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RESPONSE TO EPA COMMENTS
RCRA FACILITY INVESTIGATION
PHASE I REPORT
ENVIRITE CORPORATION
RCRA DOCKET NO. I-90-1032
THOMASTON, CONNECTICUT

PREPARED FOR:
Envirite Corporation
620 West Germantown Pike
Suite 250
Plymouth Meeting, Pennsylvania 19462

PREPARED BY:
GZA GeoEnvironmental, Inc.
27 Naek Road
Vernon, Connecticut 06066

June 1997
File No. 41875

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GZA
GeoEnvironmental, Inc.

Engineers and Scientists

June 24, 1997
File No. 41875

U.S. Environmental Protection Agency
Office of Site Remediation and Restoration
Corrective Action Section - HBT
J.F.K. Federal Building
Boston, Massachusetts 02203-2211

Attention: Mr. Raphael J. Cody
Project Manager

27 Naek Road
Vernon
Connecticut 06066
860-875-7655
FAX 860-872-2416

Re: Response to EPA Comments
RCRA Facility Investigation Phase I Report
Envirite Corporation: RCRA Docket No. I-90-1032
Thomaston, Connecticut

Dear Mr. Cody:

At the request of our Client, Envirite Corporation, we are submitting the attached data validation report for the UST interim measure and additional response comments to issues raised by the Town of Thomaston and outlined in the EPA Comments appearing in their April 25, 1996 letter to Envirite Corporation, regarding the report: RCRA Facility Investigation, Phase I Report, Thomaston, Connecticut RCRA Docket No. I-90-1032.

We note that the validation for the August, 1996 soil gas survey performed at Envirite is not complete at this time because the analytical laboratory has not provided the necessary documentation. We have attached a copy of Envirite's June 10, 1997 monthly status report which provides additional information on the status of this project element.

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The following sections present additional discussion of select issues raised by information in reports submitted by the Town of Thomaston.

Potential migration of contaminants from Envirite's landfills:

The difference in groundwater table gradient between the Envirite property and the Town of Thomaston POTW is likely due to difference in the permeability of the materials which comprise the overburden aquifer rather than the presence of the Envirite Landfill.

The Branch Brook channel was formerly located in the southwest portion of the Envirite Site (Page 21 of the RFI Work Plan). The former Branch Brook channel

also appears to represent the town line between Thomaston and Watertown and is shown on the Site Plan (Figure 1-2) of the RFI. Formerly, the stream flowed south across the southwest portion of the Envirite Site, turned east at the POTW property line and then turned south again. The presence of the former Branch Brook channel in the southwest portion of the Site would be expected to create a zone of higher permeability within the overburden aquifer. A zone of higher permeability on the POTW property would create a lesser gradient or flatter piezometric surface. Consistent with this prediction, Figure 3-1, April 1994 Shallow Overburden Head Contours of the RFI report depicts a steeper gradient in the southwestern portion of the Envirite site with a lesser gradient to the south on the POTW property.

While a groundwater mound under the landfill might also result in this pattern we do not anticipate that the landfill will result in the formation of such a mound. As discussed in Section 3.0 of the RFI supplement document, the permeability of the landfilled treatment residues is significantly lower than the surrounding materials and the cap on cells 4 and 5 serves to limit recharge to the overburden aquifer. For these reasons the presence of the Envirite Landfill is not likely to create a groundwater mound that would affect the piezometric gradient or groundwater flow patterns.

Regarding the presence of dissolved phase metals in site groundwater.

A comparison of the RFI report, Figure 1-2 and the Acid Spill locations presented on Plate 7 of the RFI Work Plan reveals that seven of the wells (MW-42S, MW-43S/D, MW-44/D/B, MW-50S, MW-51D, MW-52D, MW-61S/D, and MW-62) noted in the EPA comments are located downgradient or sidegradient of the acid spill areas. Monitoring wells MW-30, MW-31D/B and MW-63 are located upgradient of acid spill areas.

