excavator scenarios. The use of the dermal exposure route for Outdoor Worker and omission of dermal exposure for Indoor Worker is consistent with EPA Region 6 ***Human Health Medium-Specific Screening Levels***.

Outdoor Worker

Incidental ingestion of soil pathway

$$\text{CDI (mg/kg-d)} = \frac{CS \times IR \times EF \times ED}{BW \times AT}$$

$$\text{Intake (pCi)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times \left(\frac{1000\ g}{kg}\right) \times IR \times EF \times ED}{t \times \lambda}$$

Variable	Value used	Explanation/source
AT = Averaging time	365 days/year ED	Averaging time for noncarcinogens (EPA 1989a, 1991b)
	365 days/year 70 years	Averaging time for

		carcinogens (EPA 1989a, 1991b)
BW = Body Weight	70 kg	Adult (EPA 1991b)
CS = Concentration in soil or sediment	Chemical-specific (mg/kg; pCi/g)	Concentration is derived from sample data
ED = Exposure duration	25 years	OSWER Directive (EPA 1991b)
EF = Exposure frequency	225 days/year	OSWER Directive (EPA 1991b)
IR = Ingestion rate	0.0001 kg/day	**U.S. EPA 2001** (pg. 4-3)
λ = Decay Constant	0.693/halflife	**radionuclide-specific**
t = Time	(yr)	equal to ED

Dermal contact with soil pathway

$$\text{CDI (mg/kg-d)} = \frac{CS \times EF \times ED \times SA \times AF \times ABS \times \left(\frac{kg}{1{,}000{,}000\ mg}\right) \times \left(\frac{10{,}000\ cm^2}{m^2}\right)}{BW \times AT}$$

Variable	Value used	Explanation/source
ABS = Absorption factor	0.001 (unitless) 0.01 (unitless) or chemical specific	Equivalent to 0.1% for inorganics and 1.0% for organics (EPA 1992b)
AF = Adherence factor	0.2 mg/cm^2	Adherence factor for soil (RAGs Part E)
AT = Averaging time	365 days/year ED	Averaging time for noncarcinogens (EPA 1989a, 1991b)
	365 days/year 70 years	Averaging time for carcinogens (EPA 1989a, 1991b)
BW = Body Weight	70 kg	Adult (EPA 1991b)
CS = Concentration in soil or sediment	Chemical-specific (mg/kg)	Concentration is derived from sample data
ED = Exposure duration	25 years	OSWER Directive (EPA 1991b)
EF = Exposure frequency	225 days/year	OSWER Directive (EPA 1991b)
SA = Available surface area	0.33 m^2/day	50th Percentile surface area for head, hands, forearms, for a male adult (RAGs Part E)

Inhalation of soil pathway

$$\text{CDI } (mg/m^3) = \frac{CS \times EF \times ED \times \left(\frac{1}{VF} + \frac{1}{PEF}\right)}{AT}$$

$$\text{Intake (pCi)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times HR \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

Variable	Value used	Explanation/source
AT = Averaging time	365 days/year ED	Averaging time for noncarcinogens (EPA

		1989a , 1991b)
	365 days/year 70 years	Averaging time for carcinogens (EPA 1989a, 1991b)
CS = Concentration in soil or sediment	Chemical-specific (mg/kg; pCi/g)	Concentration is derived from sample data
ED = Exposure duration	25 years	OSWER Directive (EPA 1991a, 1991b)
EF = Exposure frequency	225 days/year	OSWER Directive (EPA 1991b)
IR = Inhalation rate	20 (m^3/ worker day; 8 hr)	OSWER Directive (EPA 1991b)
λ = Decay constant	0.693/halflife	**radionuclide-specific**
PEF = Particulate emission factor	Climate-specific (m^3/kg)	EPA 1996b
t = Time	(yr)	equal to ED
VF = Volatilization Factor	Chemical-specific (m^3/kg)	EPA 1996b

External exposure to soil pathway

$$\text{Intake (pCi-yeaar/g)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times EF \times ED \times \left(\frac{1\ \text{year}}{365\ \text{days}}\right) \times ACF \times ETF}{t \times \lambda}$$

Variable	Value used	Explanation/source
ACF = Area correction factor	0.9 (unitless)	U.S. **EPA 2000** (page 2-18)
CS = Concentration in soil or sediment	Chemical-specific (pCi/g)	Concentration is derived from sample data
ED = Exposure duration	25 years	OSWER Directive (EPA 1991b)
EF = Exposure frequency	225 days/year	OSWER Directive (EPA 1991b)
ETF = Exposure time fraction	0.33 (8hr/24hr, unitless)	Eight hour work day
GSF = Gamma shielding factor	0.4 (unitless)	U.S. **EPA 2000** (page 2-18)
λ = Decay Constant	0.693/halflife	**radionuclide-specific**
t = Time	(yr)	equal to ED

Indoor Worker

Incidental ingestion of soil pathway

$$\text{CDI (mg/kg-d)} = \frac{CS \times IR \times EF \times ED}{BW \times AT}$$

$$\text{Intake (pCi)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times \left(\frac{1000\ \text{g}}{\text{kg}}\right) \times IR \times EF \times ED}{t \times \lambda}$$

Variable	Value used	Explanation/source
AT = Averaging time	365 days/year ED	Averaging time for noncarcinogens (EPA 1989a, 1991b)
	365 days/year 70 years	Averaging time for

		carcinogens (EPA 1989a, 1991b)
BW = Body Weight	70 kg	Adult (EPA 1991b)
CS = Concentration in soil or sediment	Chemical-specific (mg/kg; pCi/g)	Concentration is derived from sample data
ED = Exposure duration	25 years	OSWER Directive (EPA 1991b)
EF = Exposure frequency	250 days/year	OSWER Directive (EPA 1991b)
IR = Ingestion rate	0.00005 kg/day	**U.S. EPA 2001** (pg. 4-4)
λ = Decay Constant	0.693/halflife	**radionuclide-specific**
t = Time	(yr)	equal to ED

Dermal contact with soil pathway

$$\text{CDI (mg/kg-d)} = \frac{CS \times EF \times ED \times SA \times AF \times ABS \times \left(\frac{kg}{1{,}000{,}000\ mg}\right) \times \left(\frac{10{,}000\ cm^2}{m^2}\right)}{BW \times AT}$$

Variable	Value used	Explanation/source
ABS = Absorption factor	0.001 (unitless) 0.01 (unitless) or chemical specific	Equivalent to 0.1% for inorganics and 1.0% for organics (EPA 1992b)
AF = Adherence factor	0.2 mg/cm^2	Adherence factor for soil (RAGs Part E)
AT = Averaging time	365 days/year ED	Averaging time for noncarcinogens (EPA 1989a, 1991b)
	365 days/year 70 years	Averaging time for carcinogens (EPA 1989a, 1991b)
BW = Body Weight	70 kg	Adult (EPA 1991b)
CS = Concentration in soil or sediment	Chemical-specific (mg/kg)	Concentration is derived from sample data
ED = Exposure duration	25 years	OSWER Directive (EPA 1991b)
EF = Exposure frequency	250 days/year	OSWER Directive (EPA 1991b)
SA = Available surface area	0 m^2/day	Not anticipated to be a viable exposure route.

Inhalation of soil pathway

$$\text{CDI } (mg/m^3) = \frac{CS \times EF \times ED \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times DF_i}{AT}$$

$$\text{Intake (pCi)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times HR \times EF \times ED \times \left(\frac{1000\ g}{kg}\right) \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times DF_i}{t \times \lambda}$$

Variable	Value used	Explanation/source
AT = Averaging time	365 days/year ED	Averaging time for noncarcinogens (EPA 1989a , 1991b)

	365 days/year 70 years	Averaging time for carcinogens (EPA 1989a, 1991b)
BW = Body Weight	70 kg	Adult (EPA 1991b)
CS = Concentration in soil or sediment	Chemical-specific (mg/kg; pCi/g)	Concentration is derived from sample data
DF_i = Indoor dilution factor	0.4 (unitless)	U.S. **EPA 2000** (page 2-13)
ED = Exposure duration	25 years	OSWER Directive (EPA 1991a, 1991b)
EF = Exposure frequency	250 days/year	OSWER Directive (EPA 1991b)
IR = Inhalation rate	20 m^3/day	OSWER Directive (EPA 1991b)
λ = Decay constant	0.693/halflife	**radionuclide-specific**
PEF = Particulate emission factor	Climate-specific (m^3/kg)	EPA 1996b
t = Time	(yr)	equal to ED
VF = Volatilization Factor	Chemical-specific (m^3/kg)	EPA 1996b

External exposure to soil pathway

$$\text{Intake (pCi-year/g)} = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times EF \times ED \times ACF \times ETF \times GSF \times \left(\frac{1\ \text{year}}{365\ \text{days}}\right)}{t \times \lambda}$$

Variable	Value used	Explanation/source
ACF = Area correction factor	0.9 (unitless)	U.S. **EPA 2000** (page 5-1)
CS = Concentration in soil or sediment	Chemical-specific (pCi/g)	Concentration is derived from sample data
ED = Exposure duration	25 years	OSWER Directive (EPA 1991b)
EF = Exposure frequency	250 days/year	OSWER Directive (EPA 1991b)
ETF = Exposure time fraction	0.33 (8hr/24hr, unitless)	Eight hour work day
GSF = Gamma shielding factor	0.4 (unitless)	U.S. **EPA 2000** (page 2-18)
λ = Decay Constant	0.693/halflife	**radionuclide-specific**
t = Time	(yr)	equal to ED

For information or technical assistance, please contact Fred Dolislager.

Last updated on Thursday, April 20th, 2006
URL: http://rais.ornl.gov/homepage/tm/for_ind_so.shtml

6-2. Input Parameters

The Risk Assessment Information System

Search!

RAIS Site-specific Risk Parameters

Your **Landuse** choices are:
Outdoor_Industrial
Your **Media** choices are:
Soil

Outdoor Industrial Soil

Particulate Emission Factor

$$PEF = Q/C \times \frac{3600 s/h}{0.036 \times (1-V) \times (U_m/U_t)^3 \times F(x)}$$

where

$$\frac{Q}{C} = A \times \exp\left[\frac{(\ln A_s - B)^2}{C}\right]$$

Parameters	Definition (units)	Default Value
City	Most Likely **Climatic Zone**	Chicago, IL (7)
A_s	Surface Area of Site **(acres)**	2
Q/C	inverse of the ratio of the geometric mean air concentration to the emission flux at center of a square source **(g/m^2-s per kg/m^3)**	77.26019
V	fraction of vegetative cover **(unitless)**	0.5
U_m	mean annual wind speed **(m/s)**	4.65
U_t	equivalent threshold value of windspeed at 7m **(m/s)**	11.32
F(x)	function dependenet on U_m/U_t derived using Cowherd et al. (1985) **(unitless)**	0.182

NOTES:

1. Default city is Minneapolis and default size is 0.5 acre
2. Default PEF is 1.36E+09 **(m3/kg)**
3. A, B and C are constants based on air dispersion modeling for specific climatic zones

Volatilization Factor

$$VF=\frac{Q/C\times\left(3.14\times D_A\times T\right)^{1/2}\times 10^{-4}\left(m^2/cm^2\right)}{2\times\rho_b\times D_A}$$

where

$$\frac{Q}{C}=A\times\exp\left[\frac{\left(\ln A_s-B\right)^2}{C}\right]$$

$$D_A=\frac{\left[\left(\theta_a^{10/3}\times D_i\times H'+\theta_w^{10/3}\times D_w\right)/n^2\right]}{\rho_b\times K_d+\theta_w+\theta_a\times H'}$$

Parameters	Definition (units)	Default Value
City	Most Likely **Climatic Zone**	Chicago, IL (7)
A_s	Surface Area of Site **(acres)**	2
Q/C	inverse of the geometric mean air concentration to the volatilization flux at center of a square source **(g/m^2-s per kg/m^3)**	77.26019
T	exposure interval **(s)**	9.5e08
foc	fraction organic carbon in soil **(g/g)**	0.006
ρ_b	dry soil bulk density **(g/cm^3)**	1.5
ρ_s	soil particle density **(g/cm^3)**	2.65
θ_w	water-filled soil porosity **(L_{water}/L_{soil})**	0.15

NOTES:

1. Default city is Los Angeles and default size is 0.5 acre
2. A, B and C are constants based on air dispersion modeling for specific climatic zones
3. θ_a air-filled soil porosity **(L_{air}/L_{soil})** = $n - \theta_w$
4. H' (dimensionless Henry's law constant) - chemical-specific
5. n (total soil porosity) **L_{pore}/L_{soil}** = 1-(ρ_b / ρ_s)
6. K_d (soil-water partition coefficient) **L/kg** = K_{oc} x f_{oc} (organics) - chemical-specific
7. K_{oc} (soil organic carbon/water partition coefficient) **L/kg** - chemical specific

Outdoor Industrial Exposure to Soil

Combined Ingestion, Inhalation, Dermal[1], and External Exposure[2]

Chemicals:

$$CDI\ (mg/kg\text{-}d)=\frac{CS\times IR\times EF\times ED}{BW\times AT}$$

$$\text{CDI } (mg/m^3) = \frac{CS \times EF \times ED \times \left(\frac{1}{VF} + \frac{1}{PEF}\right)}{AT}$$

$$\text{CDI } (mg/kg\text{-}d) = \frac{CS \times EF \times ED \times SA \times AF \times ABS \times \left(\frac{kg}{1{,}000{,}000\ mg}\right) \times \left(\frac{10{,}000\ cm^2}{m^2}\right)}{BW \times AT}$$

Radionuclides:

$$\text{Intake } (pCi) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times \left(\frac{1000\ g}{kg}\right) \times IR \times EF \times ED}{t \times \lambda}$$

$$\text{Intake } (pCi) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times HR \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

$$\text{Intake } (pCi\text{-}yeaar/g) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times EF \times ED \times \left(\frac{1\ year}{365\ days}\right) \times ACF \times ETF}{t \times \lambda}$$

Parameters	Definition (units)	Default Value
AF	adult adherence factor **(mg/cm^2)**	0.2
ACF	area correctin factor **(unitless)**	0.9
BW	adult body weight **(kg)**	71.8
DF_i	indor dilution factor **(unitless)**	0.4
ED	adult exposure duration **(yr)**	6.6
EF	exposure frequency **(day/yr)**	225
ET_o	exposure time outdoor **(hour/hour)**	0.333
GSF	gamma shielding factor **(unitless)**	0.4
HR	inhalation rate for adult **(m^3/day)**	15.2
IR	soil ingestion rate for adult **(kg/day)**	0.00005
SA	adult surface area (head, hands, forearms) **(m^2/day)**	0.33

NOTES:

1. Chemicals only.
2. Radionuclides only.
3. ABS=absorption factor **(unitless)**, chemical-specific
4. AT=averaging time **(yr x day/yr)**, 70 x 365 (carcinogen)
5. PEF=particulate emission factor **(m^3/kg)**. Default is 1.36×10^9
6. SF_{ad}=absorbed dose slope factor **$(mg/kg\text{-}day)^{-1}$**, chemical-specific
7. SF_o=oral slope factor **$(mg/kg\text{-}day)^{-1}$**, chemical-specific
8. SF_s=soil ingestion slope factor **$(risk/pCi)^{-1}$**. radionuclide-specific

9. SF_x=external exposure slope factor **(risk/yr per pCi/g)$^{-1}$**, radionuclide-specific
10. λ=decay constant, radionuclide-specific
11. RfD_{ad}=absorbed chronic reference dose **(mg/kg-day)**, chemical-specific
12. RfC_i=inhalation chronic reference concentration **(mg/m^3)**, chemical-specific
13. RfD_o=oral chronic reference dose **(mg/kg-day)**, chemical-specific
14. TV_{ad}=absorbed toxicity value, **SF_{ad} (carcinogen), 1/RfD_{ad} (noncarcinogen)**
15. TV_i=inhalation toxicity value, **URF (carcinogen), 1/RfC_i (noncarcinogen)**
16. TV_o=oral toxicity value, **SF_o (carcinogen), 1/RfD_o (noncarcinogen)**
17. URF=inhalation unit risk factor **(mg/m^3)$^{-1}$**, chemical-specific
18. **VF**=volatilization factor (volatile organics only) **(m^3/kg)**, chemical-specific (calculated)

RETRIEVE | clear selection

For information or technical assistance, please contact Fred Dolislager.

Last updated on Tuesday, January 23rd, 2007
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The Risk Assessment Information System

Search!

RAIS Site-specific Risk Parameters

Your **Landuse** choices are:
Construction
Your **Media** choices are:
Soil

Construction/Excavation Soil

Particulate Emission Factor

$$PEF = Q/C \times \frac{3600 s/h}{0.036 \times (1-V) \times (U_m/U_t)^3 \times F(x)}$$

where

$$\frac{Q}{C} = A \times \exp\left[\frac{(\ln A_s - B)^2}{C}\right]$$

Parameters	Definition (units)	Default Value
City	Most Likely **Climatic Zone**	Chicago, IL (7)
A_s	Surface Area of Site **(acres)**	2
Q/C	inverse of the ratio of the geometric mean air concentration to the emission flux at center of a square source **(g/m^2-s per kg/m^3)**	77.26019
V	fraction of vegetative cover **(unitless)**	0.5
U_m	mean annual wind speed **(m/s)**	4.65
U_t	equivalent threshold value of windspeed at 7m **(m/s)**	11.32
F(x)	function dependenet on U_m/U_t derived using Cowherd et al. (1985) **(unitless)**	0.182

NOTES:

1. Default city is Minneapolis and default size is 0.5 acre
2. Default PEF is 1.36E+09 **(m3/kg)**
3. A, B and C are constants based on air dispersion modeling for specific climatic zones

Volatilization Factor

$$VF = \frac{Q/C \times \left(3.14 \times D_A \times T\right)^{1/2} \times 10^{-4} \left(m^2/cm^2\right)}{2 \times \rho_b \times D_A}$$

where

$$\frac{Q}{C} = A \times \exp\left[\frac{\left(\ln A_s - B\right)^2}{C}\right]$$

$$D_A = \frac{\left[\left(\theta_a^{10/3} \times D_i \times H' + \theta_w^{10/3} \times D_w\right)/n^2\right]}{\rho_b \times K_d + \theta_w + \theta_a \times H'}$$

Parameters	Definition (units)	Default Value
City	Most Likely **Climatic Zone**	Chicago, IL (7)
A_s	Surface Area of Site **(acres)**	2
Q/C	inverse of the geometric mean air concentration to the volatilization flux at center of a square source **(g/m^2-s per kg/m^3)**	77.26019
T	exposure interval **(s)**	9.5e08
foc	fraction organic carbon in soil **(g/g)**	0.006
ρ_b	dry soil bulk density **(g/cm^3)**	1.5
ρ_s	soil particle density **(g/cm^3)**	2.65
θ_w	water-filled soil porosity **(L_{water}/L_{soil})**	0.15

NOTES:

1. Default city is Los Angeles and default size is 0.5 acre
2. A, B and C are constants based on air dispersion modeling for specific climatic zones
3. θ_a air-filled soil porosity **(L_{air}/L_{soil})** = $n - \theta_w$
4. H' (dimensionless Henry's law constant) - chemical-specific
5. n (total soil porosity) **L_{pore}/L_{soil}** = 1-(ρ_b/ ρ_s)
6. K_d (soil-water partition coefficient) **L/kg** = K_{oc} x f_{oc} (organics) - chemical-specific
7. K_{oc} (soil organic carbon/water partition coefficient) **L/kg** - chemical specific

Excavator Exposure to Soil

Combined Ingestion, Inhalation, Dermal[1], and External Exposure[2]

Chemicals:

$$CDI\ (mg/kg\text{-}d) = \frac{CS \times IR \times EF \times ED}{BW \times AT}$$

$$\text{CDI } (mg/m^3) = \frac{CS \times EF \times ED \times \left(\frac{1}{PEF} + \frac{1}{VF}\right)}{AT}$$

$$\text{CDI } (mg/kg\text{-}d) = \frac{CS \times EF \times ED \times \left(\frac{kg}{1{,}000{,}000\ mg}\right) \times \left(\frac{10{,}000\ cm^2}{m^2}\right) \times SA \times AF \times ABS}{BW \times AT}$$

Radionuclides:

$$\text{Intake } (pCi) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times IR \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

$$\text{Intake } (pCi) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times HR \times \left(\frac{1}{VF} + \frac{1}{PEF}\right) \times EF \times ED \times \left(\frac{1000\ g}{kg}\right)}{t \times \lambda}$$

$$\text{Intake } (pCi\text{-}year/g) = \frac{CS \times \left(1 - e^{-\lambda t}\right) \times EF \times ED \times GSF \times ETF \times ACF \times \left(\frac{1\ year}{365\ days}\right)}{t \times \lambda}$$

Parameters	Definition (units)	Default Value
AF	adult adherence factor **(mg/cm^2)**	0.3
ACF	area correctin factor **(unitless)**	0.9
BW	adult body weight **(kg)**	71.8
DF_i	indor dilution factor **(unitless)**	0.4
ED	adult exposure duration **(yr)**	1
EF	exposure frequency **(day/yr)**	20
ET	exposure time outdoor **(hour/hour)**	0.333
GSF	gamma shielding factor **(unitless)**	0.4
HR	inhalation rate for adult **(m^3/day)**	15.2
IR	soil ingestion rate for adult **(kg/day)**	0.00033
SA	adult surface area (head, hands, forearms) **(m^2/day)**	0.33

NOTES:

1. Chemicals only.
2. Radionuclides only.
3. ABS=absorption factor **(unitless)**, chemical-specific
4. AT=averaging time **(yr x day/yr)**, 70 x 365 (carcinogen)
5. PEF=particulate emission factor **(m^3/kg)**. Default is 1.36×10^9
6. SF_{ad}=absorbed dose slope factor **$(mg/kg\text{-}day)^{-1}$**, chemical-specific
7. SF_o=oral slope factor **$(mg/kg\text{-}day)^{-1}$**, chemical-specific
8. SF_s=soil ingestion slope factor **$(risk/pCi)^{-1}$**. radionuclide-specific

9. SF_x=external exposure slope factor **(risk/yr per pCi/g)$^{-1}$**. radionuclide-specific
10. λ=decay constant. radionuclide-specific
11. RfD_{ad}=absorbed chronic reference dose **(mg/kg-day)**, chemical-specific
12. RfC_i=inhalation chronic reference concentration **(mg/m^3)**, chemical-specific
13. RfD_o=oral chronic reference dose **(mg/kg-day)**, chemical-specific
14. TV_{ad}=absorbed toxicity value, **SF_{ad} (carcinogen), 1/RfD_{ad} (noncarcinogen)**
15. TV_i=inhalation toxicity value, **URF (carcinogen), 1/RfC_i (noncarcinogen)**
16. TV_o=oral toxicity value, **SF_o (carcinogen), 1/RfD_o (noncarcinogen)**
17. URF=inhalation unit risk factor **(mg/m^3)$^{-1}$**, chemical-specific
18. **VF**=volatilization factor (volatile organics only) **(m^3/kg)**, chemical-specific (calculated)

RETRIEVE | clear selection

For information or technical assistance, please contact Fred Dolislager.

Last updated on Tuesday, January 23rd, 2007
URL: http://rais.ornl.gov/cgi-bin/prg/for_search_results

6-3. Toxicity Indices

Toxicity & Chemical-Specific Factors Data Base Search Results

The Data are current as of October 2006

Toxicity Values and Chemical-Specific Factors You Selected:

NOTE: If this page is too wide to print, try selecting a smaller font or printing in landscape mode.