We did not assert that the acid spills are the sole cause of elevated dissolved metals in site groundwater, nor that dissolved metals in upgradient wells are due to acid spills. The RFI report states:

... Groundwater data also indicate that concentrations of copper, nickel, and zinc are highest in wells MW-43D, MW-44D and MW-44B, located at the downgradient property line. Data for pH levels in these wells are typically one to one and a half units lower than the rest of the site as well. These wells are located immediately downgradient of areas impacted by an on-site acid spill event which occurred in 1983. The spill is likely a source of these constituents in the wells since the observed metal constituents and depressed pH are consistent with the material released and constituent concentrations are decreasing over time (as reported in Envirite's last several Annual Monitoring Reports), which indicate that impacts are from a historic release rather than an on-going source.

We assert that the cause of elevated levels of dissolved metals in wells MW-43D, MW-44D, and MW-44B relative to the rest of the Site is due to the acid spills.

Sampling of soils within the Wastewater Spill Area

Results of analysis of the samples collected in the Wastewater Spill Area are presented in RFI Appendix I, Acid Spill Area Soils. Based upon this data, the majority of soil samples collected in the Wastewater Spill Area (on POTW property) were collected from depths of 0 to six inches and 24 to 32 inches.

If you have any, please feel free to contact the undersigned at your convenience.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

FOR

J. Tyler Griffith
Senior Project Manager

Thomas F. Stark
Associate Principal

cc: William McTigue; Envirite Corporation
Clifford Brammer; Town of Thomaston
Thomas Mueller, P.E.; Town of Thomaston
Diane Duva CT DEP
Jeff Wilcox; CT DEP

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ENVIRITE CORPORATION
TECHNOLOGY FOR THE ENVIRONMENT

June 10, 1997 By Telecopier & U.S. Mail

Mr. Raphael J. Cody
U.S. Environmental Protection Agency
Office of Site Remediation & Restoration
Corrective Action Section - HBT
J.F.K. Federal Building,
Boston, MA 02203-0001

Re: RFI Status Report for the Month of May, 1997; RCRA Docket I-90-1032

Dear Mr. Cody:

The following report summarizes the current status of Envirite's RFI project for the month of May, 1997. The report adheres to the requirements specified in the Consent Order at Attachment IV, Section E.2.

Tasks Completed

In compliance with the May 1, 1997 deadline Envirite submitted to the Agency a draft of a work plan whose objectives are to determine the long-term stability and permeability of the landfill treatment residue (LTR).

With the exception of revising the draft workplan, the remainder of May was spent with Envirite's consultants in developing a response to the RFI Supplement, PHERE, and Media Protection Standards proposal to meet the June 1 deadline for presenting these documents in response to the Agency's final comments of April 25, 1996 concerning the RFI Phase I Interim Report.

Tasks Not Completed

Please refer to "Problem Areas"

Sampling/Analytical Results

Groundwater monitoring results Quarter 2, 1997 were sent to you by Aaron Environmental in a letter dated June 3, 1997. There are no other sampling/analytical results pertinent to the RFI that have not previously been submitted.

Problem Areas

Quality control data relating to the analytical results of the soil gas sampling project of August, 1996 are still outstanding. Therefore, they were not included as part of the data validation report section of the RFI Supplement. On March 20, 1997 I contacted the laboratory — Target Environmental Services, Inc. (Target) — and requested a copy of the complete raw data package for the project. By March 25 I received from Target approximately 30 pages

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of data. In consultation with Mr. Greg Lawrence of EAS Laboratories (EAS), I determined that the data package was incomplete.

In a letter (copy enclosed) dated April 2, 1997 addressed to Dr. Brian Abraham (Target) I identified the specific type of information that I needed, and I stated several questions for which I was seeking answers. In his letter (copy enclosed) of April 14, 1997 Dr. Abraham answered my questions, but he did not provide any additional data. Upon receiving Dr. Abraham's letter, I contacted Mr. Tim Niblett (Target) and asked when the data would be forthcoming. Mr. Niblett reported that Target would be unable to provide the data for at least three weeks, since the lab instrument that was storing the data was going to be shipped to an off-site location for use in an environmental project. On May 22 I called Mr. Niblett to request an update of this matter. He said that the instrument had still not been returned from the field. On June 4 I called Mr. Niblett again, and I learned that the instrument would be in the field for an additional three weeks. I am hopeful that I will receive the data shortly thereafter.

As noted in the June 4 cover letter that accompanied the data validation report for the UST project, a few more bits of information must be provided to the validator by the laboratory, EAS Laboratories. Having consulted with Mr. Lawrence (EAS) this afternoon I believe that the outstanding information will be in the hands of the data validator tomorrow, and the validator will send the remainder of data validation report to you on or before June 20.

Before the end of this week, I plan to send you the second revision of the LTR stability/permeability work plan..

Projected Tasks

Upon finalizing the LTR stability/permeability workplan, Envirite anticipates that field sampling operations will commence two weeks hence. The workplan itself provides the remainder of scheduling activities.

Please do not hesitate to contact me if you require additional information..

Very truly yours,

William R. McTigue Jr.

William R. McTigue, Jr.
Director, Environmental Affairs

cc: C. Brammer, 1st Selectman, Thomaston
D. Duva, CT DEP
F. Marrazza, Environ
T. Mueller, Thomaston WPCA

ENVIRITE CORPORATION
TECHNOLOGY FOR THE ENVIRONMENT

April 2, 1997

Dr. Brian Abraham (410) 992-6622 By Telecopier
Target Environmental Services, Inc.
9180 Rumsey Road
Columbia, MD 21045

Re: Target Job Code ENW001
Soil Gas Sampling at Envirite Corporation's Thomaston, CT Landfill in August, 1996

Dear Brian,

As a follow-up to your request during our telephone conference this morning, this letter specifies the additional quality control-related raw data that I am seeking from your laboratory.

On March 20 I contacted Ann Ackerman and asked her to send me a copy of the complete raw data package relating to the project. Ms. Ackerman explained that ENVIRON was Target's customer for the project, and that she could release the raw data to me only if so directed by ENVIRON. At my request, Alan Kao (ENVIRON) asked Ms. Ackerman to send a copy of the raw data package to me. Last week I received from Ms. Ackerman a 29-page data package. Uncertain that the package was complete, I then called Tim Niblett. As you know, my conversation with Tim led to today's teleconference.

The soil gas sampling project was performed in response to a Consent Order between Envirite and U.S. EPA, Region I, which requires Envirite to perform a RCRA Facility Investigation (RFI) of its Thomaston, CT landfill. You analyzed soil gas samples starting in late August, 1996 and summarized the analytical results. The summary was sent to EPA in October, 1996. The analytical data generated from the soil gas project must be validated by a third party, and judgments regarding data validity must be documented and submitted to the Agency.

With the assistance of Greg Lawrence (EAS Laboratories) I reviewed the 29-page data package and have concluded that, at a minimum, I need the following raw data:

- initial calibration data;
- chromatograms for the entire sample universe, including sample duplicates;
- spectra for all reported compounds; and
- certified values for all performance evaluation (PE) samples.

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I also request documentation that can be used to resolve the situations and questions described below.

- Some numerical values in Target's analytical summary report are not qualified, even though they are less than the practical quantitation limit (PQL). Can Target provide documentation explaining why a "j" flag is not specified in such instances?

- There are instances where quantitation reports for different samples indicate the presence of a compound at a concentration exceeding the PQL (e.g. 1,2,3-trichloropropane), but the summary report indicates "ND" for the compound. Why is this so?

- The quantitation reports show that, for numerous field samples, the compounds 1,2,3-trichloropropane and *m&p* xylene are detected at fairly consistent concentrations. Also, both compounds exceed the PQL, but their values are not stated in the summary report. Please explain.

- The Spike Recovery and RPD Summary Report indicates that equipment blank sample EQB2MS.D was spiked. The sample was not spiked with the two primary analytes of concern, namely tetrachloroethylene and vinyl chloride. Is it not good laboratory practice to spike a sample with the target compounds, especially when there are only two such targets?

- The Continuing Calibration Report indicates a value of zero for target parameter tetrachloroethylene. Are there any data indicating that continuing calibration verification for this compound was performed?

- Do you have any data indicating that soil gas samples were spiked? Do lab procedures or physical factors preclude such a practice? Please explain.

- The chromatograms for samples I7-42DUP, I7-42 and Method Blank 1 show an unidentified peak next to peak 14S. Please provide data that identify this peak, or explain why this question is irrelevant.