Chemical	CAS #	Date Withdrawn	Dermal RfD - Chronic (mg/kg-day)	Dermal RfD - Subchronic (mg/kg-day)	Dermal SF (mg/kg-day)$^{-1}$	Inhalation Unit Risk (mg/m^3)$^{-1}$	Oral Unit Risk (mg/L)$^{-1}$	Inhalation RfC - Chronic (mg/m^3)	Inhalation RfC - Subchronic (mg/m^3)	Inhalation RfD - Chronic (mg/kg-day)	Inhalation RfD - Subchronic (mg/kg-day)	Oral RfD - Chronic (mg/kg-day)	Oral RfD - Subchronic (mg/kg-day)	Inhalation SF (mg/kg-day)$^{-1}$	Oral SF (mg/kg-day)$^{-1}$
Aroclor 1242 (exposure to soil or food)	53469219				2.22E+00 n	5.7E-01 ad								2.00E+00 u	2.00E+00 n
Aroclor 1242 (exposure to water)	53469219				4.44E-01 o	1.0E-01 q	1.0E-02 o							3.50E-01 u	4.00E-01 o
Aroclor 1254 (exposure to soil or food)	11097691		1.80E-05	4.50E-05	2.22E+00 n	5.7E-01 ad						2.00E-05	5.00E-05	2.00E+00 u	2.00E+00 n
Aroclor 1254 (exposure to water)	11097691		1.80E-05	4.50E-05	4.44E-01 o	1.0E-01 q	1.0E-02 o					2.00E-05	5.00E-05	3.50E-01 u	4.00E-01 o
Aroclor 1260 (exposure to soil or food)	11096825				2.22E+00 n	5.7E-01 ad								2.00E+00 u	2.00E+00 n
Aroclor 1260 (exposure to water)	11096825				4.44E-01 o	1.0E-01 q	1.0E-02 o							3.50E-01 u	4.00E-01 o

For information or technical assistance, please contact Fred Dollalager.

Last updated on Tuesday, October 24th, 2006
URL: http://rais.ornl.gov/cgi-bin/tox/TOX_9801

References for Nonradionuclides

† The Dermal Chronic RfD, Dermal Subchronic RfD, and Dermal Slope Factor are all derived values. These values were calculated using the method provided in the *Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual, Part A* (EPA/540/1-89/002).

†† Doses were derived from inhalation reference concentrations (mg/m^3) from IRIS and HEAST by multiplying a conversion factor of 20 m^3/day per 70 kg by the reference concentrations.

*** EPA Region 4 has adopted the following default oral absorption efficiencies when chemical-specific values are not available: 80% for VOCs; 50% for SVOCs; 20% for inorganic chemicals. *RAGS: Region 4 Bulletins, Human Health Risk Assessment* (Interim Guidance) (November 1995).**

a Source: Integrated Risk Information System (IRIS)

b Source: Health Effects and Environmental Affects Summary Table (HEAST) 1995

c These subchronic and chronic non-cancer toxicity values are found in Agency documents, but were calculated by alternative methods that are not currently practiced by the RfD/RfC Work Group. These values are considered to be adequate provisional values for risk assessment purposes at Superfund and RCRA sites, but are subject to be reviewed by the RfD/RfC Work Group and revised when necessary to reflect current work group practices.

d Lead Alkyls - See IRIS cover sheet for further explanation

e According to HEAST, The chronic oral RfD was adopted as the subchronic oral [RfD].

f HEAST concluded that toxicity data were inadequate for calculation of oral RfDs for copper and substituted the current drinking water standard (MCLG) of 1.3 mg/L. The RAIS converts this MCLG to an RfD for chronic and subchronic oral exposure.

g Listed as "Dinitrotoluene mixture, 2,4-/2,6-" in IRIS. The value is based on a study using technical grade DNT.

h Value expressed as fibers/L.

i Original HEAST value is 3.3E-05 $(pg/m^3)^{-1}$

j The oral toxicity values for 'Cadmium (Diet)' are to be used for soil and food uses while the oral toxicity values for 'Cadmium (Water)' are to be used for water uses only.

k This chemical is a criteria pollutant regulated by National Ambient Air Quality Standards under the Clean Air Act. The NAAQS are not included in the table because they represent different levels of review and different methods of calculation and must be interpreted and used differently. A list of NAAQS is appended to the table.

L Agency for Toxic Substances and Disease Registry (ATSDR). *Toxicological Profile for Carbon Disulfide.* 1992. ATSDR/TP-91/09.

m IRIS no longer separates manganese values for chronic oral RfDs into water and diet RfDs. The chronic oral RfD for the total oral intake of manganese is 1.40E-01. However, when assessing exposure to manganese from drinking water or soil, IRIS recommends using a modifying factor of 3, thereby lowering the RfD to 4.67E-02, which has been rounded to 4.6E-02. Rounding to 4.7E-02 is more accurate, but makes the value less conservative. HEAST values remain separated into water and diet subchronic RfDs.

n The cancer potency of PCB mixtures is determined using a three tiered approach that depends on the information available. Criteria for use of the High Risk and Persistence Tier include: food chain exposure; sediment or soil ingestion; dust or

aerosol inhalation; dermal exposure if an absorption factor has been applied; any early-life exposure; and the presence of dioxin-like, tumor-promoting, or persistent congeners. This value, 2.00e+00 per (mg/kg)/day, is the upper-bound slope factor for the High Risk and Persistence Tier. The central-estimate slope factor for this tier is 1.00+00 per (mg/kg)/day.

o Criteria for use of the Low Risk and Persistence Tier includes: ingestion of water-soluble congeners; inhalation of evaporated congeners; and dermal exposure if no absorption factor has been applied. The value of 4.00E-01 per (mg/kg/day) is the upper-bound Oral Slope Factor for the Low Risk and Persistence Tier. The central-estimate Oral Slope Factor for the Low Risk and Persistence Tier is 3.00E-01 per (mg/kg/day). For ingestion of water-soluble congeners, the middle tier upper-bound slope factor can be converted to a unit risk of 1.00E-05 per (ug/L/day).

p This value is the upper-bound Oral Slope Factor for the Lowest Risk and Persistence Tier. Criteria for use of this tier include situations in which congener or isomer analyses verify that congeners with more than 4 chlorines comprise less than 0.5% of the total PCBs. The central-estimate Oral Slope Factor for the Lowest Risk and Persistence Tier is 4.00E-02 per (mg/kg/day).

q For inhalation of evaporated congeners, the middle tier (Low Risk and Persistence Tier) slope factor can be converted to a unit risk estimate. The value 4.00E-01 per (mg/kg/day) is the upper-bound Inhalation Slope Factor for the Low Risk and Persistence Tier. The value 1.00E-04 per (ug/m^3/day) is the upper-bound Inhalation Unit Risk. For inhalation of an aerosol or dust contaminated with PCBs, the slope factor for the High Risk and persistence Tier should be used.

r **Van den Berg et al. (2006)** presents the WHO 2005 TEFs for carcinogenic dioxins and furans and polychlorinated biphenyls. Ahlborg et al. (1994) presents the WHO 1994 TEFs for carcinogenic polychlorinated biphenyls 170 and 180 in *Toxic equivalency factors for dioxin-like PCBs: Report on a WHO-ECEH and IPCS consultation, December 1993. Chemosphere, Vol. 28, No. 6, 1049-1067.* Polycyclic aromatic hydrocarbon TEFs are presented in ***Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons***.

s The chemical name 'Mercury (inorganic)' was replaced with the name 'Mercury (elemental)' in 9/95; both have the same CAS number as 'Mercury (elemental)' and a GIABS of 0.01%. Note: because 'Mercuric Chloride' was used in the studies from

which the toxicity values for 'Mercury (inorganic)' were derived and because 'Mercuric Chloride' is a specific inorganic form/compound of 'Mercury (inorganic)', the oral RfD values have been assigned to 'Mercuric Chloride'. However, the Oak Ridge Reservation may also use these values for 'Mercury (inorganic)' or 'Mercury Inorganic Salts', but they do not apply to 'Mercury (elemental)'. **To ensure proper use of the toxicity value, please refer to footnotes z and aa for further toxicity information regarding other forms of Mercury.**

t This entry was formerly listed as Nickel (metallic) with the CAS number 7440-02-0. The chemical name was changed so that it more accurately indicates the chemicals used in the studies from which the values were derived. Several different nickel salts were used, so the listing of one CAS number is not appropriate and has been replaced with the work VARIOUS. The values remain unchanged. Risk Assessment Program assigns these values to Nickel (metallic), although they are no longer listed with that chemical name.

u The Inhalation Slope Factor was calculated from inhalation unit risk as described in Supplemental Guidance from *RAGS: Region 4 Bulletins, Human Health Risk Assessment* (Interim Guidance) (November 1995).

v The Risk Assessment Program has contacted Superfund and been given provisional values which should be used for DOE-ORR projects. This value should be clearly documented as provisional. For other projects, Superfund Health Risk Technical Support Center should be contacted directly (513)569-7300.

w This value was withdrawn by NCEA. "The cancer slope factor was withdrawn because of the re-evaluation of the rodent data which does not support genotoxic mode of action based on our proposed cancer guidelines. This chemical is now being reassessed for IRIS which automatically flags further use of any provisional cancer or non-cancer assessments." If this chemical is identified as a risk driver, the risk assessor should consult The EPA Superfund Technical Support Center. All withdrawn values should be clearly documented when used in any risk assessment activity.

x Provisional inhalation toxicity values have been developed by the National Center for Environmental Assessment (NCEA). *RAGS: Region 4 Bulletins, Human Health Risk Assessment* (Interim Guidance) (November 1995).

y The value of 34 mg/L is a concentration in drinking water given to both chronic

and subchronic RfDs. Specifically related to organoleptic threshold. Safe concentration may be higher, but data are inadequate to assess.

z Provisional toxicity values are presented in *SRC SF 01-016a/09-25-02 "Risk Assessment Issue Paper for: Evaluation of the Provisional RfD for Mercuric Sulfide (CASRN 1344-48-5)"* In this report it is stated the use of the mercuric chloride RfD (0.0003 mg/kg-day) could be considered protective of mercuric sulfide. However, the Oak Ridge Reservation has adopted the PRTV value 0.003. **To ensure proper use of the toxicity value, please refer to footnotes s and aa for further toxicity information regarding other forms of Mercury.**

aa An EPA-approved oral chronic RfD for elemental Mercury is currently not available (refer to footnote s). However, because of the low bioavailability similar to that of Mercuric Sulfide, the Oak Ridge Reservation may use the PRTV oral chronic RfD for Mercuric Sulfide (0.003 mg/kg-d) as a proxy/surrogate for Elemental Mercury with appropriate documentation, explanation, footnotes, and uncertainty discussions (refer to footnote z). The dermal chronic RfD associated with this unverified oral chronic RfD for elemental Mercury is 3.0E-07 mg/kg-d; based on a GIABS of 0.0001.; use of this dermal toxicity value should also be documented, footnoted, and discussed in the risk assessment. **To ensure proper use of the toxicity value, please refer to footnotes s and z for further toxicity information regarding other forms of Mercury.**

ab United States Environmental Protection Agency (EPA). 1992. *Dermal Exposure Assessment: Principles and Applications.* Interim Report. EPA/600/8-91/011B.

ac Where chemical-specific information is not available, dermal absorption factors of 1.0% for organics and 0.1% for inorganics should be used as defaults in determining the uptake associated with dermal exposure to contaminated soils. *RAGS: Region 4 Bulletins, Human Health Risk Assessment* (Interim Guidance) (November 1995).

ad The Inhalation Unit Risk was calculated from inhalation slope factor as described in Supplemental Guidance from *RAGS: Region 4 Bulletins, Human Health Risk Assessment* (Interim Guidance) (November 1995).

ae Source: **Federal Register,** (very large file) Thursday December 7, 2000. Part II, Environmental Protection Agency. 40 CFR Parts 9, 141, and 142 - National Primary Drinking Water Regulations; Radionuclides; Final Rule. p 76713. **[PDF]** Also see

Soil Screening Guidance for Radionuclides: User's Guide pg 1-6.

af The Stable Cerium RfC is based on cerium oxide. This information is presented in *SRC SF 01-027b/11-01-02 "Risk Assessment Issue Paper for: Provisional RfC for Stable Cerium [Ceric Oxide] (CASRN 1306-38-3)]"*.

ag The 3-Nitroaniline RfC, RfD, and oral slope factor toxicity values are based on analogy to 4-Nitroaniline. This information is presented in *SRC SF 01-025{a,b,c}/11-01-02 "Risk Assessment Issue Paper for: Provisional {RfD, RfC, and Carcinogenicity Assessment} for 3-Nitroaniline (CASRN 99-09-2) by Analogy to 4-Nitroaniline (CASRN 100-01-6)"*.

ah These toxicity values present EPA's most current evaluation of the potential health risks from exposure to trichloroethylene (TCE). The citation presented is as follows: *2001. TRICHLOROETHYLENE HEALTH RISK ASSESSMENT: SYNTHESIS AND CHARACTERIZATION (EXTERNAL REVIEW DRAFT). USEPA EPA/600/P-01/002A. 01 AUGUST 2001. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington Office, Washington, DC, .* This NCEA report can be viewed **here**. EPA Region IX and Region III have adopted these toxicity values as well.

ai Tetrachloroethylene cancer toxicity values are taken from California EPA and EPA Region 9. Please see the **letter** justifying the use of these values. EPA Regions VI and III have adopted these toxicity values as well.

aj p-Chlorobenzoic acid has provisional screening values as follows: subchronic RfD of 0.08 mg/kg-day based on a LOAEL; subchronic RfD of 0.5 mg/kg-day based on a NOAEL; chronic RfD of 0.03 mg/kg-day based on a LOAEL; and chronic RfD of 0.2 mg/kg-day based on a NOAEL. Contact **Fred Dolislager** for more information.

For information or technical assistance, please contact Fred Dolislager.

Last updated on Friday, November 10th, 2006
URL: http://rais.ornl.gov/tox/nonrad_ftn.shtml

APPENDIX 7

Appendix 7. Risk Calculation Sheets

Site-Specific Risk Results: Construction Worker (Upper Bound)

Site-specific parameter choices

cqname	af	acf	bwa	dfi	cda
exc	0.3	0.9	71.8	0.4	1
ef	eto	gsf	hra	ira	sa
20	0.333	0.4	15.2	0.00033	0.33

Site-specific VF and PEF parameter choices

citypef	sapef	qcpef	vpef	Umpef	Utpef	Fxpef	cityvf
Chicago, IL (7)	2	77.26019	0.5	4.65	11.32	0.182	Chicago, IL (7)
savf	qcvf	Tvf	focvf	pbvf	psvf	theta_wv	Concentration in Soil (mg/kg)
2	77.26019	9.50E+08	0.006	1.5	2.65	0.15	41.3

Construction Worker Soil Risk and HI - Chemicals

Analyte's Name	CAS Number	Oral RfD	Oral SF	Inhalation RfC	Inhalation Unit Risk	Dermal RfD	Dermal SF
Units	-	(mg/kg-day)	(mg/kg-day)-1	(mg/m3)	(mg/m3)-1	(mg/kg-day)	(mg/kg-day)-1
Aroclor 1254	11097691	5.00E-05	2.00E+00	-	5.70E-01	4.50E-05	2.22E+00

Analyte's Name	Ingestion of Soil Noncarcinogenic CDI	Inhalation of Soil Particulates and Volatiles Noncarcinogenic CDI	Dermal Soil Noncarcinogenic CDI	Ingestion of Soil Carcinogenic CDI	Inhalation of Soil Particulates and Volatiles Carcinogenic CDI	Dermal Soil Carcinogenic CDI	Volatilization Factor (m3/kg)	Particulate Emission Factor (m3/kg)
Aroclor 1254	1.04E-05	2.35E-06	4.37E-06	1.49E-07	3.36E-08	6.24E-08	9.63E+05	1.22E+09

Analyte's Name	Ingestion of Soil HI	Inhalation of Soil Particulates and Volatiles HI	Dermal Soil HI	**Total Soil HI**	Ingestion of Soil Risk	Inhalation of Soil Particulates and Volatiles Risk	Dermal Soil Risk	**Total Soil Risk**
Aroclor 1254	2.08E-01	-	9.71E-02	**3.05E-01**	2.97E-07	1.92E-08	1.39E-07	**4.55E-07**

Modified from RAIS Site-Specific Risk Result Output (http://rais.ornl.gov/cgi-bin/prg/for_search_results_site)
Date: January 26, 2007

Site-Specific Risk Results: Construction Worker (Upper Bound)

Site-specific parameter choices

eqname	af	acf	bwa	dfi	eda
exc	0.3	0.9	71.8	0.4	1
ef	eto	gsf	hra	ira	sa
20	0.333	0.4	15.2	0.00033	0.33

Site-specific VF and PEF parameter choices

citypef	sapef	qcpef	vpef	Umpef	Utpef	Fxpef	cityvf
Chicago, IL (7)	2	77.26019	0.5	4.65	11.32	0.182	Chicago, IL (7)
savf	qcvf	Tvf	focvf	pbvf	psvf	theta_wv	Concentration in Soil (mg/kg)
2	77.26019	9.50E+08	0.006	1.5	2.65	0.15	41.3

Construction Worker Soil Risk and HI - Chemicals

Analyte's Name	CAS Number	Oral RfD	Oral SF	Inhalation RfC	Inhalation Unit Risk	Dermal RfD	Dermal SF
Units	-	(mg/kg-day)	(mg/kg-day)-1	(mg/m3)	(mg/m3)-1	(mg/kg-day)	(mg/kg-day)-1
Aroclor 1254	11097691	5.00E-05	2.00E+00	-	5.70E-01	4.50E-05	2.22E+00

Analyte's Name	Ingestion of Soil Noncarcinogenic CDI	Inhalation of Soil Particulates and Volatiles Noncarcinogenic CDI	Dermal Soil Noncarcinogenic CDI	Ingestion of Soil Carcinogenic CDI	Inhalation of Soil Particulates and Volatiles Carcinogenic CDI	Dermal Soil Carcinogenic CDI	Volatilization Factor (m3/kg)	Particulate Emission Factor (m3/kg)
Aroclor 1254	1.04E-05	2.35E-06	4.37E-06	1.49E-07	3.36E-08	6.24E-08	9.63E+05	1.22E+09

Analyte's Name	Ingestion of Soil HI	Inhalation of Soil Particulates and Volatiles HI	Dermal Soil HI	**Total Soil HI**	Ingestion of Soil Risk	Inhalation of Soil Particulates and Volatiles Risk	Dermal Soil Risk	**Total Soil Risk**
Aroclor 1254	2.08E-01	-	9.71E-02	**3.05E-01**	2.97E-07	1.92E-08	1.39E-07	**4.55E-07**

Modified from RAIS Site-Specific Risk Result Output (http://rais.ornl.gov/cgi-bin/prg/for_search_results_site)
Date: January 26, 2007

Site-Specific Risk Results: Construction Worker (Upper Bound)

Site-specific parameter choices

eqname	af	acf	bwa	dfi	eda
exc	0.3	0.9	71.8	0.4	1
ef	eto	gsf	hra	ira	sa
20	0.333	0.4	15.2	0.00033	0.33

Site-specific VF and PEF parameter choices

citypef	sapef	qcpef	vpef	Umpef	Upef	Expef	cityvf
Chicago, IL (7)	2	77.26019	0.5	4.65	11.32	0.182	Chicago, IL (7)
savf	qcvf	Tvf	focvf	pbvf	psvf	theta_wv	Concentration in Soil (mg/kg)
2	77.26019	9.50E+08	0.006	1.5	2.65	0.15	41.3

Construction Worker Soil Risk and HI - Chemicals

Analyte's Name	CAS Number	Oral RfD	Oral SF	Inhalation RfC	Inhalation Unit Risk	Dermal RfD	Dermal SF
Units	-	(mg/kg-day)	(mg/kg-day)-1	(mg/m3)	(mg/m3)-1	(mg/kg-day)	(mg/kg-day)-1
Aroclor 1254	11097691	5.00E-05	2.00E+00	-	5.70E-01	4.50E-05	2.22E+00

Analyte's Name	Ingestion of Soil Noncarcinogenic CDI	Inhalation of Soil Particulates and Volatiles Noncarcinogenic CDI	Dermal Soil Noncarcinogenic CDI	Ingestion of Soil Carcinogenic CDI	Inhalation of Soil Particulates and Volatiles Carcinogenic CDI	Dermal Soil Carcinogenic CDI	Volatilization Factor (m3/kg)	Particulate Emission Factor (m3/kg)
Aroclor 1254	1.04E-05	2.35E-06	4.37E-06	1.49E-07	3.36E-08	6.24E-08	9.63E+05	1.22E+09

Analyte's Name	Ingestion of Soil HI	Inhalation of Soil Particulates and Volatiles HI	Dermal Soil HI	**Total Soil HI**	Ingestion of Soil Risk	Inhalation of Soil Particulates and Volatiles Risk	Dermal Soil Risk	**Total Soil Risk**
Aroclor 1254	2.08E-01	-	9.71E-02	**3.05E-01**	2.97E-07	1.92E-08	1.39E-07	**4.55E-07**

Modified from RAIS Site-Specific Risk Result Output (http://rais.ornl.gov/cgi-bin/prg/for_search_results_site)
Date: January 26, 2007

"Hall, Todd"
<Todd.Hall@Illinois.gov>
03/02/2009 02:36 PM

To

Subject Metal Management Works/Cometco - 15090 Cortland Street

History: This message has been replied to.

Sundar:

Attached is my checklist/notes for the property. As I indicated it is a work in progress. Feel free to let me know if you have any questions.

Todd Hall
Site Remediation Program
Illinois Environmental Protection Agency
Phone: (217) 557-1409

E-mail: Todd.Hall@illinois.gov Cometco Checklist.doc

Site Remediation Program Checklist
July 19, 2001 revised December 10, 2001, April 11, 2002, August 5, 2002, November 14, 2002, November 21, 2002, April 19, 2004, April 26, 2004, June 27, 2006
Todd M. Hall

A. General Information:

1. Site:	0316005505-Cook County Chicago/Cometco Corporation 1509 West Cortland Street Site Remediation Program/Technical Reports
2. General Site Information:	Cometco Corporation 1509 West Cortland Street Chicago, IL 60622 Approximate Size: approximately 4 acres Legal Description: as noted on page 5 in Section 2.1 in Volume 1 (Illinois EPA Log No. 01-2477) PIN(s): 14-32-302-005 Site Base Map: Site Map included as Figure 2 in Volume 1 and Figure 2 in Volume 2 Appendix C (Illinois EPA Log No. 01-2477)
3. RA:	Metal Management Midwest, Inc. Attn: Ms. Debbie Hays 12701 South Doty Avenue Chicago, IL 60633 Telephone: (773)646-2121
4. RA's Consultant:	CPI Environmental Services Attn: Mr. Michael B. Place 799 Roosevelt Road Building 6, Suite 110 Glen Ellyn, IL 60137 Telephone: (630)469-6340 Fax: (630)469-6470
5. Property Owner:	Remediation Applicant is property owner.

B. General Site Information:

1. Reason for participation in the SRP; Recognized Environmental Conditions (RECs), Areas of Concern (AOCs), and related Contaminants of Concern (COCs); Past, Current, and Future Land Use:

Reason for participation in the SRP

The Remediation Applicant is seeking a Comprehensive NFR Letter.

Recognized Environmental Conditions (RECs)

The Phase I Environmental Site Assessment conducted by CPI in April 2000 identified several potential RECs. They were identified as follows:

- Darkened, oily soil under and around a 3000-gallon hydraulic oil collection tank, north of the Baler Building. Additional soil staining, sheens on pooled stormwater , and milky appearance of pooled stormwater were observed near the rail spur, crane operating areas, and under metal scrap piles;
- Two floor drains and an oil water seperator/triple basin were observed in the Maintenance Building. This system is not associated with current occupants of the building;
- Phased and emulsified oils were observed in a stormwater retention pond located on the southeast portion of the property;
- A former transformer house, which was present along the northwestern fence line, was identified on Sanborn Fire Insurance maps;
- An adjoining property to the west, which was a metal plating facility, was identified as a CORRACTS site; and
- The assessment also identified previous land use of the subject property as a coal storage yard, fuel company yard and an automobile repair shop.

Areas of Concern (AOCs)

The AOCs were addressed in the sample location selection. Test pit and boring locations were selected to evaluate potential RECs. Subsurface samples were collected at the following specific areas to address potential AOCs identified in the Phase I:

- Borings were advance near the floor drains and the triple basin system in the Maintenance and Paint Shop;
- Borings were advanced near a catch basin system within the Weld Shop;
- A boring was advanced at the location of an unidentifiable feature shown on historical Sanborn Map at the southwest corner of the Maintenance and Paint shop;
- A boring was advanced near the location of a former transformer house immediately north of the present scale;
- Three borings were advanced at the far southwest, central, and northeast portion of the property to obtain Shelby™ tube sample of native silty clay for purposes of obtaining site-specific physical characteristics of the material;
- Test pits and borings were excavated throughout operational portions of the property at areas displaying greatest surficial impact to assess overall soil quality at the subject property;

- Borings were advances south of the Maintenance Office to delineate extent of potential gasoline and diesel impact from the former UST area;
- Hand augers were advanced at four locations surrounding the stormwater pond to assess potential impact from stormwater accumulations;
- Sediment samples were collected from the stormwater pond to assess overall water quality;
- Perched fill water encountered in test pits that displayed greatest sensory impact was sampled to assess overall water quality.