I trust that this letter clarifies the type of raw data that I need. I look forward to speaking to you before week's end to determine the availability of data and/or responses to my questions.

Thank you for your attention in this matter.

Very truly yours,

Bill McTigue

William R. McTigue, Jr.
Director, Environmental Affairs

cc: T. Niblett, G. Lawrence, A. Kao

Target Environmental Services, Inc. *Small Business Enterprise Established 1982*
"Leader in Mobile Laboratory and Direct Push Sampling Services"

April 14, 1997

Mr. Bill McTigue
Envirite
620 West Germantown Pike
Suite 250
Plymouth Meeting, PA 19462

Dear Bill,

Please find enclosed the requested data package including:

- initial calibration data
- chromatograms for the entire sample universe, including sample duplicates
- spectra for all reported compounds
- certified values for all performance evaluation samples in terms of the certificates of analysis for the standards used for 1. Calibration, 2. Surrogates, 3. Internal Standards, 4. SPCC/CCC compounds, 5. BFB tune solution, etc. Please indicate if there is something further needed regarding PE information, i.e., EPA PE sample data.

Additionally, to answer specific questions relating to your facsimile transmission of 4/2/97,

- Regarding the utilization of a "j" flag:

  The use of qualifiers for analytical data has come from the EPA CLP Program. Target is not in the EPA CLP Program, in fact many laboratories have made the decision to no longer be a "CLP Lab" due to the financial and technical limitations imposed by the CLP Program. Target does not use qualifiers in our data because we have found them to be confusing and not useful to our end clients. For example, any detection between the MDL and PQL that would otherwise carry a "j" flag would mean the following:

  a) there is a 99% statistical probability that the compound concentration is not zero since it was detected above the MDL
  b) there is no a 99% statistical probability that the lab has any confidence in the quantified numerical concentration associated with that analyte since it is detected below the PQL

  Therefore, the laboratory is statistically confident the concentration is not zero, but not confident in what the actual concentration is. More specific to this work scope, the compounds in question were not target compounds and should have never been forwarded in the raw data package since they are irrelevant to the work scope. The raw data was forwarded when I was not present without my authorization or review. This was done in order to help answer your questions in an expedited fashion. This procedure will not be repeated. Every piece of analytical data leaving our lab must be reviewed by me otherwise it should be disregarded. This is especially relevant in view of the following question and explanation.

Target Environmental Services, Inc. *Small Business Enterprise Established 1982*
"Leader in Mobile Laboratory and Direct Push Sampling Services"

- Regarding the quantification report showing a detect for 1,2,3-trichloropropane:

  Firstly, see the above paragraph regarding the review of the submission of the raw data from which this question has arisen. Secondly, the mass spectra for one of our surrogate compounds (bromofluorobenzene) and the analyte in question (1,2,3-trichloropropane) have similar retention times 21.78 versus 21.88 and similar mass spectral daughter ions (m/z = 75). Since all sample matrices contain the surrogate bromofluorobenzene, all non-reviewed analytical data will show a detect not only for bromofluorobenzene as the surrogate, but also for 1,2,3-trichloropropane as a target compound due to similar retention times and the fact that m/z 75 is a daughter ion for bromofluorbenzene, but a primary characteristic ion for 1,2,3-trichloropropane.

- Regarding the quantification or 1,2,3-trichloropropane and m&p-xylenes:

  See previous explanation for 1,2,3-trichloropropane. Again, for m&p-xylenes, the raw data was printed out without review. Our PQL for m&p-xylenes is indicated at 10 ug/L according to our report. Since we do not use "j" flags for reasons stated elsewhere in this document, and since the m&p-xylene isomers (as well as the 1,2,3-trichloropropane) were not analytes that required reporting for this job in either the proposal or work plan the data was not reviewed by myself. I would like to state that there has been an internal memorandum sent to all employees of Target that no GC/MS data is to leave our laboratory without my review and signature.

- Regarding the spike recovery performed n EQB2MS and why it was not spiked with the analytes of concern:

  Target follows EPA Method 8260 protocol as closely as possible for the analysis of soil gas. Since EPA Method 8260 suggests the use of the following analytes (Section 5.13 Method 8260A, September 1994):

  1,1-Dichloroethene
  Benzene
  Trichloroethylene
  Toluene
  Chlorobenzene

  EPA suggests this suite of compounds because their physiochemical properties cover the wide range of analytes analyzed by using Method 8260. We have utilized other MS/MSD compounds on other workscopes when it is specified in the work plan. We have found through experience that it is extremely important to follow the letter of the contract and not perform the analytical technique with a variation unless it is written in the work plan and has been signed off by the client. I fully agree that using the compounds of interest is a good alternative, however, you must realize that a spiking experiment, especially in soil gas, is limited by the experiment. The matrix interferences inherent in a given sample matrix based upon the length of time the contaminant is in contact with the matrix and physical limitations such as the electron sharing through pi bonding with the soil matrix, the interaction of moisture around the molecular species preventing effective analyte transfer into the analytical equipment, and numerous other physical parameters in effect in the actual sample matrix are not accounted for in any spiking experiment

since the spiked compounds have not undergone the same indigenous conditions. I have seen no scientific data on spiking experiments on soil gas matrices that would suggest that the use of the actual analytes would have resulted in more accurate or precise measurements or indicate and "out-of-control" condition. In fact the use of several compounds is a better technique to indicate how the analytical system is responding to a whole suite of compounds which is a better technique to identify "problematic" sample matrices.

- Regarding the Continuing Calibration Report indicating a value of zero for tetrachloroethylene:

  Tetrachloroethylene is not a required system performance check standard or calibration check compound for Method 8260. It is important in all methodology to track system performance from day to day using known compounds and reference values. It is for this reason that EPA guides laboratories in recommending, or even mandating, the use of certain compounds as SPCC, CCC, surrogates, MS/MSD compounds, etc. Although some of the wording in EPA Methodology is loose allowing the individual laboratory some flexibility in designing their analytical program, the requirement for the SPCC and CCC compounds is not loose. The terminology used in the method is "the CCC compounds *are*" (Section 7.3.5, USEPA Method 8260A, September 1994), in other instances in EPA methodologies where there is flexibility, the wording would be "the compounds should be" or "recommended compounds", etc.

- Regarding spiking the soil gas samples:

  The soil gas samples were injected into a purge and trap chamber which contained 10 mL of reagent water along with internal standards and surrogates for every sample. QC samples also included MS/MSD spikes. The answer to this question is yes all samples were spiked with internal standards and surrogates through injection of the standards into the water matrix. Since the water was purged, only the volatilized fraction (or gaseous fraction) of injected standards were introduced into the GC/MS system, and since the spiking quantities are known, the calibration curve are reflective of gaseous components and this data should be considered gaseous data.

- Regarding the unidentified peak in samples I7-42DUP, I7-42 and the Method Blank next to peak 14S:

  This compound is pentafluorobenzene which is an alternative internal standard in our internal standard mixture. We do not use this as one of our internal standards because: 1,4-difluorobenzene is one of our internal standards and it elutes close to pentafluorobenzene. Additionally, pentafluorobenzene has a primary characteristic ion of 168 and widening our scan range to incorporate this compound at this retention interval would compromise sensitivity to other analytes. This peak contains the daughter fragmentation ions from the molecular ion of 168. This peak will appear in all data since it is contained in the internal standard mixture.

Data Validation Report

for

Envirite - Thomaston, Connecticut

June 23, 1997

By:
Althea L. Lindell - Data Validator

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Data Validation Report

(June 3, 1997; Amended June 18 and June 23, 1997)

Mr. Tom Stark
GZA GeoEnvironmental, Inc
27 Naek Road
Vernon, Connecticut 06066

RE:
SDG#9605880
EAS - Plymouth Meeting, Pennsylvania
Envirite - Thomaston, Connecticut
Organic/Inorganic Data Validation