The sampling locations are identified on Figure 3 of Volume 1 (Illinois EPA Log No. 01-2477).

Contaminants of Concern (COCs)

A Tier 1 evaluation indicates that PNAs, PCBs, lead, arsenic, benzene, vinyl chloride, and petroleum hydrocarbons are present in fill material. The following table (included on page 4 of Volume 1 – Illinois EPA Log No. 01-2477) summarizes the COCs and exceedences of Tier 1 SRO.

Contaminant of Concern	Industrial-Commercial		Construction Worker	
vinyl chloride				
benzene				
PCBs		---		---
benzo(a)anthracene		---		---
benzo(b)fluoranthene		---		---
benzo(a)pyrene				
dibenzo(a,h)anthracene		---		---
indeno(1,2,3-cd)pyrene		---		---
arsenic				
lead		---		---

= COC exceeds Tier 1 SRO established for exposure pathway

--- = No Tier 1 SRO established for pathway

????????revise to include ethylbenzene, PCE, selenium … also address soil component of the groundwater ingestion exposure rout????????????????/

*******MAKE SURE PCBs MEET APPROPRIATE ROs!!!!!!!!!!!!!!!!!!!!!!!!!!

Past, Current, and Future Land Use

From pre-1914 to pre-1950, Eureka Coal and Dock company, which included a blacksmith operation, occupied the premises. From pre-1950 to post-1975, Roth Adams Fuel Company stored coal at the property and an auto repair shop occupied the Welding Shop building. Between 1975 and 1988, the subject property was utilized as a scrap metal processing facility. Currently the subject property is utilized as a scrap

metal recycling facility. The future land use has yet to be determined, however the DRM-1 form indicates that the land use will be consistent with the existing industrial/commercial zoning.

2. *Site Description:*

The subject property is comprised of approximately four (4) acres of land within an urban setting containing a mixture of residential, commercial and industrial properties that are supplied with municipal water and sanitary sewer.

Six buildings are present on the subject property: the Office Building (two-story brick; contains offices and conference rooms), Maintenance and Paint Shop (one-story brick and concrete, concrete floor; includes maintenance and paint areas, used oil storage and new oil storage, sealed oil-water separator/triple basin in central portion; two floor drains in building discharge into triple basin), Welding Shop (one-story brick and concrete; used to repair lugger boxes; a floor drain inlet in this building discharges to stormwater drainage system), Maintenance Office (one-story brick; used for office space), Metals Warehouse (primarily one-story brick, concrete floor, a second story of office rooms exist along the south end; currently contains few spent lead-acid batteries on pallets; previously used for storage of nonferrous peddler scrap) ,and Baler Control Building (one-story concrete, concrete floor; used for electrical components, a 3000-gallon hydraulic oil reservoir, and a 500-gallon hydraulic oil reserve tank).

Other significant features include a truck scale, two inactive rail spurs (one that runs adjacent to the southern boundary elevated approximately 10 feet and one that trends in a north-south direction bisecting the subject property), chain-linked fencing along the northern and western boundaries, a barge-loading dock along the eastern side, and a stormwater collection pond on the southeast portion of the subject property.

The property is situated on the south side of West Cortland Street and bordered by the following:

- To the west – restaurant, residential dwellings, a plumber's shop, a gravel parking lot and North Elston Avenue;
- To the east – North Branch of the Chicago River;
- To the north – W. Courtland Street; and
- To the south – a railroad easement and a gas cylinder manufacturing company.

3. *Groundwater Class:*

Groundwater at the site was classified as Class II groundwater under 35 IAC 620.220 based on the following findings:

- The average in-situ hydraulic conductivity of the water bearing unit at the site is 7.59×10^{-7} cm/sec.;

- The site is located outside a well protection area for a community water supply well;
- The site is not located in the minimum setback zone of a well, which serves as a potable water supply;
- No community or potable water supply wells are located within a 2500-foot radius of the site;
- The City of Chicago obtains water from Lake Michigan and has a potable water supply ordinance that prohibits the installation of new potable water supply wells.

Subsurface geology at the site consists of fill material overlying disturbed silty clay, followed by clay till. As shown in the boring logs in Appendix A in the *Groundwater Investigation Report*, fill material consists of sand, gravel, slag, and cinders. The fill material is dry to saturated and its thickness varies from four (4) to 21 feet throughout the subject property. The thickness of the disturbed silty clay unit varies from 0 feet to 8 feet. No saturated zone was encountered in this unit. A glacial till unit underlies the upper silty clay confining unit. Wet to saturated intervals were encountered in the clay unit, therefore monitoring wells were screened in this unit.

4. *Description of how the remediation objectives meet the Tiered Approach to Corrective Action Objectives ("TACO") criteria 35 IAC 742:*

<u>Soil</u>

A *Soil Remediation Objectives Report*, dated January 30, 2002 and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. Included within the *Soil Remediation Objectives Report* is a presentation of the following:

- Demonstrations that the requirements for excluding an exposure route under 35 IAC 742 have been satisfied;
- Statement of applicable Tier 1 and Tier 2 soil remediation objectives for detected chemicals; and
- Summary of Areas of Concern (i.e., areas at which remediation and/or institutional controls will be required to comply with soil remediation objectives.

Table 3 and Table 4 in the *Soil Remediation Objectives Report* summarize the selected SRO for industrial/commercial workers and construction workers, respectively. In accordance with 35 IAC 742.600(f), the Tier 1 soil remediation objective was applied when the calculated Tier 2 SRO for an applicable exposure route was determined to be more stringent than the corresponding Tier 1 SRO. For the following chemicals, calculated Tier 2 SROs were determined to be equal to or more stringent than the Tier 1 SRO: arsenic, benzene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene. Therefore, RA selected the Tier 2 SRO only for the inhalation exposure route for vinyl chloride; Tier 1 SROs are selected for other

chemicals detected on-site. The project manager cross-checked the Tier 2 inhalation industrial/commercial and construction worker SROs for vinyl chloride and derived the same results as the RA. In addition, SROs (using Tier 2) were developed for parameters detected in fill material with no established Tier 1 SROs. These parameters are 2-butanone, chloromethane, dibenzofuran, 2-methylnaphthalene, and 3&4 methylphenol. The project manager randomly cross-checked the SROs for these parameters and derived the same results as the RA.

Ingestion

Inhalation

Construction Worker Ingestion

Construction Worker Inhalation

Soil Migration to Groundwater

Sampling Methodology

Groundwater

A *Groundwater Investigation Plan*, dated January 30, 2002 and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. The *Groundwater Investigation Plan* was submitted to address Illinois EPA comments in the December 12, 2001 Illinois EPA comment letter. Specifically, the two (2) comments involved investigating groundwater at the facility and determine the groundwater classification at the facility. Upon completion of the work described in the proposed *Groundwater Investigation Plan*, CPI will submit a *Groundwater* Investigation Report to the Illinois EPA to supplement the *Comprehensive Site Investigation Report.*

The groundwater investigation plan proposed by CPI is as follows:

a. Five (5) groundwater monitoring wells (MW-6 through MW-10) are to be installed at the property at the locations indicated on Figure 1 of the *Groundwater Investigation Plan* (Illinois EPA Log No. 02-0400). In general, the locations of the wells were chosen to provide property wide coverage, to provide the greatest likelihood of detecting migration of groundwater contamination, and to be place in areas where potential future damage will be minimized. Two (2) inch PVC wells are proposed to be screened in saturated conditions within or below the native silty clay.

   Groundwater samples from the five wells will be collected and analyzed for potential COCs in the area of the well (as discussed on page 5 of the *Groundwater Investigation Plan*).

b. Slug tests will be performed at two (2) selected monitoring wells to determine hydraulic conductivity through in-situ methods.

c. A groundwater investigation report will be prepared.

Sampling Methodology

5. *Remedial Action(s) Performed:*

A *Remedial Action Plan (RAP)*, dated January 30, 2002, and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. The proposed *RAP* met the requirements of 35 IAC 740.450 and is summarized below:

- Remove and off-site disposal of contaminated soils is selected in the areas: around the baler foundation/ former AST location (Area #1) and within gravel fill at the scrap storage area north of the stormwater retention pond (Area #2). Removal and disposal of stormwater pond media (surface water, bottom sediments, and bank fill material are proposed for the stormwater retention pond area (Area #14).

- An engineered barrier is planned at Areas #1 through #14. Material and design specifications of the engineered barrier in these areas are discussed in Section F.2 of the January 30, 2002 *RAP*.

- A *Construction Worker Health & Safety Plan* is proposed to be established and implemented to protect construction workers conducting future subsurface work under engineered barriers.

- Confirmation sampling is planned for Areas #1, #2, and #14. In Areas #1 and #2, confirmation sampling is being conducted to demonstrate the total petroleum hydrocarbon concentrations are less than the natural organic carbon fraction of the soil. In Area #1 a minimum of four (4) sidewall and two (2) bottom samples are proposed and at Area #2 a minimum of three (3) sidewall and two (2) bottom samples are proposed. For Area #14, confirmation sampling is being conducted to demonstrate the residual contamination does not exceed the natural attenuation capacity in accordance with 35 IAC 742.305 and the SROs of identified COCs are not exceeded within Area #14. A minimum of three 93) perimeter sidewall and two (2) bottom samples are proposed.

All Areas identified above are depicted on Figure 2 of the January 30, 2002 *RAP*.

6. *Applicable Engineered Barriers and Institutional Controls:*

7. *Post-remediation requirements:*

8. *Other Environmental Determinations or Actions:*

In September 1998, two USTs that contained diesel fuel were removed from the eastern portion of the Welding Shop. A release was subsequently reported to the Illinois Emergency Management Agency and assigned incident number 982317. An NFR letter for the release was issued by the Illinois EPA Lust Section on February 20, 2001.

9. *Other services requested by the RA:*

N/A

10. *RELPE services:*

N/A

NOTES:

August 21, 2001

Mr. Frank Santella, CPI Environmental Services, called me today regading the subject property. I left a message on Mr. Santella's voice mail yesterday stating that I had completed my initial review of Illinois EPA Log No. 01-24477. On the voice mail, I stated that the sedimentation basin issues had not been review by myself at this time due to the fact that the regulatory status of the basin was in question, the PCB issues would have to be coordinated with USEP – Region 5 (due to the concentrations), and the groundwater investigation was a concern. Mr. Santella requested clarification regarding the sedimentation basin. I stated that after I left the voice mail message, I did review the section of the report discussing the sedimentation basin, and I did not have any comments at this time. Mr. Santella indicated that he was aware that the PCB efforts would have to be coordinated with USEPA, and he had already been in contact with them about this issue. I also stated that additional sampling (VOC, SVOC and metals) was being requested in the area where a strong gasoline odor was detected (TP-116). I stated that my comment letter should be sent out by later this week.

August 27, 2001

On August 27, 2001 the following comments were forwarded to the RA:

1. The Remediation Applicant has not provided the Parcel Index Number(s) (PINs) for the site.

2. 35 Illinois Administrative Code (35 IAC) 740.425(b)(2)(D)(ii) states that the Comprehensive Site Investigation shall include site base map(s) meeting the requirements of Section 740.210(a)(7) and include on-site and off-site injection wells and withdrawal wells. Appendix D in Volume II of the *Comprehensive Site Investigation* contains groundwater well records. However, it does not appear as if a map of the locations of the wells has been included in this report. The Remediation Applicant should provide a map of the locations of the injection and withdrawal wells in accordance with this regulation.

3. 35 IAC 740.425(b)(2)(E) states a Comprehensive Site Investigation report shall include a legal description or reference to a plat showing the boundaries of the remediation site. The subject property description included on page 5, Section 2.1 of Volume I of the *Comprehensive Site Investigation* does not appear to be the full legal description of the property.

4. 35 IAC 740.420(b)(3) states that the phase II environmental site assessment shall determine the nature, concentration, direction and rate of movement, and extent of the contaminants of concern at the remediation site and the significant physical features of the remediation site and vicinity that may affect contaminant fate and transport and risk to human health, safety and the environment. The phase II environmental site assessment shall include characterization of the extent of the contaminants of concern, identifying the contaminated medium or media; the three-dimensional configuration of the contaminants of concern with the concentrations delineated; and the nature, direction, and rate of movement of the contaminants of concern and degradation products. Furthermore, 35 IAC 742.300(b) states that no exposure route may be excluded from consideration until characterization of the extent and concentrations of contaminants of concern at a site has been performed. The *Comprehensive Site Investigation* did not adequately address the requirements of 35 IAC 740.420(b)(3) or 35 IAC 742.300(b) due to the fact that groundwater conditions were not investigated at the facility. Page 28 of Volume I of the *Comprehensive Site Investigation* states that no groundwater was encountered during the subsurface investigation; and only limited and confined perched water was observed in fill material. However, the 30-foot boring drilled (B-1) by Andrews Environmental Engineering on January 4, 2000 showed that the borehole was saturated during drilling at 19.5 feet below ground surface, indicating the presence of groundwater in the native soils, below the fill material. Based on this information, a groundwater assessment is warranted to determine the hydrogeological conditions that exist at the site. The Remediation Applicant cannot exclude the Groundwater Ingestion Exposure Route until groundwater is sampled and the requirements of 35 IAC 742.300(b) are addressed.

5. 35 IAC 740.420(b)(3) states that the phase II environmental site assessment shall determine the nature, concentration, direction and rate of movement, and extent of the contaminants of concern at the remediation site and the significant physical features of the remediation site and vicinity that may affect contaminant fate and transport and risk to human health, safety and the environment. The phase II environmental site assessment shall include characterization of the extent of the contaminants of concern, identifying the contaminated medium or media; the three-dimensional configuration of the contaminants of concern with the concentrations delineated; and the nature, direction, and rate of movement of the contaminants of concern and degradation products. Borings were advanced and soil and perched water samples were collected near the two (2) underground storage tanks (UST) identified south of the maintenance building. However, page 24 of the Phase I Environmental Assessment in Volume II of the *Comprehensive Site Investigation* identifies another closed UST at the site. The location of this other UST was not discussed in the *Comprehensive Site Investigation*. The Remediation Applicant should identify the location of this UST and sample the medium in the area in question to satisfy this regulation.

6. 35 IAC 742.215(b)(2) states that the soil attenuation capacity is not exceeded if the total petroleum hydrocarbon concentration is less than the natural organic carbon fraction of the soil as demonstrated using a method approved by the Agency. Page 21 of Volume I of the *Comprehensive Site* Investigation indicates that a strong gasoline-like odor was prevalent in the area of test pit TP-116. However, it appears as if the soil sample collected from this test pit was only analyzed for Polychlorinated biphenyls (PCBs). The Remediation Applicant should collect samples in this area, and analyze the samples for VOCs, SVOCs and metals to determine the existing concentrations.

7. 35 IAC 742.305 states that no exposure route shall be excluded from consideration relative to a contaminant of concern unless the requirements of 35 IAC 742.305(a), (b), (c), (d), and (e) are met. 35 IAC 742.305(e) states any soil which contains contaminants of concern in the following list of inorganic chemicals or their salts shall not exhibit any of the characteristics of toxicity for hazardous waste as determined by 35 IAC 721.124, or an alternative method approved by the Agency: arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver. To ensure compliance with this regulation, the Remediation Applicant should collect additional Toxicity Characteristic Leaching Procedure (TCLP) metals samples at various locations across the site. Specifically, samples should be collected in the areas of TP-108 and TP-127, which contained concentrations of total arsenic at 120 mg/kg and total lead at 6930 mg/kg, respectfully.

Note: At this time, the Illinois EPA Site Remediation Program Project Manager has no comments regarding the investigation conducted in the sedimentation basin due to the fact that the regulatory status of the basin is under review.

December 10, 2001

On October 25, 2001, CPI Environmental Services, Inc. submitted a response letter to the August 27, 2001 Illinois EPA comment letter. The response letter was received by the Illinois EPA on October 25, 2001 (Illinois EPA Log No. 01-4001). The following narrative summarizes the responses provided by CPI Environmental Services, Inc followed by Illinois EPA comments.

CPI Environmental Services, Inc. – response to comment #1

The PIN number is 14-32-302-005.

Illinois EPA Comments:

Comment #1 from the August 27, 2001 letter has been satisfied.

CPI Environmental Services, Inc. – response to comment #2

The Figure D1, attached to the October 25, 2001 response letter, shows the locations of the injection and withdrawal wells. The location of these wells is based on well record information obtained from the Illinois State Water survey, Illinois Geological Survey, and records compiled by Environmental Data Resources.

Illinois EPA Comments:

Comment #2 from the August 27, 2001 letter has been satisfied.

CPI Environmental Services, Inc. – response to comment #3

The legal description is provided on pages 1-2 of the October 25, 2001 response letter.

Illinois EPA Comments:

Comment #3 from the August 27, 2001 letter has been satisfied.

CPI Environmental Services, Inc. – response to comment #4

Groundwater is present in native soil below fill material and has been characterized. Andrews Environmental Engineering (AEEI) characterized the groundwater by installing five (5) groundwater monitoring wells. CPI conducted subsequent investigations of hydrogeologic conditions to supplement AEEI's data. Based on the extent of characterization performed and the incomplete groundwater ingestion exposure route that exists due to the City of Chicago ordinance, the groundwater exposure pathway has been excluded.

AEEIs groundwater sampling results showed, that chemicals of concern present in soil samples collected from fill material in the area of the monitoring wells were not detected in groundwater samples. Due to these results, CPI concentrated its subsequent sampling efforts to fill material and native silty clay on the principal that if mobility of contaminants of concern was such to affect saturated zones 19.5 feet below grade, these contaminants would be evident in the upper zones of the silty clay. Not only were contaminants of concern not detected in groundwater wells, but also no significant signs of contaminants were detected in silty clay located directly underlying impacted fill and beneath saturated zones.

Groundwater flow direction, hydraulic conductivity, and yield of geologic material measurements were conducted by AEEI (refer to the *Site Classification Completion Report* included in Volume 2, Appendix C). Further characterization was conducted to determine a more representative hydraulic conductivity value. CPI used an ex situ method to establish a hydraulic conductivity value of 1.23×10^{-7} cm/sec. of native silty clay underlying impacted fill material.

Illinois EPA Comments:

The groundwater has only been characterized in the northern portion of the property. AEE installed five monitoring wells in the vicinity of the USTs, as discussed and shown in the *Site Classification Completion Report* in Appendix C of Volume 2 of the *Comprehensive Site Investigation Report*. The RA is still required to model the extent of contamination in groundwater on/off-site regardless of the City of Chicago groundwater ordinance. Furthermore, even though no BTEX or PNA constituents were detected by AEE in the above named wells at concentrations above the most stringent 35 IAC 742 TACO standards, only BTEX and PNA constituents were monitored for at these

locations. Additionally, as stated above no groundwater sampling was conducted in the southern portions of the site. In order to fully define the extent of contaminants in groundwater in accordance with 35 IAC 740.420(b)(3), the Illinois EPA believes additional groundwater samples should be collected south of the samples collected by AEE, and analyzed for all the potential contaminants of concern at the facility, including, VOCs, SVOCs, metals, and PCBs. In addition, groundwater samples should be analyzed for metals and PCBs in the north portions of the property boundary, as they were not sampled previously during AEE's sampling.

In addition, the RA should define the class of groundwater at the site in accordance with 35 IAC 620.620.210 through 620.240.

CPI Environmental Services, Inc. – response to comment #5

The third UST is suspected to have been a 500-gallon heating oil tank present in the vicinity of the other USTs removed under supervision of the Fire Marshall in 1998. The Fire Marshall reported no release associated with this third UST. In addition, thorough characterization has been completed in the former UST area. AEE characterized this UST area during LUST closure activities in which an NFR letter has been granted. CPI performed additional characterization in the vicinity of the former UST area. No evidence was noted that this UST is present.

Illinois EPA Comments:

As stated by CPI, the Fire Marshall reported no release associated with the third UST. Characterization in the former UST area (eastern portion of the welding shop) included collection of several soil and groundwater samples. Some of these sampling locations are B-333, B-334, B-336, and B-206 for soil, and MW-1, MW-2, MW-3, MW-4 and MW-5 for groundwater. Based on this characterization, the fact that no evidence was found that the UST is present in this area, and the medium in this area has been sampled, additional investigation is not warranted in this UST area at this time. Comment #5 from the August 27, 2001 letter has been adequately addressed.

CPI Environmental Services, Inc. – response to comment #6

TP-116 was excavated during initial investigations conducted to define areas warranting further investigations. Due to the presence of gasoline odor in this TP-116, additional borings were advanced and soil was analyzed for BTEX to define the extent of possible gasoline-impacted soil in this area. Not only was a strong gasoline-odor prevalent in TP-116, but also at B-333. Gasoline-like odors were noted at B-336 and B-334. Gasoline odors were not noted at TP-115, B-335, TP-133, B-207, and B-340. As shown in the Figure on page 3 of the October 25, 2001 response letter, the maximum concentrations of gasoline indicator parameters, such as benzene, were detected northwest of TP-116 at B-333. A similar isocontour profile is displayed for concentrations of toluene, ethylbenzene, and total xylene. The sum of organic contaminant residual concentrations at B-333 is 72.26 mg/kg-less than 2000 mg/kg, the default value for natural carbon

fraction of soil. Therefore, soil attenuation capacity is not exceeded at B-333 where the greatest concentrations of BTEX are documented.

Illinois EPA Comments:

As discussed by CPI, additional borings were advanced in the vicinity of TP-116 and analyzed for BTEX, VOCs, SVOCs, and metals. As discussed on page 3-4 of the October 25, 2001 response letter, the maximum concentrations of the gasoline indicator parameters were detected northwest of TP-116 at B-333. As shown on the *Sample Locations Map* (Figure 3, Volume 1) several soil samples were collected in the vicinity and analyzed for a combination of same/all of VOCs, SVOCs, metals and PCBs. Comment #6 from the August 27, 2001 letter has been adequately addressed.

CPI Environmental Services, Inc. – response to comment #7

TCLP metal analysis was conducted on soil, and no characteristics of toxicity for hazardous waste were detected. TCLP metal analyses were performed on soil from the following discrete locations: S-105, S-121, S-127, S-129, TP-301, TP-302, and TP-310, and the following composited locations: S-101, S-103, S-107, S-109, S-111, S-116, S-118, S-121, S-124, S-127, S-129, S-133, and S-135. Results of TCLP and corresponding total values are presented in the table on page 4 of the October 25, 2001 response letter. Discrete sampling locations were selected for TCLP analysis either based on displaying the maximum total metal concentration during that sampling event, by random selection, or for purposes of waste characterization in PCB-impacted areas. The composite sample is representative of soil determined to contain contaminants of concern in excess of Tier 1 Soil Remediation Objectives.

Illinois EPA Comments:

As discussed by CPI, TCLP metals analysis was conducted at various locations across the site. TCLP was conducted at TP-127 and in the area of TP-108 (i.e., TP-105, TP-310). The TCLP analysis for these areas, and all other areas, showed no characteristics of toxicity for hazardous waste. The TCLP results were compared to the regulatory levels listed in 35 IAC 721.124(b). The TCLP results and locations are depicted on page 4 of the October 25, 2001 comment letter. Comment #7 from the August 27, 2001 letter has been adequately addressed.

CPI Environmental Services, Inc. – response to Note

There is no sedimentation basin located on the subject property. If instead, the Illinois EPA is referring to the lined stormwater retention pond present in the southeast corner of the property, please be aware that the stormwater retention pond is slated for removal as part of planned remedial activities.

Illinois EPA Comments:

The Illinois EPA was referring to the stormwater retention pond present in the southeast corner of the property. At this time, the Illinois EPA Site Remediation Program Project Manager has no comments regarding the investigation conducted in the sedimentation basin due to the fact that the regulatory status of the retention pond is under review.

December 11, 2001

On December 11, 2001 I called Mr. Frank Santella of CPI Environmental Services and asked him for the specific sampling locations of certain points. Specifically, I requested the locations of sample EQ-1 (stormwater pond sampling event), W-101 thru W-104 (sampling event #1), and wanted to verify that the S-101 thru S-136 sampling results corresponded to the TP-101 thru TP-136 sampling results. I found that Table 1 in Volume 1 of the *Comprehensive Site Investigation Report* contained the applicable sample I.D (S-sample) and cross-referenced that the corresponding TP sample location. Mr. Santella stated that sample EQ-1 was an equipment blank, and W-101, W-102, W-103, and W-104 were surface water/standing water samples collected from TP-128, TP-130, TP-135, and a pond water sample, respectively. Mr. Santella also stated that for boring B-201 in Table 2, Volume 1 of the *Comprehensive Site Investigation Report*, three parameter's concentrations showed incorrect results. 4-chlorophenyl-phenylether was actually recorded as non-detect in the analysis; chrysene was reported as 183 mg/kg in the analysis, and dibenzo[a,h] anthracene was reported as 35.5 mg/kg in the analysis.

December 21, 2001

I talked to Frank Santella today regarding the December 12, 2001 Illinois EPA comment letter. Mr. Santella did not understand why a groundwater investigation would be warranted at this site due to the low hydraulic conductivity and the fact the silty clay underlying the fill material was minimally or not impacted. I stated that based on the SRP regulations (35 IAC 740.420(3)) all media (i.e., soil and groundwater) has to be addressed at the site. I stated that several things could cause contaminants to travel from soil to groundwater including heterogeneous site geology, the length of time contaminants have been in the fill/soil, etc. I stated that also due to the proximity of the Chicago River, I would anticipate groundwater to be located at the site. I stated that under a Tier 3 scenario, the groundwater exposure pathway may be eliminated, however this issue would have to be presented to senior managers at CORE. Mr. Santella agreed that a groundwater investigation would be conducted at the site and anticipated sending in a plan for the groundwater monitoring well location after January 1, 2002.

January 10, 2002

Sarah Schlichtholz, CPI Environmental, called me today regarding sampling at the Cometco facility. She asked what "a method approved by the Agency" was under 35 IAC 742.215(b)(2) was. I stated that a site specific natural organic carbon fraction of the soil could be determined by taking unimpacted sample(s) from location(s) across the site, and compare that value to the total petroleum hydrocarbon (TPH) value in a sample to determine if the soil attenuation capacity has been exceeded (i.e., free product exists).

She also asked how many confirmatory samples were required once the free product was removed. I stated that the 35 IAC 740 regulations do not specify distances when confirmation samples should be collected. I stated it would be a judgement call on the part of CPI, however enough samples should be collected at the base of the excavation(s) and side walls to adequately demonstrate that free product concentrations do not exist in the areas of concern.

February 7-19, 2002

A *Groundwater Investigation Plan*, dated January 30, 2002 and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. Further detail of this plan is discussed in Section B.4 above (**General Site Information** - *Description of how the remediation objectives meet the Tiered Approach to Corrective Action Objectives ("TACO") criteria 35 IAC 742).*

A *Remedial Action Plan*, dated January 30, 2002, and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. Further detail of this plan is discussed in Section B.5 above (**General Site Information** - *Remedial Action(s) Performed*). The proposed *RAP* met the requirements of 35 IAC 740.450.

A *Soil Remediation Objectives Report*, dated January 30, 2002 and received by the Illinois EPA on February 4, 2002 (Illinois EPA Log No. 02-0400) was submitted for Illinois EPA review. A summary of this report is discussed in Section B.4 above (**General Site Information** - *Description of how the remediation objectives meet the Tiered Approach to Corrective Action Objectives ("TACO") criteria 35 IAC 742).*

After review of the above named three (3) documents, the Illinois EPA has the following comments:

1. The soil component of the groundwater ingestion route exposure pathway was not addressed in the January 30, 2002 *Soil Remediation Objectives Report* (Illinois EPA Log No. 02-0400). The Remediation Applicant (RA) should address this exposure pathway using one of the tiered approaches for this pathway referenced in 35 Illinois Administrative Code (35 IAC) 742.505(a)(3), 742.700, or 742.925.

2. As referenced in 35 IAC 742.215(b)(1)(B), a site-specific f_{oc} (organic carbon content of the soil) value may be determined as measured by ASTM D2974-87, Nelson and Sommers, or by SW-846 Method 9060: Total Organic Carbon, as incorporated by referenced in Section 742.210. Page 10 of the January 30, 2002 *Soil Remediation Objectives Report* states that the site-specific f_{oc} of 19,550 mg/kg was derived from an average concentration of f_{oc} collected from non-impacted native soil at the subject property. The RA should provide the sample locations from which this f_{oc} value was derived.

3. The Illinois EPA Toxicity Assessment Unit (TAU) has developed provisional soil cleanup objectives of 61,000 mg/kg for the ingestion exposure route for industrial/commercial land use and for construction workers for the parameters acenaphthylene, benzo(g,h,i)perylene, 2-methylnaphthalene, and phenanthrene. No toxicity criteria available for the inhalation exposure route for these parameters are currently available.

A Illinois EPA comment letter, containing these three (3) comments was sent to the RA on February 20, 2002.

February 28, 2002

Sue Brauer, USEPA, called me today and stated that there were "pumping" activities occurring today at the sedimentation basin. Ms. Brauer planned on traveling to the site this afternoon to observe the pumping of the basin, and to determine where the pumped material was being disposed of.

April 4, 2002

Mr. George Opec, USEPA – Region 5, called me today and stated that he was the enforcement officer in the RCRA section. He stated he is another point of contact for the site.

April 11, 2002

I spoke with Greg Gehrig today regarding February 20, 2002 Illinos EPA comment letter. Mr. Gehrig indicated that he was a consultant, obtained by USEPA, to review the *Groundwater Investigation Plan, Soil Remediation Objectives Report*, and *Remedial Action Plan*. He stated that his main concern, as noted in the February 20, 2002 comment letter was that the RA did not address the soil component of the groundwater ingestion pathway. He indicated that he was going to prepare a report of his findings for the USEPA.

In addition, a letter from CPI dated April 8, 2002 (Illinois EPA Log No. 02-1294) was submitted to respond to the February 20, 2002 Illinois EPA comment letter. The letter addresses the three (3) Illinois EPA comments from the February 20, 2002 and is summarized as follows:

CPI Environmental Services, Inc. – response to comment #1

The soil component of the groundwater ingestion route exposure pathway will be addressed in the *Groundwater Investigation Report* to be prepared and submitted to the Illinois EPA upon completion of further groundwater investigation and classification activities.

CPI Environmental Services, Inc. – response to comment #2

The organic carbon fraction (f_{oc}) was obtained from sample locations B-212, B-213, B-214, and B-216.

CPI Environmental Services, Inc. – response to comment #3

The maximum concentrations of acenaphthylene (4.46 mg/kg), benzo(g,h,I)perylene (66 mg/kg), 2-methylnaphthalene (59.2 mg/kg), and phenanthrene (284 mg/kg) at the subject property do not exceed the provisional soil cleanup objective of 61,000 mg/kg, these chemicals are not considered COCs. Due to the limited occurrence and extent of 4-chloro-3-methylphenol, it likely poses no additional significant risk to human health or the environment.

Illinois EPA Comments:

Regarding comment #1, the Illinois EPA anticipates the receipt of the *Groundwater Investigation Report* and, if necessary, will develop additional comments at that time. Comment #2 has been addressed. Regarding comment #3, the Illinois EPA TAU is currently in the process of reviewing the applicable RO for 4-chloro-3-methylphenol. Once a RO is provided to the project manager, additional comments may be developed, if necessary.

<u>August 5, 2002</u>

CPI provided three (3) reports to the Illinois EPA. The reports were titled *Groundwater Investigation Report* (June 12, 2002), *Letter report responding to IEPA's February 20, 2002 comment regarding the soil component of the groundwater ingestion pathway* (June 17, 2002), and *Interim Remedial Action Completion Report* (June 20, 2002). All three (3) reports were received by the Illinois EPA on July 1, 2002. A summary of these reports is presented below.

Groundwater Investigation Report

In March 2000, five (5) monitoring wells (MW-1 through MW-5) were installed at the subject site. Samples were collected from these wells and were analyzed for BTEX and PNAs. No BTEX or PNA compounds were reported to have been detected in these groundwater samples. The results of this investigation were presented in a *Site Classification Completion Report* dated March 2000.

On April 24-25, 2002, five (5) additional boreholes were drilled at the site. In accordance with the *Groundwater Investigation Plan*, these soil borings were converted to 2-inch diameter PVC monitoring wells (MW-6 through MW-10). Well locations are shown on Figure 2 in the *Groundwater Investigation Report*. The monitoring wells were screened from depths ranging from 10-28 feet bgs. Well MW-6 is located south of the paint shop, downgradient of previously identified areas impacted with arsenic and PNAs. Well MW-7 is located northeast of the baler building along the riverbank, downgradient of previously identified areas displaying elevated arsenic, lead, and PCB concentrations. Well MW-8 is located north of the central material storage area and downgradient of areas displaying elevated concentrations of metals and PCBs. Well MW-9 is located along the southern extent of the riverbank, downgradient of elevated concentrations of metals and PCBs were detected. Well MW-10 is located on the southwest corner of the property downgradient of areas displaying elevated lead and arsenic concentrations.

The geologic and hydrogeologic characterization and Class II groundwater classification is discussed in detail in the *Groundwater Class* Section B.3 in this checklist above.

Based on depth-to-water measurements, groundwater elevations were calculated and used to prepare the potentiometric surface map presented in Figure 3 in the *Groundwater Investigation Report*. Based on the potentiometric surface map, groundwater at the site flows to the northeast toward the North Branch of the Chicago River.

In accordance with the *Groundwater Investigation Report*, groundwater samples collected from wells MW-6 and MW-7 were analyzed for dissolved metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and PCBs. Groundwater samples collected from wells MW-8, MW-9, and MW-10 were analyzed for VOCs, SVOCs, metals, and PCBs. No dissolved metals, VOCs, SVOCs, or PCBs were detected at concentrations that exceeded the Class I or Class II groundwater ROs.

Letter report responding to IEPA's February 20, 2002 comment regarding the soil component of the groundwater ingestion pathway (June 17, 2002), and *Interim Remedial Action Completion Report*

In response to comment #1 in the February 20, 2002 Illinois EPA comment letter, this letter-report evaluates the soil component of the groundwater ingestion exposure pathway.

A review of Tier 1 soil component of the groundwater ingestion exposure route evaluation indicates that concentrations of the following COCs exceed 35 IAC 742 Tier 1 soil component of the groundwater ingestion exposure route ROs: benzene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, ethylbenzeene, tetrachloroethene, vinyl chloride, and selenium. The identified organic COCs were detected in soil samples representing fill material in areas #2, #8, #13, and the area in the immediate vicinity of borehole B-318. Concentration of selenium exceeded the pH specific SRO in area #6.

As indicated in the Illinois EPA approved *Remedial Action Plan*, impacted fill material will be removed from Area #2, eliminating COCs (vinyl chloride) from this area.

The COCs identified in areas #6, #8, #13, and B-318 are evaluated under 35 IAC 742 Tier 2 soil component of the groundwater ingestion exposure route evaluation. Tier 2 calculation sheets are included in Attachment B of June 17, 2002 response letter. CPI's modeling results indicate that the concentrations on COCs in groundwater will not exceed Tier 1 ROs at the point of exposure, therefore, there is no potential for off-site migration of COCs.

Interim Remedial Action Completion Report

The *Interim Remedial Action Completion Report* includes the following: a narrative of field activities and remedial actions; discussion of special conditions including engineered barriers and institutional controls; results of Area 14 post-excavation sampling; and CPI's conclusions pertaining to the remediation of Area 14.

The *Interim Remedial Action Completion Report* states that the following field activities were performed during the remediation of Area 14:

- Pumping, transporting and off-site disposal at permitted facility of accumulated stormwater (approximately 23,500 gallons);
- Bulking bottom sediments with fly ash (approximately 20 cubic yards) and sawdust (approximately 120 cubic yards) to absorb excess water, then excavating and transporting the bulked sediments to a permitted off-site disposal facility;
- Removing a synthetic poly-liner found beneath the stormwater pond sediments and disposal at a permitted off-site disposal facility;
- Removing silty clay soil (approximately 1 to 2.5 feet) underlying the poly-liner based on odor, visual observations and field screening instrumentation readings and disposal at a permitted off-site disposal facility (approximately 1 to 2.5 feet);
- Collecting post-excavation confirmation soil samples from the excavation floor and sidewalls for laboratory analysis in accordance with the RAP;
- Comparing the laboratory analytical results of the soil samples to the soil SROs;
- Removing additional soil from areas of the excavation, as defied by the area of inference of the sample, where the initial confirmation samples failed to meet the SROs and disposal of this soil at a permitted off-site disposal facility;
- Collecting a second round of post-excavation confirmation samples for laboratory analysis;
- Comparing the second round analytical results to the soil SROs and determining that no further excavation was needed; and
- Backfilling the excavation with clean fill material.

Excavation

The completed excavation measured approximately 54 feet north to south and approximately 58 feet east to west, resulting in a roughly circular excavation with a 40-foot diameter bottom. The depth of the completed excavation ranged from approximately 8 to 10 feet below the edge of the excavation area. The average excavation depth was 8.5 feet below average grade of the excavation edge. The slope of the excavation walls varied in angle from vertical to approximately 45 degrees.

Confirmation Sampling

Initial confirmation sampling results from the excavation bottom center sample location (CA14BCS) and east sidewall location (CA14WES) exceeded the soil SROs for select VOCs and TPH, respectively. Based on these results, and additional one (1) foot of silty clay was removed from the area of inference of CA14BCS, defined as a 20-foot square centered within the excavation bottom, as presented on Figure 3 in the *Interim Remedial*

Action Completion Report. Due to riverbank stability issues, further remediation along the eastern sidewall was impractical; no additional material could be removed from the eastern sidewall of the excavation.

Five (5) excavation bottom confirmatory samples and four (4) sidewall confirmatory samples were collected to verify that attenuation capacity of the soil was not exceeded by demonstration that the TPH concentrations had been reduced as a result of remedial activities to concentrations less than the natural organic carbon fraction of the soil. The five (5) excavation bottom samples displayed TPH concentrations ranging from below detection limits to 20 mg/kg, and three (3) out of the four (4) sidewall also displayed TPH concentrations less than the site-specific natural organic carbon fraction of 18,000 mg/kg. A TPH concentration of 37,900 mg/kg detected at the sample location representing the eastern sidewall (CA14WES) exceeded the soil attenuation capacity. Due to riverbank stability issues, further remediation along the eastern sidewall was impractical; no additional material could be removed from the eastern sidewall of the excavation. Since the confirmation sample was collected from the vertical midpoint of the sidewall and was biased to the most visually impacted horizon, additional samples subsequently were collected from the visually impacted horizon along the eastern sidewall to further characterize the distribution of TPH at the eastern sidewall. TPH concentrations from the subsequent three (3) sampling locations ranged from 199 mg/kg to 1290 mg/kg, with an arithmetic mean of TPH concentrations of 9969 mg/kg. In addition to limited horizontal extent, the visually impacted horizon appears limited in lateral extent to the east since no visual indication of similar impact is apparent along the riverbank. Based on this CPI states TPH exceedences are likely limited within the confined visually impacted area with the overall TPH concentrations at the eastern extent of the excavation less than the attenuation capacity of the soil.

<u>August 9, 2002</u>

On August 8, 2002 the Illinois EPA project manager conducted a site visit to the site. I met Mr. Mike Place, CPI, and Ms. Debbie Hayes, Metal Management, Inc. Mr. Place and Ms. Hays showed me around the site. They showed me the area of soil/sediment that had been removed and filled with clean fill (Area #14). We also walked in the baler building. Several piles of metal, white goods, etc. were present on the subject site.

<u>August 15, 2002</u>

On August 15, 2002, the following comments were forwarded to the RA:

1. 35 Illinois Administrative Code (35 IAC) 742.225 states that compliance with remediation objectives is achieved if each sample result does not exceed that respective remediation objective unless a person elects to proceed under subsections (c), (d) and (e) of this Section. The Remediation Applicant (RA) has not satisfied this regulation for the following reasons:

    a. A Toxicity Characteristic Leaching Procedure (TCLP) analytical result from soil from boring TP-310 revealed a concentration of lead at 1.46 mg/l. This exceeds the 35 IAC 742 Appendix B.Table B Tier 1 Class II soil component of the groundwater ingestion

exposure route value of 0.1 mg/l. The Remediation Applicant (RA) should address this lead concentration above the applicable Tier 1 remediation objective (RO).

b. Trichloroethene (TCE) detected in soil sample S-4 at a concentration of 0.61 mg/kg, which exceeds the 35 IAC 742 Appendix B.Table B Tier 1 Class II soil component of the groundwater ingestion exposure route value of 0.3 mg/kg. The RA should address this TCE concentration above the applicable Tier 1 RO.

2. 35 IAC 742.215(b)(2) states that the soil attenuation capacity is not exceeded if the total petroleum hydrocarbon (TPH) concentrations is less than the natural organic carbon fraction of the soil as demonstrated using a method approved by the Agency. A TPH concentration of 37,900 mg/kg detected at sidewall sample location (CA14WES) exceeds the site-specific soil attenuation capacity of 18,000 mg/kg. The RA must address this discrete TPH concentration, as the arithmetic mean TPH concentration should not be compared to the site-specific TPH concentration. The RA might consider addressing the TPH concentration at sample location CA14WES under 35 IAC 742.900.

Note:

The Illinois EPA Toxicity Assessment Unit is currently investigating applicable groundwater RO for the parameter dibenzofuran.

November 14, 2002

A document, prepared by CPI, was provided to respond to the August 15, 2002 Illinois EPA comment letter. The response document is dated October 23, 2002 and was received by the Illinois EPA on October 25, 2002. The following narrative summarizes CPI's response to the comments, followed by additional Illinois EPA comments.

CPI Environmental Services, Inc. – response to comment #1a

As depicted in the figure in the response document, TP-310 is located within a PCB impacted area (Area B). As part of PCB clean up to 40 CFR 761, impacted fill material in this area, including the location wher TP-310 was taken, will be removed and properly disposed off-site. The PCB Remedial Action Plan and Risk Assessment Report, which will include the aforementioned figure, is in final stages of preparation. Upon completion, this report will be submitted to USEPA Region V for review and approval. Confirmation samples documenting PCB cleanup success also will include lead analysis in the area where TP-310 was taken for SRP closure of the lead issue.

Illinois EPA Comments:

The response to comment #1 is conditionally appropriate for Illinois EPA approval. Based on the future excavation in this area, the elevated levels of lead may be removed from this location. The RA will be required to provide confirmation sampling for lead in the TP-310 location to determine if concentrations are below the 35 IAC 742 Appendix B, Table B Tier 1 Cass II soil component of the groundwater ingestion exposure route value of 0.1 mg/l.

CPI Environmental Services, Inc. – response to comment #1b

The location of soil sample S-4 is shown in a schematic figure included in a letter report prepared by Ecology and Environment, Inc. (E&E) dated January 20, 1999. From the E&E schematic figure it was determined that the location of soil sample S-4 falls within the boundary of Area #2. As indicated in the approved Remedial Action Plan, impacted fill material from Area #2 will be removed and properly disposed off-site. Post clean-up confirmation samples will include TCE analysis in the suspected area of S-4 for SRP closure of the TCE issue.

Illinois EPA Comments:

The response to comment #1 is conditionally appropriate for Illinois EPA approval. Based on the future excavation in this area, the elevated levels of TCE may be removed from this location. The RA will be required to provide confirmation sampling for TCE in the S-4 location to determine if concentrations are below the 35 IAC 742 Appendix B, Table B Tier 1 Cass II soil component of the groundwater ingestion exposure route value of 0.3 mg/l.

CPI Environmental Services, Inc. – response to comment #2

As indicated in the Interim Remedial Action Completion Report Area 14: Stormwater Retention Pond report, soil sample CA14WES was collected from the east wall of the excavated area located adjacent to the Chicago River. Prior to sample collection, soils were removed from this area to the extent practical, a determination made with the subsidence into the river. Therefore, in accordance with 35 IAC 742.900(c)(5), a site-specific RO of 37,900 mg/kg for TPH is requested since it is not practical to remove additional soils from this area due to proximity to the Chicago River and the danger of subsidence.

Illinois EPA Comments:

The impractical remediation request under 35 IAC 742.900 and 742.920 will be presented to CORE for review. If CORE has any comments, these comments will be placed in the letter.

<u>November 21, 2002</u>

On November 21, 2002, the Illinois EPA Project Manager presented the 35 IAC 742.900(c)(5) Tier 3 Impractical Remediation request to the Cleanup Objectives Review and Evaluation Group (CORE). The RA recommended that the TPH impacted soils on the east side wall of the former stormwater retention pond/sedimentation remain in place. The RA stated that it is not practical to remove additional soils from this area due to its proximity to the Chicago River and the danger of subsidence. The CORE Group agreed with the RA's recommendation, and will allow the soil to remain in place. A detailed discussion of the Tier 3 request is include as the memorandum (November 21, 2002) attached to this checklist.

ATTACH CORE MEMO TO CHECKLIST FOR FILE!!!!!!!!!!!!!!!!!!!!!!!!!

April 19, 2004

A report entitled *Interim Remedial Action Completion Report Area 2: Scrap Metal Storage Area* (Interim RACR) was submitted by CPI. The report is dated February 3, 2004 and was received by the Illinois EPA on March 25, 2004 (Illinois EPA Log No. 04-19396). The following narrative provides a summary of the report, followed by Illinois EPA comments.

Report Objectives

The Interim RACR focuses on the remediation of a portion of the property referred to as Area 2, an area where historically scrap potentially containing residual oil was stored. As part of the remedial action reported in this Interim RACR, soil within Area 2 has been remediated and post-excavation soil sample results demonstrate that the remedial actions performed meet SROs as presented in the soil ROR and RAP within practical limitations.

So as to proceed with the installation of an engineered barrier in the vicinity of Area 2, based on the results or the remedial action presented in this interim RACR, the RA requests that the Illinois EPA:

1. Approve the remedial actions reported herein as having been performed in accordance with the approved RAP;
2. Approve a Tier 3 request of impractical remediation for further soil removal along the east side wall of Area 2; and,
3. Confirm that the results of the actions performed and reported herein demonstrate that the ROs have been met in Area 2.

Field Activities and Remedial Actions

The following general field activities were performed during the remediation of Area 2:

1. Removal, transportation, and off-site disposal at a permitted facility of fill material containing TPH concentrations in excess of SROs excavated from Area 2; and,
2. Post-excavation soil sampling and laboratory analysis to confirm compliance with the SROs.

Remedial Activities

1. Excavated fill material consisting of metal-laden silty clay and asphalt millings to an average depth of two (2) feet below grade based on visual observations of apparent presence of petroleum hydrocarbons (e.g., sheen, odor);

2. Loaded excavated material into plastic-lined trucks;
3. Disposed of the fill at Newton County Landfill
4. Collected post-excavation confirmation soil samples from the excavation floor and sidewalls in accordance with the RAP for laboratory analysis; and,
5. Compared the laboratory analytical results of the soil samples to the soil SROs.

Figure 2 in the report shows the final dimensions of the Area 2 excavation area. The completed excavation was irregularly shaped and measured approximately 110 feet north to south and approximately 15 feet to 25 feet east to west at the northern and southern excavation extent, respectively. The depth of the completed excavation ranged from approximately one (1) to four (4) feet below the edge of the excavation area. The average excavation depth is estimated at two (2) feet below average grade of the excavation edge. The slope of the excavation walls varied in angle from vertical to approximately 45 degrees.

Confirmatory Sampling

On December 17, 2003, as completion progress of the initial excavation allowed, confirmation samples were collected from the excavation bottom and sidewalls to verify remediation progress. The excavation bottom soil samples were collected using the procedures prescribed in the RAP section D.2 *Soil Sampling Methodology*.

To verify the lateral limit of soil remediation, one (1) sample was collected from the west wall of the excavation and one (1) from the east wall. No samples were collected from the south excavation wall since excavation was performed to the northern extent of where soil was remediated at Area 14 and subsequently backfilled with clean fill. Sidewall samples were analyzed for TPH in accordance with the RAP.