Summary of Samples and Required Analysis

Sample	Lab ID	Matrix	VOA	ABN	PCB/Pest.	Herb.	Metals*	CN*	Sulfide	TPH
Back Fill Soil "A"	9605880	Soil	x	x	x	x	x	x	x	x
Back Fill Soil "B"	9605881	Soil	x	x	x	x	x	x	x	x
West UST Comp. 0-5'	9605882	Soil	x	x	x	x	x	x	x	x
West UST Comp. 5'	9605883	Soil	x	x	x	x	x	x	x	x
West Ust Bottom Comp.	9605884	Soil	x	x	x	x	x	x	x	x
West UST Sidewall Comp.	9605885	Soil	x	x	x	x	x	x	x	x
West UST Sludge	9605886	Soil	-----	-----	-----	-----	(TCLP)	-----	-----	-----
East UST Comp.0-5'	9605892	Soil	x	x	x	x	x	x	x	x
East UST Sidewall Comp.	9605893	Soil	x	x	x	x	x	x	x	x
East UST Rolloff Comp.	9605894	Soil	-----	-----	-----	-----	(TCLP)	-----	-----	-----
East UST Bottom G-1	9605895	Soil	x	x	x	x	x	x	x	x
East UST Bottom G-2	9605896	Soil	x	x	x	x	x	x	x	x
East Ust Field Blank	9605897	Water	x	x	x	x	x	x	x	x
West UST Field Blank	9605898	Water	x	x	x	x	x	x	x	x
Trip Blank	9605899	Water	x	-----	-----	-----	-----	-----	-----	-----
PE (ERA 230)	9605900	Soil	x	x	x	x	x	x	x	x

* Soils - Total and Leachable

I. Introduction

This data validation report is based on a Tier I review of SDG # 9605880 along with a Tier III review of 10% of the sample data. There were ten (10) soil samples, two associated (2) field blanks and one (1) trip blank collected October 24, 1996 - November 1, 1996 by Aaron Environmental Services from the Envirite Site in Thomaston, Connecticut. Therefore, one soil sample (West UST Composite 5' - 9605883) was validated using a Tier III review. The data validation was performed using Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analysis, December 1996 and the Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses (U.S. EPA June 13,1988, revised February 1989). The laboratory's approved QAPP and the criteria in the specific non-CLP Methods were used to evaluate the data. The analyses were performed in accordance with:

1) APHA Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992.
2) Clean Water Act, List of Approved Test Procedures, 40 CFR.
3) EPA Test Methods for the Evaluation of Solid Waste, SW-846, 3rd Edition, December 1987.

The data was evaluated based on the following parameters for organics analysis:

- • Overall Evaluation of the Data and Potential Usability Issues
- • Data Completeness
- • Preservation and Technical Holding Times
- ☑ GC/MS Instrument Performance Check (Tuning)
- • Initial and Continuing Calibrations
- • Blanks
- • Surrogate Compounds
- ☑ Internal Standards
- ☐ Matrix Spike/Matrix Spike Duplicate
- ☐ Field Duplicates
- ☐ Sensitivity Check
- • PE Samples Accuracy Check
- • Target Compound Identification
- • Compound Quantitation and Reported Quantitation Limits
- ☐ Tentatively Identified Compounds
- ☐ Semivolatile Clean-up
- • System Performance

The data was evaluated based on the following parameters for the inorganics analysis:

- • Overall Evaluation of the Data and Potential Usability Issues
- • Data Completeness
- • Preservation and Holding Times
- ☑ Calibration
- • Blanks
- ☐ ICP Interference Check Sample
- • Matrix Spike Analysis
- • Laboratory Duplicate Sample Analysis
- ☐ Field Duplicate Sample Analysis
- • Laboratory Control Sample Analysis
- ☑ Furnace Atomic Absorption Sample Analysis
- ☐ ICP Serial Dilution Sample Analysis
- ☐ Detection Limits
- • Sample Result Verification

☑ All Criteria were met for this parameter; and therefore the associated worksheets have not been included.

☐ Not applicable to requirements of the method and/or the approved laboratory QAPP; and therefore the associated worksheets have not been included.

Listed below are the Region I EPA required tables for a Data Validation Report:

1) Table I: Recommendation Summary Table - summarizes validation recommendations
2) Table II: Overall Evaluation of Data - summarizes site DQOs and potential usability issues.
*3) Table III: Tentatively Identified Compounds - summarizes volatile and semivolatile compounds tentatively identified by GC/MS.
4) Data Summary Tables

* TICs were not required as part of the analysis; and therefore this table was not included.