Field observation performed during remedial activities indicated no apparent visual or olfactory evidence of free product present in fill material north of the final extent of the excavation area. Due to these observations, two (2) test pits, TP301 and TP302, were excavated to observe soil conditions to determine the need to extend the excavation farther north. Soil conditions at TP501 and TP502 appeared similar to those observed along the western and northern extent of the excavated area and no presence of free product was noted. Only a slight petroleum-like odor was noted in the fill, which extends to one (1) foot below ground surface and overlies native silty clay with no apparent petroleum impact. Samples were collected at 0.5 feet bgs at both test pits to verify field observations.

Discussion of Confirmatory Sampling Results

Exposure Route Evaluation

Results from confirmation samples collected from the bottom of the excavation and analyzed for vinyl chloride and TCE were compared to SROs as defined in the ROR

dated January 30, 2002. Neither compound was detected at concentrations in excess of SROs or Tier 1 soil component of the groundwater SROs.

Soil Attenuation Capacity

One (1) excavation bottom confirmatory sample and four (4) confirmatory samples defining the lateral extent were collected to verify that attenuation capacity of the soil was not exceeded by demonstrating that TPH concentrations had been reduced as a result of remedial activities to concentrations less than the site-specific natural organic carbon fraction of 18,000 mg/kg. The excavation bottom sample and the duplicate sample displayed TPH concentrations less than detection limits. TPH concentrations of 27 mg/kg, and 5940 mg/kg to 6700 mg/kg also were confirmed along the western and northern extents of the excavation, respectively. Previous remedial activities at Area 14 confirmed TPH activities less than the natural organic carbon fraction along the southern extent. Therefore, remedial activities were successful at reducing the vertical extent of TPH in the soil below the soil attenuation capacity to the north, south, and west.

A TPH concentration of 21,700 mg/kg, detected at the sample location representing the eastern sidewall, exceeded the site-specific natural organic carbon fraction of 18,000 mg/kg. The sample collected from this location displayed a high concentration of metal shavings with a petroleum odor, but no visible sheen or free product observed. Further remediation along this sidewall was deemed impractical due to proximity of riverbank shoring and tiebacks; additional soil removal in this area may affect the stability of the riverbank. Based on this, a request for Illinois EPA approval of impracticality of remediation is requested in accordance with 35 IAC 742.920.

Special Conditions

The approved SROs achieved as part of remedial activities at Area 2 require that institutional controls and engineered controls be placed on the property. These requirements will be implemented after the remaining areas at the property are remediated.

Engineered Controls

Engineered controls will consist of a site-wide impermeable surface to be placed over affected areas, as defined in the RAP. Area 2 is included in the site-wide engineered barrier. The nature of the barrier to be installed, the operation and maintenance plan, and construction worker protection will be determined in accordance with the RAP Section F following remediation of the remaining areas at the property, and determination of the property's future use.

Conclusions

- The remedial action resulted in the residual soil at the base of the excavation meeting the prescribed SROs as defined in the ROR dated Janaury 30, 2002.

- The remedial action has reduced overall TPH at Area 2 to concentrations less than the site-specific soil attenuation capacity to allow for use of an engineered barrier at the property.
- Further remediation along this sidewall was deemed impractical due to proximity of riverbank shoring and tiebacks; therefore, a request for Illinois EPA approval of impracticality of remediation is requested in accordance with 35 IAC 742.920.
- Area 2 is sufficiently remediated to be included in the site-wide comprehensive No Further Remediation Letter that the RA will request at the completion of the remaining planned remedial activities. Remaining site-wide remedial activities include soil removal at Area 1, installation of an engineered barrier, and establishment of institutional controls.

Illinois EPA Comments

A request of impractical remediation (35 IAC 742.920) at Area 14 was previously approved in a November 22, 2002 Illinois EPA comment letter. This request was for a TPH concentration observed above the site-specific natural organic carbon fraction along the east wall of Area 14. Based on the locations of riverbank shorings and tiebacks, and the possibility of riverbank stability concerns with further excavation, the request for impractical remediation was approved by the Illinois EPA CORE group. Like Area 14, additional excavation to the east at Area 2 may affect riverbank stability. Area 2 is located immediately north-northwest of Area 14 (parallel to the North Branch of the Chicago River). It should be noted that the TPH concentration (21,700 mg/kg) along the east wall of Area 2 (CA2WES - confirmation sampling), while above the site-specific natural organic carbon fraction, was lower than the TPH concentration that remained in place in Area 14 east wall confirmation sampling. Based on the previously approved Tier 3 request by CORE for Area 14, the Illinois EPA approves the Tier 3 request at Area 2.

April 26, 2004

On April 22, 2004 the Illinois EPA Project Manager conducted a site visit to the site. Ms. Sarah Schlichtholz, CPI, and the Cometco on-site Manager showed the Illinois EPA Project Manager the Area 2 excavation limits. The excavation was conducted to depths of up to four (4) feet in some of Area 2. The excavation had not been backfilled as of April 22, 2004 and contained surface water. The retaining wall tiebacks were observed in the limits of the excavation. Ms. Schlichtolz indicated that the excavation was tentatively scheduled to be backfilled the summer of 2004.

June 27, 2006

A document entitled *Interim Remedial Action Completion Report / Area 1: Baler Area* was submitted by CPI. The document is dated May 17, 2006 and was received by the Illinois EPA on June 9, 2006. The document was submitted to request Illinois EPA concurrence that remedial activities at Area 1 have been completed in accordance with the RAP dated January 30, 2002. The following narrative provides a summary of the document followed by Illinois EPA comments.

Report Objectives

This Interim RACR focuses on Area 1, or the Baler Area. Activities were carried out in accordance with the RAP at Area 1 and soil within Area 1 was sampled to demonstrate it meets the SROs.

Field Activities

The following general field activities were performed at Area 1:

1. The hydraulic baler, including concrete foundations, were removed and underlying soil conditions were observed; and,
2. Confirmatory soil sampling and laboratory analysis were performed to confirm compliance with the SROs.

Remedial Activities

Decommissioning of the baler commenced in November 2005 by removing the aboveground equipment components. During removal of subsurface components, such as concrete foundations, piping, and sumps, soil conditions were observed for the presence of free product. With the exception of small pockets of oily water in fill surrounding the baler area, which were controlled with oil-absorbing mats, no oil saturated conditions were encountered around or underlying the baler foundations in fill or underlying course base material.

In May 2006, samples were collected from the excavation bottom and sidewalls to verify that TPH concentrations were not present in excess of the soil saturation concentration. Figure 1 in the document depicts the sample locations.

Confirmatory Sampling Results

TPH concentrations from all sidewall and floor samples were less than the site-specific f_{oc} of 18,000 mg/kg. Therefore, the soil attenuation capacity of the soil is not exceeded at the Baler Area, allowing for exclusion of exposure routes with the use of an engineered barrier.

Since no TPH concentrations exceeded the soil attenuation capacity in any of the samples, including the stockpile sample, the material will be used as backfill in the excavation area.

Engineered Controls

Engineered controls will consist of a site-wide impermeable surface to be placed over affected areas, as defined in the RAP. Area 1 is included in the site-wide engineered barrier. The nature of the barrier to be installed, the operation and maintenance plan, and

construction worker protection will be determined in accordance with the RAP, Section F, following remediation of the remaining areas at the site.

Illinois EPA Comments

On June 28, 2006 the following comments were forwarded to the RA:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the document entitled *Interim Remedial Action Completion Report Area 1: Baler Area* dated May 17, 2006. The document was received by the Illinois EPA on June 9, 2006 (Illinois EPA Log No. 06-29888) and was prepared by CPI Environmental Services, Inc.

The *Interim Remedial Action Completion Report / Area 1: Baler Area* document adequately documents the remedial actions and confirmation sampling activities completed in Area 1: Baler Area as described in Section C.2.1.5 and Section D.1 in the January 30, 2002 *Remedial Action Plan* document.

The Interim Remedial Action Completion Report / Area 1: Baler Area document is approved.

As referenced in Section 4.2 of the document, an engineered barrier is anticipated to be installed at the site. Once the barrier has been installed, documentation of the barrier (i.e., photographs, etc.) should be provided to the Illinois EPA.

Peter Ramanauskas/R5/USEPA/US

To

Subject Example 61(c) approval

03/02/2009 12:22 PM

History: This message has been replied to.

Hi Bhooma,

Here is an example 761.61(c) conditional approval letter. I hope you find it helpful.

Please let me know if you have questions. I've sent my IEPA contact an email and will let you know what I hear from her.

Thanks,
Peter

Enthone approval.pdf

REMEDIAL ACTION PLAN

Cometco Corporation
1509 West Cortland Street
Chicago, Illinois 60622

Prepared for Remediation Applicant:

Metal Management Midwest, Inc.
LPC # 0316005505
12701 South Doty Avenue
Chicago, IL 60633

Prepared by:

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CPI Project No. E-05-74-06-249

January 30, 2002

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TABLE OF CONTENTS

SECTION ..... **Page**

FOREWORD V

Project Background vi
Stormwater Retention Pond vi
List of Acronyms vii

A) EXECUTIVE SUMMARY 1

A.1 Recognized Environmental Conditions 1
A.2 Objectives of Remedial Action Plan 3
A.3 Technical Approach 3
A.4 Schedule of Activities 5

B) STATEMENT OF REMEDIATION OBJECTIVES 6

C) SELECTION OF REMEDIATION TECHNOLOGIES 8

C.1 Overview of Remedial Technologies 8
C.2 Implementation of Remedial Strategies at Area #1 through Area #13 9
C.2.1 Excavation and Off-site Disposal 10
C.2.1.1 Area Logistics 10
C.2.1.2 Waste Characterization and Disposal 11
C.2.1.3 Backfilling and Grading Excavated Areas 11
C.2.1.4 Free Liquid In Excavations 12
C.2.1.5 Area Specific Considerations: Area #1 13
C.2.1.6 Area Specific Considerations: Area #2 14
C.2.2 Engineered Barrier 15
C.2.3 Construction Worker Health & Safety Plan 15
C.3 Implementation of Remedial Strategies at Area #14 (Stormwater Retention Pond) 15
C.3.1 Remedial Strategy Overview 15
C.3.2 Area #14 Logistics 19
C.3.3 Waste Characterization and Disposal 20
C.3.3.1 Liquid Waste Streams 20
C.3.3.2 Solid Waste Streams 20
C.3.4 Removal and Off-Site Disposal of Liquids 21
C.3.5 Removal and Off-Site Disposal of Solid Waste 21
C.3.6 Backfilling Excavated Areas 22
C.3.7 Free Liquid In Excavation 22
C.3.8 Engineered Barrier 22

SECTION ..... **Page**

C.2.3 Construction Worker Health & Safety Plan 22

D) CONFIRMATION SAMPLING PLAN 23

D.1 Confirmation Sampling Plan Overview & Objectives 23
D.1.1 Area #1 and Area #2 23
D.1.2 Area #14 24
D.2 Soil Sampling Methodology 25
D.3 Sample Labeling and Handling 28
D.4 Analytical Program and Procedures 29
D.5 Quality Assurance/Quality Control 30

E) CURRENT AND POST-REMEDIATION USE 31

F) SELECTED CONTROLS 32

F.1 Institutional Controls 32
F.2 Engineered Barriers 32
F.2.1 Material & Design 32
F.2.2 Operation & Maintenance Plan 33
F.2.3 Construction Worker Protection 33

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FIGURES

Figure 1 – Subject Property Location Map

Figure 2 – Summary of Areas of Concern

Overlay 1 – Removal and Disposal Areas
Overlay 2 – Construction Worker Health & Safety Plan Areas
Overlay 3 – Engineered Barrier

Figure 3 – Remedial Strategy and Project Progression Plan

Figure 4 – Confirmation Sampling Scheme

4a – Area #1
4b – Area #2 and Area #14

TABLES

Table 1 – Summary of Areas of Concern and Proposed Remedial Action
Table 2 – Remedial Action Schedule
Table 3 – Confirmation Sampling Plan Overview
Table 4 – Confirmation Sampling Plan Analytical Summary

APPENDICES

Appendix A – Chemical Health And Safety Guidelines For Construction Workers

Appendix B – Supplemental Stormwater Retention Pond Assessment

FOREWORD

CPI Environmental Services Inc. (CPI) has completed this Remedial Action Plan for property owned by Metal Management Midwest, Inc. (MMMI) and referred to as Cometco Corp. located at 1509 Cortland Street in Chicago, Illinois (subject property). See Figure 1 for subject property location map.

In anticipation of the divestiture of this property, MMMI entered into the Illinois Environmental Protection Agency's (IEPA) Site Remediation Program (SRP) on June 28, 2001. This report is submitted for approval of remedial action in response to the presence of contaminants of concern (COCs) in fill material at the subject property. The Remediation Applicant (RA), MMMI, is seeking a comprehensive No Further Remediation (NFR) letter for the property under the SRP.

This report is organized into six chapters to meet the Remedial Action Plan reporting requirements as outlined in 35 IAC 740.450:

- Chapter A: Executive Summary
- Chapter B: Statement of Remediation Objectives
- Chapter C: Selection of Remediation Technologies
- Chapter D: Confirmation Sampling Plan
- Chapter E: Current and Post-Remediation Use of Property
- Chapter F: Selected Controls

References and other information sources are incorporated into the appendices, and a licensed Professional Engineer affirmation in accordance with Section 740.410 accompanies the report on a DRM-2 form.

Project Background

Comprehensive site investigation activities are detailed in the *Comprehensive Site Investigation Report* (CSIR) dated June 6, 2001 and previously submitted to the IEPA for approval. Soil investigation activities revealed evidence of the existence of COCs in fill material at the subject property; therefore, remediation objectives were developed in accordance with 35 IAC 740.440, as presented within the *Soil Remediation Objectives Report* (ROR) dated January 30, 2002 and concurrently submitted for review and approval to IEPA.

Currently IEPA approval of the CSIR is pending completion of further groundwater characterization and classification activities as requested in IEPA's correspondence dated December 12, 2001. Based on December 21, 2001 communications with IEPA, MMMI has submitted a groundwater characterization plan dated January 30, 2002 to IEPA prior to conducting groundwater investigations. IEPA approval of this plan is pending.

Due to pending completion of further groundwater characterization, the ROR dated January 30, 2002 was prepared exclusive of groundwater and associated groundwater pathways. Upon (a) approval of the groundwater characterization plan, and (b) completion of groundwater characterization activities, the RA will submit a *Groundwater Investigation and Classification Report* detailing groundwater characterization activities, preparing a groundwater classification summary, and updating the endangerment assessment. If groundwater investigations reveal evidence of the existence of one or more COCs in groundwater, a *Groundwater Remediation Objectives Report* will be developed in accordance with 35 IAC 740.440 as an addendum to the *Soil ROR* dated January 30, 2002.

Stormwater Retention Pond

The stormwater pond located in the southeast corner of the property is not a surface impoundment, as defined under RCRA §3004(k). Subpart K of 40 CFR §264/265 describes surface impoundments as operating units used to treat, store, or dispose of hazardous wastes. The stormwater pond does not meet that definition. The stormwater pond was designed and is

operating as a stormwater best management practice for the sole purpose of retaining stormwater on the property to prevent stormwater direct discharge into the adjacent river, as required by the City of Chicago Department of Environment. Neither hazardous nor petroleum wastes have been placed, treated, stored or disposed into the stormwater pond. Stormwater exposed to scrap metal containing small amounts of residual oily coatings has entered the stormwater pond and has caused an incidental accumulation of oil in the pond. The RA has only used the stormwater pond for the management and accumulation of stormwater. Removals of water from the stormwater pond have been conducted only at the insistence and direction of the USEPA.

From a practical and technical standpoint, no basis exists for separating the pond from other planned remedial activities to be conducted at the property. Due to the presence of oil in the stormwater pond, the RA includes the pond within the scope of its SRP activities in order to assure that the stormwater pond is closed, removed, and remediated in accordance with applicable IEPA remediation standards. Separating the pond from the remainder of the property is impractical, as that would diminish the value of seeking a Comprehensive NFR through the SRP.

List of Acronyms

The following acronyms are used herein:

AST	=	Aboveground Storage Tank
CFR	=	Code of the Federal Register
COC	=	Contaminant of Concern
CPI	=	CPI Environmental Services, Inc.
CSIR	=	Comprehensive Site Investigation Report
CSP	=	Confirmation Sampling Plan
IAC	=	Illinois Administrative Code
IEPA	=	Illinois Environmental Protection Agency

MMMI	=	Metal Management Midwest, Inc.
NFR	=	No Further Remediation
O & M	=	Operation and Maintenance
PCB	=	Polychlorinated Biphenyls
PNA	=	Polynuclear Aromatic Hydrocarbons
QA/QC	=	Quality Assurance/Quality Control
RA	=	Remediation Applicant (Metal Management Midwest, Inc.)
RACR	=	Remedial Action Completion Report
RAP	=	Remedial Action Plan
RCRA	=	Resource Conservation and Recovery Act
ROR	=	Remediation Objectives Report
SRO	=	Soil Remediation Objective
SRP	=	Site Remediation Program (35 IAC 740)
SSL	=	Soil Screening Level
TACO	=	Tiered Approach to Corrective Action Objectives (35 IAC 742)
USEPA	=	United States Environmental Protection Agency
UST	=	Underground Storage Tank

A) EXECUTIVE SUMMARY

This section summarizes the objectives of the Remedial Action Plan (RAP) and the technical approach utilized to meet such objectives, including the major components of the RAP, the scope of the problems to be addressed, and a schedule of activities [35 IAC 740.450(a)].

A.1 Recognized Environmental Conditions

Investigations at the subject property reveal evidence of the following recognized environmental conditions:

- Potential oil source areas are present in fill material in the scrap storage area north of the stormwater pond and near the baler;
- Stormwater exposed to scrap containing residual oil coatings has affected various media at the lined stormwater retention pond; the source of this oil is believed to be from the storage area north of the pond; and,
- Fill material throughout the property contains the following compounds at concentrations that pose a potential risk to onsite workers: lead, arsenic, benzene, and select polynuclear aromatic hydrocarbons (PNAs).

The following chemicals detected at the subject property were found to exceed applicable SROs as presented in the ROR dated January 30, 2002, and therefore, may pose a potential risk to the respective receptor population:

Industrial-Commercial Workers:

METALS: Arsenic, Lead
VOCs: Benzene
PNAs
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Benzo(a)pyrene
- Dibenzo(a,h)anthracene
- Indeno(1,2,3-c,d)pyrene

Construction Workers:

METALS: Arsenic, Lead
VOCs: Benzene
PNAs
- Benzo(a)anthracene
- Benzo(a)pyrene
- Dibenzo(a,h)anthracene

Table 1 summarizes and Figure 2 delineates the affected areas where environmental conditions have been recognized (i.e., areas of concern) that shall be addressed by this RAP.

A.2 Objectives of Remedial Action Plan

The objectives of remedial action and selected technologies for the subject property include:

Objective	Technology	Area of Concern
Eliminate potential oil source areas to allow for exclusion of exposure pathways	Removal & Disposal	Area #1, Area #2, and Area #14[1]
Eliminate exposed stormwater oil source areas to allow for closure of stormwater retention pond	Removal & Disposal	Area #2
Remove stormwater retention pond to eliminate exposed stormwater accumulations	Removal & Disposal	Area #14
Minimize industrial-commercial worker exposure to protect onsite industrial-commercial workers from COCs in fill material	Engineered Barrier	Property-wide[2]
Minimize construction worker exposure to protect future onsite construction workers from COCs in fill material	Construction Worker Health & Safety Plan	Construction Worker Protection Zones 1 through 3[3]

A.3 Technical Approach

The selected remedial strategies include removal and disposal of oil-impacted fill material, sediments, and surface water; installation and maintenance of an engineered barrier; implementation of a construction worker health and safety plan; and establishment of land use restrictions. The technical approach is presented within a flow chart on Figure 3 and discussed in detail in Section C.

In order to meet exposure route exclusion criteria in accordance with 35 IAC 742.310 through 742.320, removal and disposal will be conducted in areas where fill material contains potential oil sources. Removal of fill material in Area #1 and Area #2 will be completed prior to

[1] See Figure 2 for delineation of Areas of Concern and Figure 2, Overlay 1 for depiction of Removal and Disposal Areas

[2] See Figure 2, Overlay 3 for extent of proposed engineer barrier

[3] See Figure 2, Overlay 2 for delineation of Construction Worker Protection Zones (CWPZ)

addressing impacted media at the stormwater retention pond area, Area #14, since Area #2 likely is a contributing source area for exposed stormwater in the stormwater retention pond. Implementation of remedial strategies to address Area #1 and Area #2 are detailed in Section C.2 and Area #14 are detailed in Section C.3.

Upon removal of potential oil source areas, confirmation samples will be collected and analyzed. Objectives of confirmation sampling at Area #1, Area #2, and Area #14 are to quantify that the attenuation capacity of remaining soil is not exceeded. In addition, removal and disposal at Area #14 will continue until confirmation sampling indicates that remaining soil within Area #14 does not contain concentrations of COCs in excess of SROs established in the ROR dated January 30, 2002. The Confirmation Sampling Plan is detailed in Section D of this RAP.

When remediation goals are achieved, excavation areas will be backfilled as discussed in Section C. To prepare the subject property for installation of the property-wide engineered barrier and to control stormwater onsite until the barrier can be constructed, grading of the property will be conducted. Excess fill material obtained through re-grading in non-restricted re-grading areas, as discussed in Section C.2.1.3, will be used to fill excavations at Area #1, Area #2, and Area #14. In the event that onsite fill material generated during re-grading is deficient in quantity to fill excavated areas, clean fill obtained from an off-site source will be used. Upon completion of backfilling activities, an *Interim Remedial Action Completion Report* will be submitted to the IEPA for approval.

Upon identification of a redevelopment strategy at the subject property, an engineered barrier will be designed consistent with redevelopment plans. An *Engineered Barrier Construction Plan* will be submitted for IEPA review and approval prior to implementation. Upon IEPA approval, the engineered barriers will be constructed and an *Operation & Maintenance (O& M) Plan* and a *Construction Worker Health & Safety Plan* will be developed and implemented. Upon completion of remedial activities, a *Final Remedial Action Completion Report* prepared in

accordance with 35 IAC 740.455 will be submitted to the IEPA to allow issuance of the NFR letter.

A.4 Schedule of Activities

Removal and disposal activities shall commence following IEPA approval of this Remedial Action Plan. Projected remedial activity progression is outlined on Figure 3 and an estimated schedule of remedial activities is shown on Table 2.

B) STATEMENT OF REMEDIATION OBJECTIVES

This section includes a reference to the Remediation Objectives Report (ROR) in accordance with 35 IAC 740.450(b).

Soil remediation objectives (SROs) for each exposed receptor population were determined using Tier 1 and Tier 2 procedures of IEPA's TACO in accordance with 35 IAC 742. Selected property-wide soil remediation objectives are presented in the *Soil Remediation Objectives Report* (ROR) dated January 30, 2002. SROs for chemicals detected in fill material for industrial-commercial workers and construction workers are summarized in the ROR on Table 3 and Table 4, respectively.

The overall remedial objectives at Area #1 through Area #13 (see Figure 2) include the following elements:

1. Reducing potential oil sources at Area #1 and Area #2 to allow for exclusion of pathways in accordance with 35 IAC 742.305 through 742.320;
2. Minimizing potential industrial-commercial worker exposure to COCs in fill material at Area #1 through Area #13; and,
3. Minimizing potential construction worker exposure to COCs in fill material.

Remedial strategies to address Area #1 through Area #13 remedial objectives are discussed in detail in Section C.2.

The overall remedial objectives in the area of the stormwater pond (Area #14) include the following elements:

1. Reducing the occurrence of oil-exposed stormwater by removing potential source areas impacting the pond;
2. Reducing potential free product sources at Area #14 to allow for exclusion of pathways in accordance with 35 IAC 742.305 through 742.320;

3. Minimizing potential industrial-commercial worker exposure to COCs at Area #14;
4. Minimizing potential construction worker exposure to COCs at Area #14; and,
5. Removing the stormwater retention pond.

Remedial strategies to address Area #14 remedial objectives are discussed in detail in Section C.3.

C) SELECTION OF REMEDIATION TECHNOLOGIES

In accordance with 35 IAC 740.450(c), this section describes how each major remedial technology fits into the overall strategy for addressing the recognized environmental conditions at the subject property including feasibility of implementation, performance and reliability, and whether remediation objectives will be achieved within a reasonable period of time.

C.1 Overview of Remedial Technologies

Remediation technologies selected and selection criteria include the following:

- **Removal and disposal**

  Removal and off-site disposal are selected as a remediation technology at Area #1, Area #2, and Area #14. This technology offers an efficient and reliable method for eliminating affected materials in a short period of time. In addition, removal and disposal is favorable for the limited and confined extent of affected media to be removed as opposed to treating and managing the material onsite.

- **Construction of engineered barriers**

  Engineered barriers are selected as a remediation technology to exclude ingestion and inhalation exposure routes to protect onsite industrial-commercial workers. Industrial fill material used to fill the property inherently displays concentrations of PNAs in excess of SROs protective of onsite workers, and historical industrial operations have contributed additional COCs, such as benzene, lead, and arsenic, at concentrations that also may pose a potential risk. Alternative active remedial technologies to address these issues would be cumbersome, time-consuming and logistically difficult to manage due to the heterogeneous nature, property-wide occurrence, and assortment of COCs identified in the fill material. In addition, due to the location of the property within a developing urban area and overall compact size of the property, redevelopment plans likely will entail construction of buildings, parking lots, and

other property improvements that will serve to reduce long-term exposure and potential risk. Based on these criteria, use of engineered barriers offers an effective, efficient, and manageable approach to addressing potential risks posed by fill material throughout the subject property.

Figure 3 provides the overview and flow process of the site-wide remedial strategies. Implementation of remedial strategies is discussed in two parts. The first part involves discussion of implementation of site-wide remedial strategies (Area #1 through Area #13, Figure 2), excluding the stormwater retention pond area. These remedial strategies for Area #1 through Area #13, as defined on Figure 2, are discussed in detail in Section C.2. The second part involves discussion of implementation of remedial strategies at the stormwater retention pond area, defined as Area #14 on Figure 2. Remedial strategies for Area #14 are discussed in detail in Section C.3.

C.2 Implementation of Remedial Strategies at Area #1 through Area #13

The overall remedial strategy to address remediation objectives as identified in Section A.2 at Area #1 through Area #13 (see Figure 2) include the following elements:

1. Reducing potential oil sources at Area #1 and Area #2 through excavation and off-site disposal of oil-coated fill material;
2. Minimizing potential industrial-commercial worker exposure to COCs in fill material at Area #1 through Area #13 through implementation of an engineered barrier; and,
3. Controlling potential construction worker exposure to COCs in fill material by implementing a *Construction Worker Health & Safety Plan.*

Implementation of the above elements is discussed in detail in Section C.2.1 through C.2.3.

C.2.1 Excavation and Off-site Disposal

To exclude pathways in accordance with 35 IAC 742.310 through 742.320, potential oil source areas will need to be addressed. Oil-coated fill material was observed during investigation activities in the following areas: around the baler foundation and former hydraulic oil aboveground storage tank near the northeast corner of the baler control building (Area #1) and within coarse gravel fill at the scrap storage area north of the stormwater retention pond (Area #2).

C.2.1.1 Area Logistics

Site logistical issues will be carefully considered prior to initiating soil excavation. The most prominent issues are discussed in the following paragraphs.

Prior to commencement of excavation activities, the area of soil excavation in Area #1 and Area #2 will be delineated. Delineation will be accomplished by reestablishing sampling locations that are shown on Figure 2. The initial excavation limits will be established using the sampling locations as points of reference.

Facility personnel will be interviewed and site drawings will be reviewed to determine the location of the various utilities and dock tiebacks in the areas. Potential excavation hindrances created by the presence of utilities or dock tiebacks will be identified, and remedies will be defined prior to onset of excavation.

Since remediation is anticipated to begin upon termination of property operations, no impacts to facility operations are anticipated. In addition, since no regular facility operations will be occurring, potential exposure of facility industrial workers to contaminants during the excavation process is not an issue. However, if industrial workers are known to be present during excavation activities, this population will be addressed in the site-specific Health & Safety Plan

to be developed prior to commencing excavation. Copies of the Health & Safety Plan will be maintained onsite and will be accessible by remediation personnel.

Other considerations prior to the start of excavation include establishing the appropriate method for securing excavation areas, determining appropriate areas for the potential temporary stockpiling of excavated soil, and identifying traffic flow patterns for trucks removing soil for disposal and delivering fill, if needed, for backfilling operations.

C.2.1.2 Waste Characterization and Disposal

Prior to commencing soil excavation, required authorization from a permitted waste disposal facility for disposal of wastes will be obtained. After the excavation areas have been delineated, representative samples will be obtained from Area #1 and Area #2 and tested for the parameters required by the disposal facility. Upon receipt of data from the laboratory, a disposal request application will be submitted to the disposal facility. Disposal authorization should be obtained within three to five days after the disposal facility receives the disposal request. Soil classified as non-hazardous special waste is tentatively planned to be disposed at Waste Management, Inc.'s CID Landfill in Calumet City, Illinois.

Shipments of impacted soil will include appropriate manifest and weight tickets. A licensed waste hauler will provide transportation on designated haul routes. Copies of the manifests and weight tickets will be included in the RACR.

C.2.1.3 Backfilling and Grading Excavated Areas

Planned excavation areas are present within the engineered barrier area (Figure 2, Overlay 3) and within Construction Worker Protection Zone 1 (Figure 2, Overlay 3). Future industrial-commercial workers present in the post-remediation planned excavation areas will be protected from COCs with the engineered barrier. Future construction workers excavating under the engineered barrier in the post-remediation planned excavation areas will be protected from lead

and arsenic within CWPZ-1 through implementation of a site-specific Construction Worker Health & Safety Plan. Since measures will be established to reduce potential risks in these areas, excavations will be backfilled with excess fill material available onsite through re-grading.

Re-grading will be necessary to prepare the subject property for installation of the property-wide engineered barrier and to control stormwater onsite until the barrier can be constructed. Re-grading will be limited to CWPZ-1, and no movement of fill material from this zone to other areas will be conducted. With the exception of fill material from Area #8 and Area #13, fill material from re-grading at areas outside CWPZ-1 may be transferred to CWPZ-1. Re-grading activities are anticipated to be surficial and limited to the top six-inches to one-foot of fill material accumulated above grade. The boundaries of CWPZ-1 will be staked prior to re-grading activities.

Since benzene and PNAs are present at concentrations that may pose a potential risk to construction workers at Area #8 and Area #13, respectively, no movement of fill material from these areas to other areas onsite will be performed. Elevated concentrations of PNAs currently exist under an asphalted surface at Area #13; therefore, these materials will not be encountered nor will they be accessible during re-grading activities. Area #8 will be staked prior to re-grading to prevent transfer of contaminated fill material from this area to non-benzene impacted areas. In the event that quantities of onsite excess fill material are not available, clean off-site fill will be used.

C.2.1.4 Free Liquid In Excavations

Soil excavation is not expected to encounter site groundwater. However, precipitation and infiltration of surface water from surrounding fill material may accumulate in the excavations. If water accumulates within the excavation, temporary drainage channels will be constructed to direct water or water will be pumped to the stormwater retention pond onsite for temporary management. In the event that water accumulations exceed the storage capacity of the

stormwater retention pond, the liquids will be pumped out and disposed off-site. Temporary berms may be placed around excavations to limit water entering the excavation area.

In the event that excavated fill materials contain excessive free liquid and cannot be transported or disposed, the fill material will be dewatered prior to commencing excavation activities. Temporary sumps will be constructed within the areas to be excavated to dewater the fill material. Liquids collected within the sumps will be pumped to the stormwater retention pond for temporary containment. In the event that water accumulations exceed the storage capacity of the stormwater retention pond, the liquids will be pumped out and disposed off-site.

C.2.1.5 Area Specific Considerations: Area #1

Visual observations of materials in the area northwest of the baler control building indicate that hydraulic oil is present within fill material delineated on Figure 2 as Area #1. The source of this oil is attributed to spilling and overfilling at the former hydraulic oil aboveground storage tank, or from minor leaks from the hydraulic system used to bale scrap metal. The extent of oil impact was delineated through visual observations and subsurface borings and test pits. These observations indicate that oil is likely present at concentrations in excess of the attenuation capacity of the material[4] within the coarse aggregate fill material and within the silty sand and gravel fill material. This impacted fill material overlies native brown and gray silty clay that displayed only minor impact from oil within vertical surficial fissures extending approximately one-foot below the silty clay surface. Oil-impacted conditions present in fill material northwest of the baler extend to a depth of approximately four feet below grade. Depth of oil-impacted conditions along the perimeter of the structural foundations is estimated to range from four-feet to six-feet. Extent of oil-impacted conditions underneath structural foundations is uncertain, but is estimated to be confined to coarse base fill estimated to be one-foot thick.

[4] Hereon referred to as "oil-impacted conditions"

Excavation activities will be performed as discussed in Section C.2.1.1 through C.2.1.4. Since the presence of building foundations and other structures in the area may preclude access to material to be excavated, excavation will be conducted concurrently with baler decommissioning activities. Upon dewatering, as discussed in Section C.2.1.4, affected fill material will be excavated, live-loaded and disposed off-site at a pre-approved landfill. Excavation will proceed until native silty clay is encountered and confirmation sampling indicates that the attenuation capacity of the soil is not exceeded as determined by 35 IAC 742.215, as further discussed in Section D.

Oil-impacted fill material will be handled separately from construction debris generated during baler decommissioning activities. Construction debris (i.e., concrete foundations, pads, etc.) will be temporarily stockpiled until disposal authorization from a permitted facility is obtained. Upon inspection of construction debris, options regarding ability to recycle this material will be explored.

C.2.1.6 Area Specific Considerations: Area #2

Visual observations at the scrap metal storage area north of the stormwater pond indicates that oil-impacted conditions[5] likely are present within fill material in the area delineated on Figure 2 as Area #2. The source of oil in this area is attributed to infiltration of stormwater exposed to residual cutting oils on the scrap metal stored in the area. The extent of oil impact was delineated through visual observations and subsurface borings and test pits. These observations indicate that oil-impacted conditions exist within the coarse aggregate fill material present from ground surface to approximately 0.5-foot to 1.5 feet below grade and within the silty sand and gravel fill material extending to four feet below grade. This impacted fill material overlies native brown and gray silty clay that displayed no significant impact through visual observations and analytical testing.

[5] See footnote 4

Depth of oil-impacted conditions within fill material at Area #2 ranges from 0.5-foot at the north end to four feet at the south end near the stormwater retention pond. Excavation activities will be performed as discussed in Section C.2.1.1 through C.2.1.4. Upon dewatering, as discussed in Section C.2.1.4, affected fill material will be excavated, live-loaded and disposed off-site at a pre-approved landfill. Excavation will proceed until native silty clay is encountered and confirmation sampling indicates that the attenuation capacity of the soil is not exceeded as determined by 35 IAC 742.215, as further discussed in Section D.

C.2.2 Engineered Barrier

An engineered barrier is planned at Area #1 through Area #13 to minimize potential industrial-commercial worker exposure to COCs present in fill material throughout the subject property. Material and design specifications of the engineered barrier in these areas will be performed as discussed in Section F.2.

C.2.3 Construction Worker Health & Safety Plan

A Construction Worker Health & Safety Plan will be established and implemented to protect construction workers conducting future subsurface work under engineered barriers, as discussed in Section F.2.3.

C.3 Implementation of Remedial Strategies at Area #14 (Stormwater Retention Pond)

The area delineated as Area #14 on Figure 2 represents the extent of the stormwater retention pond area. Remedial activities presented within this Section will be confined to the Area #14 perimeter delineation as shown on Figure 2.

C.3.1 Remedial Strategy Overview

The objectives of remediation activities in the area of the stormwater pond are to reduce the occurrence of exposed stormwater by removing source areas impacting the pond, remove the stormwater retention pond, and minimize the occurrence of potential oil-impacted media at Area #14.

To exclude pathways in accordance with 35 IAC 742, potential oil source areas will need to be removed. Evaluations at Area #14 indicate that potential oil sources are present in various media in this area delineated on Figure 2 and that impact has occurred from stormwater entering the retention pond that has been exposed to oil. The primary contributing source of oil-impacted stormwater to the pond is from the drainage area north of the pond where scrap metal containing residual cutting oil was stored (Figure 2, Area #2). Affected media within Area #14 includes stormwater, sediments, and fill material along the banks. Cross-sections depicting the relationship of stormwater media to surrounding areas, such as the Area #2 source area, are included as Figures B1 and B2 within Appendix B.

Investigations have been completed at Area #14 to delineate the nature and extent of impacted media. Analytical sampling events from soil collected from seven locations around the perimeter of the pond indicate the presence of select volatile organic compounds, semi-volatile organic compounds, and metals. Of the chemicals detected, the following were detected at concentrations in excess of IEPA Tier 1 soil remediation objectives (SROs) as outlined in 35 IAC 742, Appendix B, Table B for industrial-commercial properties: benzo(a)pyrene, arsenic, and lead. Concentrations detected are similar to those detected in fill material in non-operationally impacted areas elsewhere at the subject property, such as under asphalt paving near the property entrance, and are believed to be inherent to the fill material used at the property or from the former coal storage operations conducted at the subject property. No chemical concentrations were reported in excess of Tier 1 SROs in the two pond sediment samples; however, laboratory detection limits were elevated suggesting matrix interference effects. Visual observations indicate that emulsified and phased oils are present within stormwater accumulation within the pond. Potential impact to minor sediment accumulations at the bottom of the pond also has been noted visually and is suggested by elevated laboratory detection limits.

Although its integrity is unknown, assessment activities and conversations with former facility personnel indicate that a liner is present in the stormwater pond. Based on subsurface investigations around the perimeter of the pond, the liner likely overlies native silty clay. The extent of impact to the underlying silty clay is dependent on the overall integrity of the pond liner, which is unknown at this time, and will be evaluated during remedial activities. However, site-wide evaluations of silty clay indicate low permeability, and no significant impact to silty clay was noted elsewhere at the property despite noted impact existing in overlying fill material. Due to the low-permeability of the silty clay, only limited surficial impact to the underlying silty clay would be suspected, if any. The remediation strategy has been designed to assess liner integrity and potentially impacted silty clay at Area #14 during remedial activities, and the confirmation-sampling scheme has been designed to demonstrate that materials remaining in Area #14, including underlying silty clay, meet SROs.

The overall remedial plan to address remediation objectives in Area #14 includes the following:

1. **Reduction and elimination of exposed stormwater contributing source areas**

   Impacted stormwater entering the stormwater retention pond likely is exposed at the material storage area north of the pond (Area #2, Figure 2). Scrap metal potentially containing residual cutting oil and subjected to stormwater contact was stored in the area north of the pond, which is underlain by fill material consisting primarily of coarse aggregate. Drainage at Area #2 is such that stormwater run-off, both surficially and within the subsurface aggregate, flows south into the stormwater retention pond. Since assessment activities indicate that soil potentially containing residual cutting oil remains present in Area #2, this potential source area will need to be remediated prior to removal of the stormwater pond. Remedial strategies at Area #2 are discussed in Section C.2.1.

2. **Removal and disposal of stormwater pond media**

The following media within the pond have been affected by exposed stormwater entering the pond: surface water, bottom sediments, and fill material comprising perimeter banks. Upon removal of stormwater and sediments, as discussed in Section C.3.4 and C.3.5, respectively, the liner will be inspected. Upon removal of the liner, the silty clay will be visually assessed, and removal of impacted material, if any, will occur prior to confirmation sampling. Details regarding removal and disposal are presented in Section C.3.2 through Section C.3.3.7.

3. Confirmation sampling

A Confirmation Sampling Plan has been designed to measure the effectiveness of the remedial technologies selected at Area #14. The objectives of confirmation sampling include the following:

- To confirm that the natural attenuation capacity of soil is not exceeded; and,
- To confirm SROs of identified COCs at the subject property are not exceeded.

Confirmation sampling will be conducted as discussed in Section D.

4. Restoration of area through backfilling and re-grading

Excavated areas will be backfilled and graded as discussed in Section C.3.6.

5. Implementation of Engineered Barrier

Upon removal of impacted media, Area #14 will be managed as if COCs are present in excess of SROs for industrial-commercial workers. Remediation strategies for other areas of potential concern onsite include the use of a property-wide engineered barrier to eliminate worker ingestion and inhalation exposure routes. An engineered barrier also will be incorporated at Area #14.

C.3.2 Area #14 Logistics

Logistical issues will be carefully considered prior to initiating remedial activities at Area #14. The most prominent issues are discussed in the following paragraphs.

Prior to commencement of excavation activities, the boundaries of the stormwater pond remediation area (Area #14) will be delineated. Reestablishing sampling locations that are shown on Figure 2 will delineate Area #14. The initial excavation limits will be established using the sampling locations as points of reference.

Facility personnel will be interviewed and site drawings will be reviewed to determine the location of the various utilities and dock tiebacks in the areas. Potential excavation hindrances created by the presence of utilities or dock tiebacks will be identified and remedies will be defined prior to onset of excavation.

Since remediation is anticipated to begin upon termination of property operations, no impacts to facility operations are anticipated. In addition, since no regular facility operations will be occurring, potential exposure of facility industrial workers to contaminants during the excavation process is not an issue. However, if industrial workers are known to be present during excavation activities, this population will be addressed in the site-specific Health & Safety Plan to be developed prior to commencing excavation. Copies of the Health & Safety Plan will be maintained onsite and will be accessible by remediation personnel.

Other considerations prior to the start of excavation include establishing the appropriate method for securing excavation areas, determining appropriate areas for the potential temporary stockpiling of excavated soil, and identifying traffic flow patterns for trucks removing contaminated soil for disposal and delivering fill for backfilling operations.

C.3.3 Waste Characterization and Disposal

C.3.3.1 Liquid Waste Streams

Prior to commencing remedial activities at Area #14, required authorization from a permitted liquid management facility will be obtained for disposal of accumulated stormwater within the retention pond. A representative sample will be obtained and tested for the parameters required by the disposal facility. Upon receipt of the data from the laboratory, a disposal request application will be submitted to the disposal facility. Disposal authorization should be obtained within three to five days after the disposal facility receives the disposal request.

Shipments of liquids will include appropriate manifesting. A licensed waste hauler will provide transportation on designated haul routes. Copies of the manifests will be included in the RACR.

C.3.3.2 Solid Waste Streams

Prior to commencing remedial activities at Area #14, required authorization from a permitted waste disposal facility will be obtained for disposal of solid non-hazardous wastes streams. After the excavation areas have been delineated, representative samples will be obtained from sediment and fill material and tested for the parameters required by the disposal facility. Upon receipt of the data from the laboratory, a disposal request application will be submitted to the disposal facility. Disposal authorization should be obtained within three to five days after the disposal facility receives the disposal request. Solid waste classified as non-hazardous special waste is tentatively planned to be disposed at Waste Management, Inc.'s CID Landfill in Calumet City, Illinois.

Shipments of impacted soil will include appropriate manifests and weight tickets. A licensed waste hauler will provide transportation on designated haul routes. Copies of the manifest and weight tickets will be included in the RACR.

C.3.4 Removal and Off-Site Disposal of Liquids

A permitted liquids management company will be contracted to remove accumulated stormwater within the retention pond. A contractor will be selected based on permitting feasibilities, unit costs, and condition of available equipment.

Stormwater will be vacuum-pumped into a licensed tanker truck and transported off-site for treatment and/or disposal. When water levels reach a level where vacuum pumping is no longer efficient, grading and constructing berms will be performed within the area in order to remove the greatest feasible amount of stormwater.

C.3.5 Removal and Off-Site Disposal of Solid Waste

Upon removal of stormwater, accumulated sediments will be removed from the liner. Integrity conditions of the liner will be noted at this time, if possible. Sediments will be dewatered within the confines of the lined pond area and live-loaded into haul trucks for transportation and disposal at a pre-approved landfill, as discussed in Section 3.3.2. Accumulated stormwater within the pond will continue to be removed as needed, as detailed in Section 3.4.

Upon removal of stormwater and sediments and upon noting conditions, the liner will be removed, live-loaded, and hauled for disposal at the pre-approved landfill. Underlying silty clay conditions will be noted; areas displaying visible impact will be excavated and disposed. In addition, fill material encompassing the banks will be removed. Lateral extent of fill material to be removed will be defined by the initial delineation perimeter of Area #14, as indicated on Figure 2. The depth to silty clay will define the initial vertical extent. Material to be removed will be live-loaded and disposed off-site at a pre-approved landfill.

Confirmation samples then will be collected in accordance with Section D. Vertical and lateral excavation will proceed at Area #14 until confirmation sampling indicates that the attenuation capacity of the soil is not exceeded as determined by 35 IAC 742.215. Vertical excavation also will proceed until SROs are not exceeded. Unless confirmation samples indicate that attenuation

capacity of soil is exceeded at excavation sidewalls, excavation will not be extend outside the confines of the Area #14 delineation perimeter, as shown on Figure 2.

C.3.6 Backfilling Excavated Areas

Backfilling at Area #14 will be conducted as discussed in Section C.2.1.3,

C.3.7 Free Liquid In Excavation

Soil excavation is not expected to encounter site groundwater. However, precipitation and infiltration of surface water from surrounding fill material may accumulate in the excavation. If water accumulates within the excavation, it will be managed as discussed in Section C.3.4. Temporary construction of berms may be performed to limit water entering the excavation area.

C.3.8 Engineered Barrier

An engineered barrier is planned at Area #14. Material and design specifications of the engineered barrier at Area #14 will be performed as discussed in Section F.2.

C.2.3 Construction Worker Health & Safety Plan

A Construction Worker Health & Safety Plan will be established and implemented to protect construction workers conducting future subsurface work under engineered barriers, as discussed in Section F.2.3.

D) CONFIRMATION SAMPLING PLAN

In accordance with 35 IAC 740.450(d), the following sections describe how the effectiveness of the remedial action will be measured.

This *Confirmation Sampling Plan* (CSP) presents the field sampling and quality assurance methods and procedures that will be used to measure the effectiveness of the remedial technologies selected and performed in accordance with the RAP. The methods and procedures described are consistent with the IEPA Analytical Quality Assurance Plan and the U.S. Environmental Protection Agency (USEPA) Publication No. SW-846 entitled, "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods."

Confirmation sampling will be performed at removal and disposal areas to include Area #1, Area #2, and Area #14 (see Figure 2). Table 3 summarizes the rationale for confirmation soil sampling strategies at each of the three excavation areas and the analytical parameters that will be used to confirm that the remediation objectives at each area have been met. Overview and objectives of the CSP at each removal and disposal area are presented in Section D.1. The remainder of this plan provides details on the proposed sampling procedures, including sampling frequency, decontamination, sample handling, chain-of-custody procedures, analytical program, and QA/QC.

D.1 Confirmation Sampling Plan Overview & Objectives

D.1.1 Area #1 and Area #2

Data obtained from the confirmation sampling activities at Area #1 and Area #2 will be used to confirm that the residual contamination does not exceed the natural attenuation capacity of soil remaining in accordance with 35 IAC 742.305.

Determination of soil attenuation capacity will be performed in accordance with 35 IAC 742.215(b)(2). Upon removal of visibly impacted material, confirmation samples will be collected in accordance with this CSP from the perimeter and base of the excavation areas. Concentrations of total petroleum hydrocarbons remaining in the areas will be obtained from the individual confirmation samples through laboratory analysis. Total petroleum hydrocarbon concentrations will be compared to the natural organic carbon fraction of the soil. The natural organic carbon fraction of non-impacted native soil at the subject property was determined during comprehensive site investigations as detailed in the *Comprehensive Site Investigation Report* dated June 6, 2001. The value obtained using ASTM D2974-87 from sample location B-213, 1.8-percent organic matter, will be used due to its close proximity to the excavations and its medium range compared to the other three samples submitted for natural organic carbon fraction analyses.

If total petroleum hydrocarbon concentrations exceed the natural organic carbon fraction of the soil, additional soil will be removed from the respective area of inference within the excavation, and an additional confirmation sample will be collected from the affected area. The area of inference of the confirmation sample will be one-half the distance to adjacent sampling points. Soil removal in the areas will be completed when total petroleum hydrocarbon concentrations are less than the natural organic carbon fraction of the soil.

D.1.2 Area #14

Data obtained from confirmation sampling activities at Area #14 will be used to confirm that the following objectives have been achieved:

- The residual contamination does not exceed the natural attenuation capacity of soil (i.e., no free product) in accordance with 35 IAC 742.305; and,

- The soil remediation objectives (SROs) of identified COCs at the subject property are not exceeded within Area #14.

Determination of soil attenuation capacity will be performed in accordance with 35 IAC 742.215(b)(2), as discussed in Section D.1.1. Determination that SROs of identified COCs are not exceeded in soil at the base of the excavation at Area #14 will be performed by collecting samples on approximately 20-foot centers. The samples will be submitted for laboratory analyses to determine the concentrations of identified COCs remaining in the soil at the base of the excavation. The analytical results will be compared to IEPA-approved site-specific soil remediation objectives as presented in the *Soil Remediation Objectives Report* (ROR) dated January 30, 2002. If confirmation-sampling results exceed one or more of the SROs, additional excavation will be performed within the affected grid(s). Additional confirmation samples will be collected and analyzed for the COCs exceeding SROs during the previous confirmation-sampling event. Excavation and confirmation sampling will continue until concentrations are less than SROs.

D.2 Soil Sampling Methodology

This section describes the sampling methods and procedures to be followed for the collection of post-excavation confirmation soil samples at each of the three targeted areas of concern (Areas #1, #2, and #14).

The individual areas of concern will be sampled in the sequence that they are excavated, (i.e., Area #1, followed by Area #2, followed by Area #14). Following completion of the soil removal activities at each of the three excavated areas, experienced CPI geologists or technicians will perform post-excavation confirmation soil sampling in accordance with this CSP and the site-specific Health and Safety Plan. After the intended depth and extent of excavation has been reached at each area of concern, CPI will collect the appropriate number of soil samples from the respective excavation perimeters (i.e., sidewalls) and/or floor. Samples will be grab samples and collected, labeled, shipped, and analyzed in accordance with the procedures presented in this CSP. CPI personnel will document field-sampling activities with written notes in bound field notebooks and with photographs. A written log of the photographs will be included in the field

notebook. Copies of field notes, photographs, sampling documentation and laboratory reports will be included in the RACR.

Confirmatory soil samples will be collected according to the following procedures:

- Sampling equipment will be dedicated, (i.e., used only once for a specific sample location); therefore, no decontamination of sampling equipment is deemed necessary. Samples will be collected using a new stainless steel scoop, spoon, or hand trowel, or other similar soil-sampling device that is dedicated to each sample. Dedicated sampling equipment will be disposed after each sample is collected.

- Samplers will wear clean disposable latex or nitrile gloves that are replaced between each sample.

- Samples are to be collected directly into new laboratory-supplied glassware and labeled in accordance with the protocols presented in this CSP. The following information will be recorded in the field log book for each sample collected:
  - Sample Identification (using the protocol presented in this CSP);
  - Person(s) performing the sampling activities and their affiliation;
  - Date and time of sample collection;
  - Analyses requested;
  - Physical appearance of sample;
  - Types of samples collected; and
  - Problems encountered, including reasons for and description of any deviations from the CSP.

- Samples will be collected as grab samples at each location. Bottom samples are to be collected within the upper six inches of the excavation floor. Perimeter (sidewall)

samples are to be collected at approximately the vertical midpoint of the excavation wall. Samples locations should be biased to include areas that appear to be or have been more heavily contaminated based on laboratory or visual evidence.

- Sample locations and frequency are prescribed according to the following protocols:
  - Area #1: A minimum of 4 sidewall and 2 bottom samples are to be collected at locations distributed approximately as shown on Figure 4.
  - Area #2: A minimum of 3 sidewall and 2 bottom samples are to be collected at locations distributed approximately as shown on Figure 4.
  - Area #14: A minimum of 3 perimeter sidewall and 2 bottom samples are to be collected for Total Petroleum Hydrocarbon (TPH) analysis. Bottom samples for analyses other than TPH will be collected on approximately 20-foot centers at locations distributed approximately as shown on Figure 4. This sample distribution is based on a 20 by 20-foot grid superimposed the proposed excavation for Area #14. The actual number of samples collected will be dependent on the area defined by the final excavation boundaries.
- Samples will be collected in new laboratory-supplied glassware and labeled with adhesive labels and waterproof pen by the sampler at the time the sample is collected. Sample labels will be covered with clear packaging tape to protect and secure them to the sample jar.
- Each filled sample container will be placed in its own sealable plastic bag and immediately placed on ice in a cooler for transport to the laboratory. If ice is used to

cool the sample, it will be double bagged to minimize leakage. If artificial ice packs are used, they are to be frozen 24 hours prior to use to minimize thawing.

D.3 Sample Labeling and Handling

Each completed sample label will include the date, project number, sample time, analyses requested, sampler's initials, and sample identification number. Each sample will have a unique identification number consisting of a coded sequence of numbers and letters that establish the sample identity according to the following protocol:

- Site Name: **C** (for Cometco);
- Area : **A1** (Area #1), **A2** (Area #2), **A14** (Area #14);
- Sample Type: **W** (sidewall), or **B** (bottom);
- Direction: **N** (North), **S** (South), **E** (East) or **W** (West). If additional sample designation is needed, numbers may be added, eg.,W1;
- Matrix: **S** (soil);
- QA/QC: **D** (duplicate), **B** (field blank), **T** (trip blank).

For example, a perimeter sample collected from the north wall of Area #1 would be labeled as CA1WNS, and a bottom sample from the north end of Area # 1 would be labeled as CA1BNS. If a duplicate were included, it would be labeled as CA1BNSD.

Samples will be kept in an iced cooler and accompanied by a standard-chain-of custody form and shipped using standard chain-of-custody procedures. A sample will be considered to be under a sampler's custody if:

- The samples are in the sampler's possession;
- The samples are within view of the sampler after being in the sampler's possession;
- The sample containers are locked in a secure area or sealed to prevent tampering, or
- The samples have been placed in a designated secure area.

Each cooler will contain a chain-of-custody for the samples contained within. The chain-of-custody form will be signed and dated by the sampler when custody of the samples is relinquished to the laboratory. Laboratory personnel will inspect and log the samples on arrival to verify condition, analyses, number of samples, holding times, and label information compared to the chain-of-custody. If the samples are shipped, a copy of the completed chain-of-custody form will remain with the samples and with the sampler, respectively. A copy of the completed chain-of-custody form signed by the laboratory will be included in the laboratory report and the RACR.

Samples will be transported directly to the laboratory or shipped via overnight courier and delivered within 24 hours. If samples area shipped, the coolers will be sealed with chain-of-custody seals. If shipped overnight on Friday, the sampler will arrange with the laboratory to receive the samples on Saturday.

D.4 Analytical Program and Procedures

Samples collected from Areas #1, #2, and #14 will be submitted to First Environmental Laboratory (the Laboratory) in Naperville, Illinois for analysis. The Laboratory is an IEPA-certified laboratory. The analyses requested for each sample have been selected based on the chemicals of concern identified through the site characterization process and are consistent with the ROR. Table 4 specifies the analytical methods to be used on samples collected from each of the excavations.

Results will be received from the Laboratory within five days of submittal for analysis. Depending on the timeframe of remedial activties, rush turnaround on analyses may be performed.

D.5 Quality Assurance/Quality Control

The Quality Assurance/Quality Control measures used for this project are intended to meet the objectives of evaluating the capability of the laboratory to obtain consistent results that are within acceptable limits of precision and accuracy, and to support the quality of the data reported.

QA/QC measures will include duplicate samples, matrix spike/matrix spike duplicates (MS/MSDs), and trip blanks, as follows:

- The duplicate samples will be collected to evaluate the reproducibility of the laboratory analytical results. The duplicate samples will be randomly selected at a frequency of 1 per excavation area. Duplicate sampling procedures will be the same as described for other samples in this section. One MS/MSD sample will be collected and analyzed from Area #14 for the VOC and SVOC analyses.

- Trip blanks will be analyzed to assess the potential for cross contamination of samples while in transport. The trip blanks will consist of laboratory-supplied bottles of water that will be placed in each cooler at a frequency of one per cooler. Trip blanks will accompany the samples at all times. One trip blank per sampling day at Area #14 will be analyzed for select VOCs.

E) CURRENT AND POST-REMEDIATION USE

The subject property currently is classified as industrial-commercial, and future land use is expected to remain industrial-commercial based on its location in an industrial corridor and its zoning. The property currently is used for scrap metal processing operations.

F) SELECTED CONTROLS

In accordance with 35 IAC 740.450(f), the following subsections describe controls selected or relied upon in determining and achieving remediation objectives presented in Section B.

F.1 Institutional Controls

Remediation objectives outlined within this RAP are based on the following assumptions:

- Industrial/Commercial property use limitations;
- Presence of engineered barriers; and
- Exclusion of groundwater exposure routes.

The use of these assumptions requires institutional controls to be placed on the subject property [35 IAC 742.1000(a)]. The following instruments shall be used as institutional controls:

- A comprehensive *No Further Remediation (NFR) Letter* to be transferred with the property; and,
- Local ordinances that prohibit the installation and use of potable water supply wells[6].

Recording duties of institutional controls will be conducted in accordance with 35 IAC 740.620 within 45 days after receipt of the comprehensive NFR.

F.2 Engineered Barriers

F.2.1 Material & Design

An approved engineer barrier meeting the requirements of Subpart K will be constructed and maintained over the entire contaminated area of the property, as shown on Figure 2, Overlay 3. The use of an engineered barrier will significantly reduce industrial-commercial workers ingestion and inhalation of COCs in fill material.

Specifications for construction and materials will be established upon determination of future redevelopment plans for the facility. Engineered barriers will be designed in accordance with 35 IAC 742.1105 and may include concrete building foundations and slabs, asphalt parking lots, and/or other barriers constructed of clay, concrete or asphalt. Upon determination of redevelopment plans, details outlining the construction and material of the engineered barrier will be forwarded to the IEPA for review and approval.

F.2.2 Operation & Maintenance Plan

An Operation & Maintenance (O & M) Plan for the engineered barrier will be implemented to facilitate long-term reliability of the barrier in reducing worker exposure. The O & M Plan will include regularly scheduled inspections of the barrier to identify potential integrity problems that may increase potential risk of exposure.

F.2.3 Construction Worker Protection

A site-specific *Construction Worker Health & Safety Plan* will be developed and implemented to protect construction workers conducting future subsurface work under engineered barriers. The *Construction Worker Health & Safety Plan* will be designed to protect construction workers from specific COCs in identified Construction Worker Protection Zones (CWPZs). CWPZs are identified on Figure 2, Overlay 2. Measures will be implemented for construction worker protection from exposure to arsenic and lead in CWPZ-1, PNAs in CWPZ-2, and benzene in CWPZ-3.

Guidelines for chemical health and safety for construction workers are included in Appendix A. This document shall serve as notice that certain environmental conditions exist on this property that may pose a potential hazard to construction workers involved in subsurface work. These

[6] If pending groundwater characterization activities indicate presence of contaminants exceeding applicable Groundwater Remediation Objectives

guidelines identify areas and associated chemicals of concern within those areas that present potential environmental risks to construction workers and provide general means by which potentially exposed workers may achieve an adequate level of protection. It is intended to serve as a notice of potential chemical hazards that may be present and the general considerations that may be necessary to perform subsurface work in a safe manner. It is not intended to act as a site-specific Health & Safety Plan. Any contractor planning to engage in subsurface work at this property will develop and implement a site-specific *Health & Safety Plan.*

GROUNDWATER INVESTIGATION REPORT

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TABLE OF CONTENTS

SECTION ..... PAGE

TABLE OF CONTENTS II
FOREWORD IV
EXECUTIVE SUMMARY V
1.0 INTRODUCTION 1
1.1 Report Objectives 1
1.2 Previous Groundwater Investigations 1
2.0 GROUNDWATER INVESTIGATION ACTIVITIES 2
2.1 Soil Boring and Monitoring Well Installation 2
2.2 Well Development and Groundwater Sampling 3
2.3 Geologic and Hydrogeologic Characterization 3
2.3.1 Drawdown and Recovery Testing 5
2.3.2 Groundwater Classification 5
2.4 Monitoring Well Abandonment 7
2.5 Decontamination 7
2.6 Laboratory Analysis 7
2.7 Groundwater Analytical Results 8
2.8 Groundwater Ingestion Exposure Route Evaluation 8
3.0 CONCLUSIONS 10

FIGURES

Figure 1 – Subject Property Location Map
Figure 2 – Monitoring Well Location Map
Figure 3 – Potentiometric Surface Map

TABLES

Table 1 – Summary of Groundwater Analytical Results – Tier 1 Evaluation

APPENDICES

APPENDIX A	SOIL BORING LOGS AND MONITORING WELL CONSTRUCTION REPORTS
APPENDIX B	SLUG TEST DATA INTERPRETATION
APPENDIX C	WATER WELL SURVEY DATA
APPENDIX D	WATER WELL SEALING FORM
APPENDIX E	LABORATORY ANALYTICAL REPORTAND CHAIN-OF-CUSTODY FORM

FOREWORD

On behalf of Metal Management Midwest, Inc. (MMMI), CPI Environmental Services, Inc. (CPI) has completed this *Groundwater Investigation Report* for MMMI's property referred to as Cometco Corporation located at 1509 Cortland Street in Chicago, Illinois (subject property). Refer to Figure 1 for subject property location map.

On June 28, 2001, MMMI, the Remediation Applicant (RA), enrolled the subject property into the Illinois Environmental Protection Agency's (IEPA) Site Remediation Program (SRP). A *Comprehensive Site Investigation Report* was prepared and submitted to the IEPA in June 2001. IEPA in a letter dated December 12, 2001, requested completion of additional groundwater investigation prior to approval of the *Comprehensive Site Investigation Report*. In response to IEPA's request, a Groundwater Investigation Plan was submitted to the IEPA on January 30, 2002. *The Groundwater Investigation Plan* was approved by IEPA in a letter dated February 20, 2002. Groundwater investigation activities were completed in accordance with the *Groundwater Investigation Plan* in April and May 2002. This report presents the results of the groundwater investigation.

EXECUTIVE SUMMARY

In response to IEPA's request, CPI on behalf of MMMI characterized hydrogeologic conditions at the subject property and evaluated water well survey data. In accordance with 35 IAC Section 620.220, the groundwater at the subject property is classified as Class II: General Resource Groundwater.

In accordance with *Groundwater Investigation Plan*, five monitoring wells (MW-6 through MW-10) were installed at the subject property. No Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), or Polychlorinated Biphenyls (PCBs) were detected in groundwater samples collected from monitoring wells MW-6 through MW-10. Metal concentrations were below laboratory detection limits except for arsenic and barium. However, concentrations of arsenic and barium do not exceed the Class I or Class II Groundwater Remediation Objectives. Therefore, development of remediation objectives for groundwater is not necessary.

Groundwater ingestion exposure route evaluation results indicate that conditions stipulated under 35 IAC Section 742.320 have been met. Therefore, the groundwater ingestion exposure route is not a complete pathway and is excluded from further consideration.

1.0 INTRODUCTION

1.1 Report Objectives

The objectives of this report are to address the requirements of 35 IAC 740 (b)(3), to evaluate the hydrogeologic characteristics of water bearing unit(s) at the subject property, to classify groundwater in accordance with 35 IAC 620.210 through 620.240, and to demonstrate that the conditions to exclude the groundwater ingestion exposure route as outlined in Section 742.320 (a) through (f) have been met.

1.2 Previous Groundwater Investigations

In March 2000, on behalf of MMMI Andrews Environmental Engineering, Inc. (Andrews) completed a soil and groundwater assessment at the subject property as part of an underground storage tank closure. A total of six soil borings and five monitoring wells (MW-1 through MW-5) were installed. Monitoring wells were sampled and groundwater samples were analyzed for the presence of benzene, toluene, ethylbenzne, total xylenes (BTEX) and polynuclear aromatic hydrocarbons (PNAs). No BTEX and PNA compounds were reported by Andrews to have been detected in the groundwater samples. The results of Andrews' investigation were presented in a *Site Classification Completion Report* dated March 2000.

2.0 GROUNDWATER INVESTIGATION ACTIVITIES

2.1 Soil Boring and Monitoring Well Installation

On April 24 and 25, 2002, five boreholes were drilled with a CME 45C drill rig equipped with hollow stem augers and 2-foot split spoon samplers. In accordance with the *Groundwater Investigation Plan*, boreholes were installed in previously identified areas of the property. Boreholes were continuously sampled to termination depth of 20 to 28 feet below ground surface. An Illinois certified geologist classified subsurface lithologies in accordance with Unified Soil Classification. Soil boring logs are included in Appendix A. In accordance with the *Groundwater Investigation Plan*, soil borings were converted to 2-inch diameter PVC monitoring wells. Monitoring well locations are shown on Figure 2. These monitoring wells were screened in the water bearing gray clay unit underlying the brown-gray, silty clay unit. Total well depth ranged from 20 to 28 feet below ground surface. Filter sand was placed in the annular space to approximately 2 feet above the screened interval. The remainder of the annular space was sealed with bentonite chips, hydrated in 6-inch lifts, and topped off with concrete slurry mix to ground surface in case of stick-up wells or to approximately 0.5 feet below the top of the casing in cases of flush-mount wells. Monitoring well construction reports are included in Appendix A.

Monitoring well MW-6 is located south of paint shop, downgradient of previously identified areas impacted with arsenic and PNA compounds. Monitoring well MW-7 is located northeast of the baler building along the riverbank, downgradient of previously identified areas (Area #1, Area #9, and Area #11) displaying elevated arsenic, lead, and PCB concentrations. Monitoring well MW-8 is located north of the central material storage area and downgradient of areas (Area #11 and Area #3) displaying elevated concentrations of metals and PCBs. Monitoring well MW-9 is located along the southern extent of the riverbank, downgradient of Area #2 and Area #11 where

elevated concentrations of metals and PCBs were detected. Monitoring well MW-10 is located on the southwest corner of the subject property downgradient of areas #6 and #1 displaying elevated lead and arsenic concentrations.

2.2 Well Development and Groundwater Sampling

Prior to groundwater sampling, groundwater monitoring wells were developed by surging for approximately 15 minutes and removing approximately five well volumes of water with a dedicated, disposable bailer.

One round of groundwater samples was collected from monitoring wells and submitted for laboratory analysis. Prior to sampling, monitoring wells were gauged with an electronic water level indicator and purged three to five well volumes using a disposable bailer.

Groundwater samples were transferred into the appropriate laboratory containers, preserved, and stored in a cooler with ice prior to shipment to First Environmental Laboratories in Naperville, Illinois. Appropriate quality assurance/quality control (QA/QC) procedures and chain-of-custody protocols were followed. For QA/QC purposes, a laboratory-prepared trip blank sample and a duplicate groundwater sample were submitted for analysis.

2.3 Geologic and Hydrogeologic Characterization

Subsurface geology at the subject property consists of fill material overlying disturbed brown-gray, mottled, silty clay followed by gray, clay till. Fill material consists of sand, gravel, cinder, and slag. It is dry to saturated and its thickness varies from 4 feet to 21 feet throughout the subject property with the thickest fill present along the riverbank. The thickness of the disturbed silty clay unit varies from 0 feet to 8 feet. No saturated zone was encountered in this unit. A glacial till, gray clay, unit underlies the upper silty clay confining unit. Wet to saturated intervals were encountered in the gray clay unit;

therefore, monitoring wells were screened in this unit. Due to presence of confining beds (i.e., brown-gray silty clay and gray clay units), the vertical movement of groundwater into and out of the screened interval is limited and the water pressure is greater than the atmospheric pressure in the monitoring wells at the subject property. As a result, the potentiometric surface stands above the top of the gray clay unit.

Depth-to-water levels and depth to bottom of the wells were measured and recorded upon completion of well development activities. In addition, CPI representative surveyed all monitoring wells to a local benchmark to define the relative ground surface and top of the casing elevations on April 30, 2002. Following table presents a summary of groundwater elevation data:

Well ID	Ground Surface* Elevation (feet)	TOC Elevation* (feet)	Depth to Water TOC (feet)	GW Elevation (feet)	Total Well Depth TOC / GS (feet)
MW-6	98.11	97.65	14.86	82.79	19.54/20
MW-7	96.67	96.25	19.78	76.47	22.58/23
MW-8**	97.55	97.10	0.97	96.13	19.55/20
MW-9	95.40	97.22	10.25	86.97	29.82/28
MW-10	97.42	99.92	6.26	93.66	25.5/23

*Top of the casing (TOC)and Ground Surface (GS) elevations were measured relative to a benchmark with an assumed elevation of 100 feet.
**Due to anomalously high groundwater elevation in monitoring well MW-8, the groundwater elevation at this well was not used during the preparation of potentiometric surface map.

Based on depth-to-water level measurements, groundwater elevations were calculated and used to prepare the potentiometric surface map presented in Figure 3. Based on the potentiometric surface map, groundwater at the subject property flows to the northeast toward the North Branch of Chicago River, under an average hydraulic gradient of 0.026 feet/feet.

2.3.1 Drawdown and Recovery Testing

CPI conducted hydraulic conductivity tests at two locations. Prior to performing these tests, depth-to-water levels in the monitoring wells were measured with an electronic water level indicator. In addition, total well depths were measured and recorded in the logbook. A transducer with an appropriate pressure range was introduced into monitoring wells MW-10 and MW-9 approximately one hour prior to test commencement. During each test, a data logger was used to record drawdown or recovery data. After proper configuration, the data logger was activated to record the results of a drawdown test. A 1¾-inch diameter, 37-inch long slug was rapidly introduced into the monitoring well and the drwadown rate of the aquifer was recorded for approximately one hour. Due to low recharge rate, depth-to-water level in the monitoring wells had not reached equilibrium prior to commencement of recovery testing. The recovery rate was recorded for approximately one hour and data collection was terminated.

Collected data was evaluated using Super Slug software based on the Cooper, Bredehoeft, and Papadopulos solution. The following table presents calculated hydraulic conductivity, transmissivity, storativity, and capacity of the water bearing formation in the immediate vicinity of the monitoring wells MW-10 and MW-9.

Well ID	Hydraulic Conductivity (K)		Transmissivity (T)	Storativity (s)	Capacity (Q)
	(cm/sec)	(feet/day)	(ft^2/sec)		(gal/day)
MW-10	8.28×10^{-7}	2.35×10^{-3}	8.15×10^{-7}	5.54×10^{-4}	0.08
MW-9	6.91×10^{-7}	1.96×10^{-3}	9.06×10^{-7}	5.86×10^{-4}	0.04

Slug test interpretation datasheets are presented in Appendix B.

2.3.2 Groundwater Classification

The groundwater at the subject property exhibits the following characteristics and meets the criteria as outlined under the 35 IAC Section 620.220, Class II: General Resource Groundwater:

- The groundwater at the subject property does not meet the provisions of Section 620.210 (Class I), Section 620.230 (Class III), or Section 620.240 (Class IV);
- The average in-situ hydraulic conductivity of the water bearing unit in the subject property is 7.59×10^{-7} cm/sec, which is less than the 10^{-4} cm/sec limit;
- The subject property is located outside a well protection area for a community water well supply;
- The subject property is not located in the minimum setback zone of a well, which serves as a potable water supply;
- No community or potable water supply wells are located within a 2,500-foot radius of the subject property. Based on water well survey information, there are three industrial wells (Well #9, 19, and 17) within 2,500-foot radius of the subject property. Well number 9, 19, and 17 are finished in bedrock at depths of 1610, 1616, and 1850 feet below ground surface, respectively. Well number 9 and 19 are located across the North Branch of Chicago River and well #17 is located cross-gradient of the subject property. A copy of water well survey information is included in Appendix C; and
- The subject property is located within the limits of the City of Chicago. The City of Chicago obtains water from Lake Michigan and has a Potable Water Supply Well Ordinance that prohibits the installation of new potable water supply wells and the use of such wells within the City of Chicago by private entities, but allows the installation and use of new wells by the City of Chicago. A Memorandum Of Understanding (MOU) between the City of Chicago and IEPA was established in order to use the local Potable Water Supply Well Ordinance as an Institutional Control. The MOU has been in effect since July 3, 1997.

Therefore, the groundwater at the subject property is classified as a Class II Groundwater Resource.

2.4 Monitoring Well Abandonment

Five monitoring wells (MW-1 through MW-5) were installed during previous investigations by Andrews. However, only one (monitoring well MW-1) out of five wells was in place during the CPI groundwater investigation. The remaining monitoring wells MW-2 through MW-5 have either been destroyed or buried under fill material placed along the riverbank. In accordance with Illinois Water Well Construction Code 77 IAC Section 920.120, monitoring well MW-1 was abandoned on April 25, 2002. Water well sealing form is included in Appendix D. CPI will search for the remaining monitoring wells during site remediation activities and abandon these wells accordingly.

2.5 Decontamination

To prevent cross-contamination, drilling and sampling equipment was decontaminated between each borehole with a pressure washer. In addition, stainless steel split spoon samplers were washed with alconox and water solution and rinsed with water prior each use. Disposable dedicated bailers were used during well development and groundwater sampling activities. A new pair of disposable gloves was used at each monitoring well location during well development and sample collection.

2.6 Laboratory Analysis

Prior to sampling, groundwater monitoring wells were gauged with an electronic water level indicator and purged a minimum of three well volumes using a disposable bailer. In accordance with the *Groundwater Investigation Plan,* groundwater samples collected from monitoring wells MW-6 and MW-7 were analyzed for presence of dissolved metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and polychlorinated biphenyls (PCBs). Groundwater samples collected from monitoring wells MW-8, MW-9, and MW-10 were analyzed for presence of VOCs, SVOCs, metals, and PCBs.

For QA/QC purposes, a laboratory prepared trip blank sample and a duplicate groundwater sample were submitted with the groundwater samples for analysis. The trip blank sample was analyzed for VOCs. The duplicate sample was collected from monitoring well MW-10 and analyzed for the same parameters.

2.7 Groundwater Analytical Results

No VOCs, SVOCs, or PCBs were detected in exceedance of laboratory detection limits in groundwater samples collected from monitoring wells MW-6 through MW-10. Except for barium and arsenic, no metals were detected in the groundwater samples. Barium concentrations exceeded the laboratory detection limit in the five monitoring wells and arsenic concentrations exceeded the laboratory detection limit in monitoring wells MW-7, MW-8, and MW-9. However, the concentrations of detected metals do not exceed the Class I or Class II Groundwater Remediation Objectives. A summary of groundwater analytical results is presented in Table 1. The groundwater analytical report and chain-of-custody form are included in Appendix E.

No VOCs were detected in the trip blank sample. The results of duplicate sample collected from monitoring well MW-10 were consistent with the MW-10 results.

2.8 Groundwater Ingestion Exposure Route Evaluation

Based on groundwater analytical results, no VOCs, SVOCs, or PCBs were detected in the groundwater samples collected from monitoring wells MW-6 through MW-10 and no metals were detected in excess of Class I or Class II groundwater remediation objectives in groundwater samples collected from monitoring wells MW-6 through MW-10. In accordance with 35 IAC Section 742.320, the groundwater ingestion exposure route can be excluded from considerations since the following criteria have been met:

a) The requirements of Sections 742.300 and 742.305 are met as demonstrated in the *Soil Remediation Objectives Report* dated January 30, 2002;

b) No free product has been detected in the groundwater monitoring wells at the subject property;

c) The subject property is not located within the minimum or designated maximum setback zone or within a regulated recharge area of a potable water supply well; and

d) The subject property is located within the limits of the City of Chicago. The City of Chicago obtains water from Lake Michigan and has a Potable Water Supply Well Ordinance that prohibits the installation of new potable water supply wells and the use of such wells within the City of Chicago by private entities, but allows the installation and use of new wells by the City of Chicago. A Memorandum Of Understanding (MOU) between the City of Chicago and IEPA was established in order to use the local Potable Water Supply Well Ordinance as an Institutional Control. The MOU has been in effect since July 3, 1997.

Therefore, the groundwater ingestion exposure route is not considered a complete pathway and therefore, this route can be properly excluded from further consideration.

3.0 CONCLUSIONS

In accordance with 35 EAC Section 620.220, the groundwater at the subject property has been classified as Class II: General Resource Groundwater.

No VOCs, SVOCs, or PCBs were detected in the groundwater samples collected from monitoring wells MW-6 through MW-10. Metal concentrations were below laboratory detection limits except for arsenic and barium. However, concentrations of arsenic and barium do not exceed the Class I or Class II Groundwater Remediation Objectives.

Groundwater ingestion exposure route evaluation results indicate that the conditions stipulated under 35 IAC Section 742.320 have been met. Therefore, the groundwater ingestion exposure route is not a complete pathway and is excluded from further consideration.

"Mike Place" <mplace@continentalplacer.com>

03/06/2009 04:54 PM

Please respond to <mplace@continentalplacer.com>

To

Subject RE: Metal Management Midwest

Bhooma, here are the Groundwater Investigation Report and the SRP-RAP. I can follow up with any appendix information that you may want. Have a great weekend.

Michael B. Place
President
Continental Placer Inc.
CPI Environmental Services, Inc.
1123 Wheaton Oaks Court
Wheaton, IL 60187
(630)407-0800, ext. 101
Fax (630)407-0799
mailto: mplace@continentalplacer.com
www.continentalplacer.com

-----Original Message-----
From: Sundar.Bhooma@epamail.epa.gov [mailto:Sundar.Bhooma@epamail.epa.gov]
Sent: Thursday, March 05, 2009 3:00 PM
To: mplace@continentalplacer.com
Cc: Hamper.George@epamail.epa.gov
Subject: Metal Management Midwest

Mike,

I have reviewed the Baseline Human Health Risk Assessment submitted by CPI Environmental Services, Inc on behalf of Metal Management Midwest, Inc ("facility") to USEPA , Region 5 in February, 2007. Office of Soil Waste and Emergency Response has recently transferred to TSCA responsibility to RCRA (Resource Conservation and Recovery Act). Hence I am reviewing the risk based options being pursued at the facility in lieu of self-implementing or performance based options. I have number of questions in regards to the conceptual site model and therefore would like to set up a conference call to discuss the concerns with you and the facility.

Please provide any supporting documents such as Groundwater investigation report and remediation workplan submitted to IEPA in regards to non PCB areas, so that we have a productive conference call that results in faster approval of the request.

The contact number for the call on 3/10/09 at 10.00 a.m. CT:

Dial in number : 866-299-3188
Conference code: 3532153

Please call me if you have any questions.

Bhooma Sundar
Toxicologist

RCRA Corrective Action
Land and Chemicals Division
USEPA Region 5
77, W.Jackson Blvd, Chicago, IL 60604
Tel: 312-886-1660

RAP Report-01-30-02.pdf GW Investigation Report.pdf

Bhooma Sundar/R5/USEPA/US
02/26/2009 02:16 PM

To

Subject Metal Management Midwest - Risk Assessment

George,

My recommendation for the site is hot spot removal with the recommended engineering and institutional controls.

Note: The engineering and institutional controls are not specified and discussed anywhere in the risk assessment.

Under self implementing on-site cleanup, this site typically should have cleaned up to 10 ppm and installed a cap. The EPC for the subsurface is calculated to be 41.3 ppm for this site. PCB concentration in the surface soil is 8.6ppm. With default conservative assumptions, the excess cancer risk of industrial worker is estimated as 1.1E-05 and construction worker risk 2.6E-05 respectively. Using site specific assumptions, the facility calculated 2.22 E-06 excess cancer risk for industrial workers and 4.55E-07 for construction workers.

Although the risk is acceptable for this site, it is possible that the residual contamination can be excavated and disposed off improperly. Therefore, spot removal at TP-301 and TP-308 should occur to eliminate the potential for groundwater/surface water contamination. 310

The conceptual site model eliminates exposure pathways associated with groundwater, surface water and sediment. However, the summary tables provided in this document do not provide the analytical date for the above media.

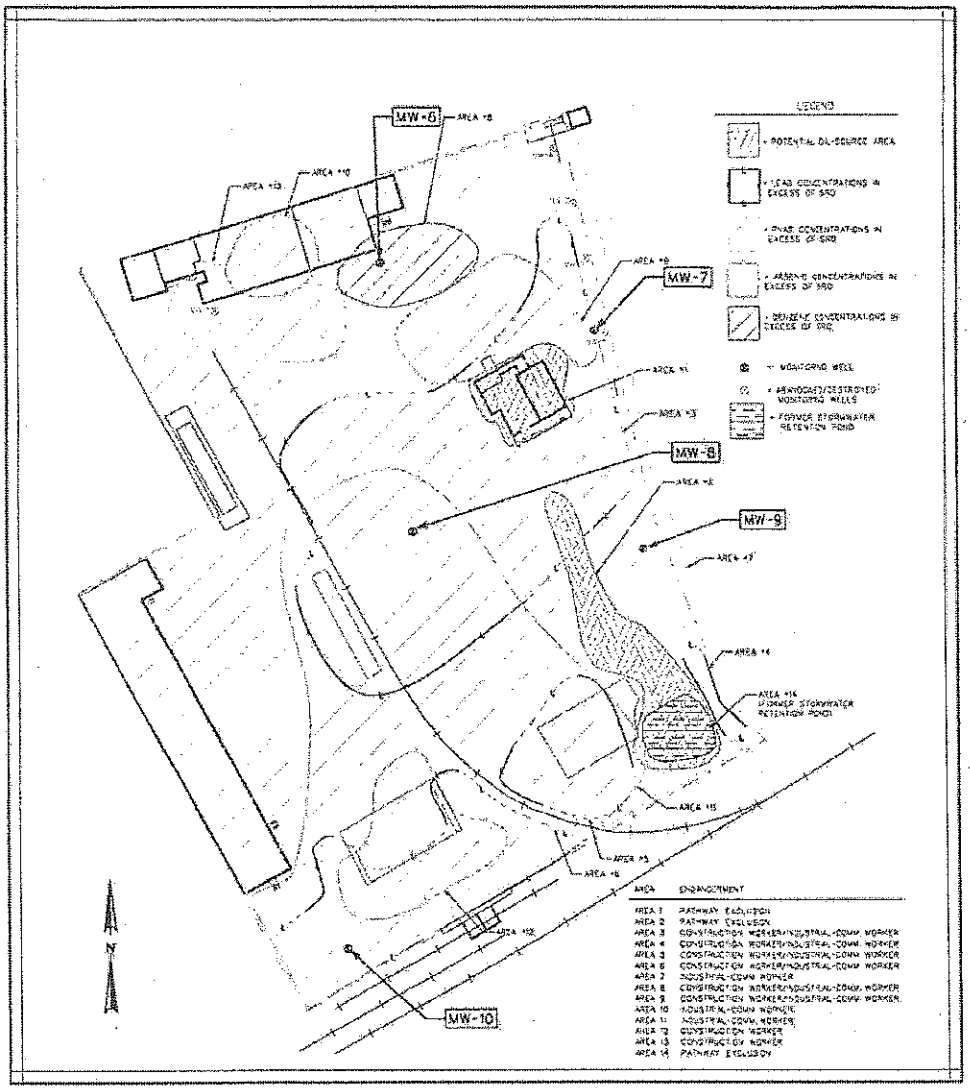
Table 7 summarizes the average and RM EPCs for the fill area. The foot note refers appendix 5 for proUCL calculations. The proUCL model output however is not included in appendix 5.

It is not clear how the exposure frequency of 20 days was derived for construction worker scenario. Typically such scenario should include 45 days of exposure frequency for a duration of one year.

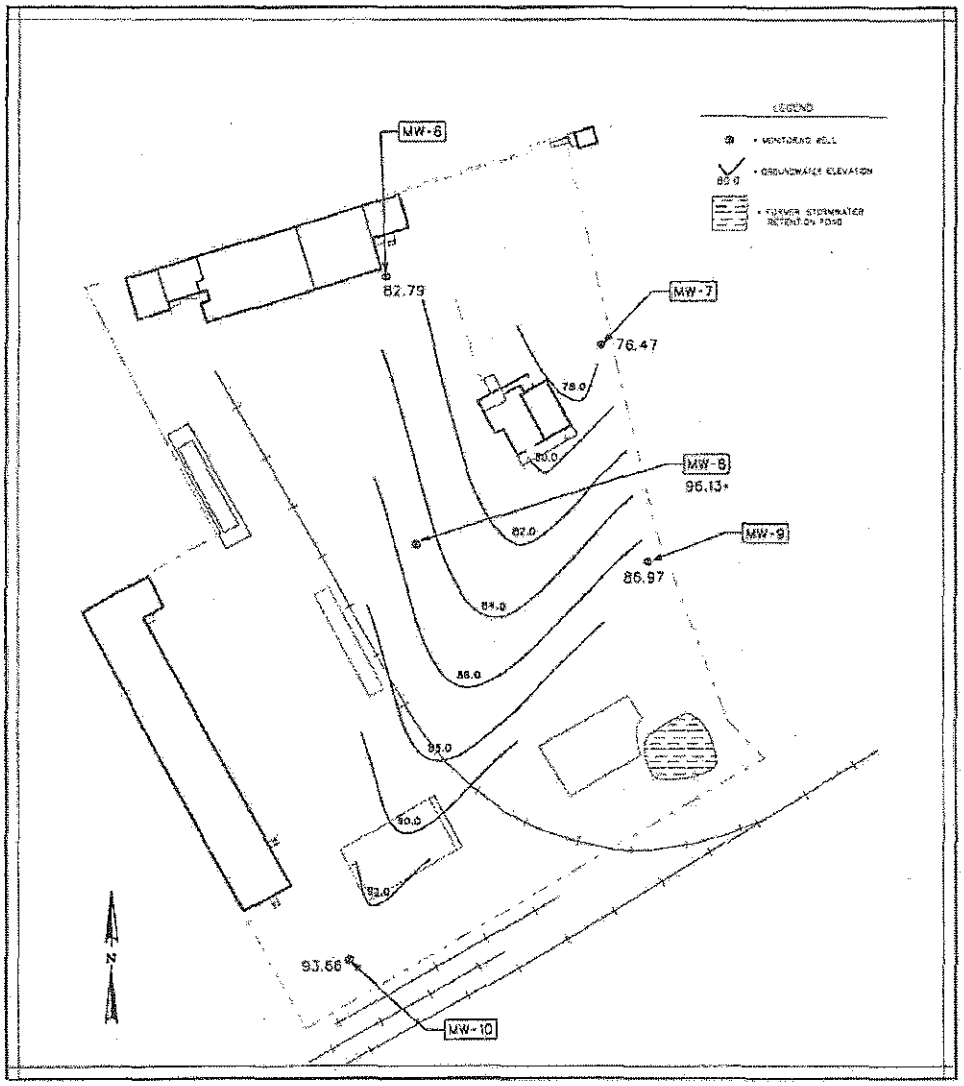
Recommendations:

1. A revised risk assessment as an appendix supplementing the information requested for can be provided. The appendix should also include proposed engineering and institutional controls.
2. The conceptual site model is based on just one sampling round and concludes that only soil and subsurface soil is contaminated. Citing this uncertainty, hot spot removal can be requested.

Bhooma Sundar
Toxicologist
RCRA Corrective Action
Land and Chemicals Division
USEPA Region 5
77, W.Jackson Blvd, Chicago, IL 60604
Tel: 312-886-1660



F: 630-469-6470 P: 630-469-6340 CPI Environmental Services, Inc. 299 ROOSEVELT ROAD, BLDG.8, STE.110 GLEN ELLYN, ILLINOIS 60137	GRAPHIC SCALE 0 25 50 100 FEET	LOCATION METAL MANAGEMENT MIDWEST, INC. COMETCO CORP. 1509 CORTLAND STREET CHICAGO, ILLINOIS
NOTES	DATE 11/30/2001 / DRAWN SAS/SLE PROJ. NO. E03-74-04-249 WELLLOCATIONS.DGN / APVD NAB	TITLE FIGURE 2. MONITORING WELL LOCATION MAP

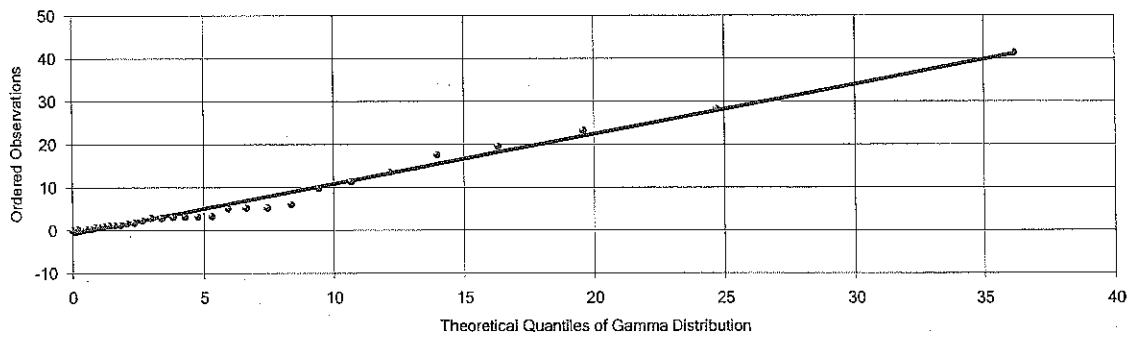


F: 630-469-6470 P: 630-469-6340 CPI Environmental Services, Inc. 799 ROOSEVELT ROAD, BLDG. B, STE. 103 GLEN ELLYN, ILLINOIS 60137	GRAPHIC SCALE 0 25 50 100 FEET		LOCATION METAL MANAGEMENT MIDWEST, INC. COMETCO CORP. 1509 CORTLAND STREET CHICAGO, ILLINOIS
NOTES GROUNDWATER LEVELS COLLECTED ON 4/30/2002. *ANOMALOUS GROUNDWATER ELEVATION - NOT INCLUDED IN GROUNDWATER FLOW DIRECTION DETERMINATION.	DATE 04/30/2002	DRAWN SAS/BLF	TITLE FIGURE 3. POTENTIOMETRIC SURFACE MAP
	PROJ. NO. C05-74-06-249 POTENTIOMETRIC.DGN	APVD MAB	

ProUCL Dataset
Total PCBs in EA

Total PCBs
11.26
0.3
0.04
3.14
0.34
0.3
0.04
0.04
5.99
2.3
0.04
0.2
0.2
5.22
9.82
1.16
0.95
1.58
5.15
13.48
2.8
41.38
17.58
0.2
3.08
1.04
28.26
0.2
5.04
19.56
23.24
0.75
0.77
0.2
0.2
1.17
3.28
3.03
1.71
2.79

Gamma Q-Q Plot for Total PCBs



N = 40, Mean = 5.446, k hat = 0.463
Slope = 1.159, Intercept = -0.754, Correlation, R = 0.993
K-S Test Statistic = 0.126, Critical Value(0.05) = 0.148, Data are Gamma Distributed

ProUCL Results
Gamma Statistics

Data File

Variable: Total PCBs

Number of Valid Samples	40
Number of Distinct Samples	31
Minimum	0.04
Maximum	41.38
Mean	5.44575
Standard Deviation	8.984932
Variance	80.72899
k hat	0.462822
k star (bias corrected)	0.444777
Theta hat	11.76639
Theta star	12.24376
nu hat	37.0258
nu star	35.5822
Approx.Chi Square Value (.05)	22.93038
Adjusted Level of Significance	0.044
Adjusted Chi Square Value	22.54887

A-D Test Statistic	0.748643
A-D 5% Critical Value	0.821403
K-S Test Statistic	0.125686
K-S 5% Critical Value	0.148281

Data follow gamma distribution
at 5% signifcance level

95% UCLs (Adjusted for Skewness)

Adjusted-CLT UCL	8.377631
Modified-t UCL	7.932183

95% Non-parametric UCLs

Bootstrap-t UCL	8.809746
Hall's Bootstrap UCL	8.733112

95% Gamma UCLs (Assuming Gamma Distribution)

Approximate Gamma UCL	8.450438
Adjusted G	8.593412

Data follow gamma distribution (0.05)

Recommended UCL to use:

Use Adjusted Gamma UCL

Bhooma Sundar/R5/USEPA/US
03/10/2009 11:38 AM

To <mplace@continentalplacer.com>
cc George Hamper/R5/USEPA/US@EPA
bcc
Subject RE: Metal Management Midwest

Mike,

Thanks for providing the Pro UCL output for Metal Management Midwest. The 95% UCL calculations that you provided is similar to that of what I calculated. The only difference was I removed the hotspots and you had averaged out the hotspot location with further sampling. While both approaches seem to result in similar results, let me provide an explanation as to why I removed the hot spots while calculating the average concentration:

- The individual locations at TP-302 with a conc. of 71ppm and TP-310 at 214 ppm exceeded the 1 in 10,000 excess cancer risk per industrial worker default assumptions and are considered as hot spots.
- Risk assessment evaluation of PCB contamination assesses risks to protect health and the environment from chemicals left in place. During a redevelopment scenario, if the location containing hotspot is excavated, it might either be improperly disposed off or cross contaminate clean areas or run off into the river.
- Eventhough PCB has not been detected in groundwater due to the site geology, horizontal movement of PCB through groundwater in to Chicago River cannot be excluded since the site is at the groundwater surface water interface and due to the presence of coexisting contaminants that might aid in mobilization.
- Removal of one hotspot -TP 310 will also address the lead issues per the August 15, 2002 letter from CPI to IEPA. The TCLP from this soil boring revealed a lead conc. of 1.46 mg/l.

Based on the above rationale, I suggested removing the hotspots and submitting the confirmatory sample analysis to USEPA. Please call me if you have any questions.

Bhooma Sundar
Toxicologist
RCRA Corrective Action
Land and Chemicals Division
USEPA Region 5
77, W.Jackson Blvd, Chicago, IL 60604
Tel: 312-886-1660
"Mike Place" <mplace@continentalplacer.com>

"Mike Place" <mplace@continentalplacer.com>
03/10/2009 10:41 AM
Please respond to <mplace@continentalplacer.com>

To Bhooma Sundar/R5/USEPA/US@EPA
cc

Subject RE: Metal Management Midwest

Bhooma, attached are files I found related to the ProUCL calculations. Using the statistical averaging for TP-302 and TP-310, I see that our 95% UCL calculations are less than 10 mg/kg.

Let me know if you need any other information. Thank you.

Michael B. Place
President
Continental Placer Inc.
CPI Environmental Services, Inc.
1123 Wheaton Oaks Court
Wheaton, IL 60187
(630)407-0800, ext. 101
Fax (630)407-0799
mailto: mplace@continentalplacer.com
www.continentalplacer.com

ProUCL input data.pdf Gamma Chart.pdf ProUCL Gamma Statistics.pdf

LU-9J

Certified Mail :
Metal Management Midwest, Inc.
Attn: Ms. Debbie Hays
12701 South Doty Avenue
Chicago, IL 60633

Certified Mail
CPI Environmental Services
Attn: Mr. Michael B. Place
799 Roosevelt Road
Building 6, Suite 110
Glen Ellyn, IL 60137

Dear Ms. Hays and Mr. Place,

RE: Risk-Based PCB Cleanup Approval
1509 Courtland Street, Chicago IL 60642-1215

We have completed our review of your February 7, 2007 application (entitled *Baseline Human Health Risk Assessment*) for approval of a risk-based cleanup under 40 CFR 761.61(c) for the Metal Management Midwest, Inc. property located at 1509 Courtland Street in Chicago, Illinois. In addition to the information in your application, Mr. Place has also agreed that Metal Management Midwest, Inc. will remove the soil represented by samples TP 302 and TP 310 and dispose of it off-site in an appropriate landfill.

There are several other locations at this facility where the PCB concentrations in soils exceed the self-implementing cleanup cleanup levels found at 40 CFR 761.61(a)(4). Based on the information provided in your application, we have determined that the existing PCB soil contamination represented by those other samples does not pose an unreasonable risk of injury to human health or the environment, as long as the land use of the property is restricted.

We also understand that there are other chemical contaminants in the soils at this facility, and that you are working with the Illinois EPA to clean up those contaminants under a Remedial Action Plan (RAP). We expect that this will result in capping ~~approximately~~ entire

75% of your 4-acre facility. The requirements for construction, inspection, and maintenance of the cap will be established through the RAP approval process.

Accordingly, your application is hereby approved, subject to the conditions contained in the enclosure to this letter.

Please note that this approval does not relieve you from your duty to comply with all other applicable federal, state, and local requirements. If you have any questions, please contact Bhooma Sundar by e-mail at sundar.bhooma@epa.gov or by telephone at (312) 886-1660.

Sincerely,

Margaret M. Guerriero
Director, Land and Chemicals Division

cc : Todd Hall
Illinois Environmenta Protection Agency
Bureau of Land
Remedial Project Management Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, IL 62794-9276