II. Overall Evaluation of the Data and Potential Usability Issues

- Data Use - Soils around underground storage tanks (USTs) were evaluated in order to determine if they met the most stringent clean-up standards referenced in the UST excavation work plan. Analytical parameters were based on the site specific parameter list.

VOA

Volatile sample results were qualified based on both analytical and sampling error. It should be noted that the laboratory does not have control over the sampling error.

Sampling Error - Lack of confirmation of preservation.

- Consequence - Due to the possibility that the samples were not kept cool at 4^0 C the volatiles results and detection limits have been qualified as estimated to indicate the possibility of a negative bias. This may potentially impact the assessment of the soil results in order to evaluate if the soils meet the clean-up standards especially for the compounds trichloroethene and tetrachloroethene since the laboratory's quantitation limit is close to the lowest clean-up standard.

Analytical Error - Missed compounds, benzene and 1,2-dichloroethane, in PES, CCC results for acetone, MEK, MiBK, and 2-hexanone exceed the %D criteria of <30%, Acetone contamination found in associated method blanks, and methylene chloride contamination in associated field blank.

- The detection limits in the associated sample have been qualified as not usable "R" due to possibility of false negatives for benzene and 1,2-dichloroethane. This may potentially impact the assessment of the data.
- The non detects for acetone, MEK, MiBK, and 2-hexanone have been qualified as estimated (UJ) in the validated sample due to the possibility of a negative bias. This may potentially impact the assessment of the data.
- The acetone detected in the associated sample has been qualified as not detected "U" due to the probability of laboratory contamination. The methylene chloride in the sample has been marked with a "EB" code to indicate it was also detected in the associated field blank. This low level contamination does not appear to impact the evaluation of the sample data.

ABN

Sampling Error - Lack of confirmation of preservation.

- The data has not been qualified since the sample integrity is judged to be acceptable given the time of year and the lack of volatility of this group of compounds.

Analytical error -CCC results for n-nitrosodimethylamine exceed %D Criteria of <30%.

- The detection limit for n-nitrosodimethylamine in the validated sample has been qualified as estimated "UJ" due to the possibility of a negative bias. This may potentially impact the assessment of the data.

PCB/Pesticides/Herbicides

Sampling Error - Lack of confirmation of preservation.

- The data has not been qualified since the sample integrity is judged to be acceptable given the time of year and the lack of volatility of this group of compounds.

Analytical error - High breakdown of endrin in the PEM, CCC results for DDD, Dieldrin, MCPA, Dichloroprop, 2,4-D, and 2,4-DB exceed %D criteria of 15%.

- The endrin detection limits in the validated sample, 9605883, have been qualified as unusable due to the possibility of false negatives. This may potentially impact the assessment of the data.
- DDD, dieldrin, MCPA, Dichloroprop, 2,4-D, and 2,4-DB were not detected in the validated sample. The detection limits have been qualified as estimated "UJ" due to the possibility of a negative bias. This may potentially impact the assessment of the data.

Inorganics

Sampling Error - Lack of confirmation of preservation

- The data has not been qualified since the sample integrity is judged to be acceptable given the time of year and the non-volatility of this group of compounds.

Analytical Error - Matrix spike recoveries out of acceptance for Total Hg, Total Sb, Total Cu, and Total Tl, Duplicate %RPD out of acceptance for Total Ag and Total Sulfide, LCS recovery low for Ag, PES Recovery low for Ag, PES Miss for Sn and V, Blank contamination for Be.

- The positive results and detection limits for Total Hg, Sb, Cu, and Tl have been qualified as estimated "J" due to the possibility of a negative bias. This may potentially impact the assessment of the data.
- The positive results and detection limits for Total Ag and Total Sulfide have been qualified as estimated "J" due to the possibility of measurement error. This may potentially impact the assessment of the data.
- The result for Ag has been qualified as estimated "J" due to the possibility of a negative bias. This may potentially impact the assessment of the data.
- The non detects for V and Sn have been qualified as not usable "R" due to the possibility of false negatives. This could potentially impact the evaluation of the sample data.
- The beryllium result has been qualified as not detected "U" since the blank action level exceeded the result in the associated sample. This low level contamination could potentially impact the evaluation of the sample data.

III. Data Completeness

Missing Items as of 6/18/97:

PCB/Pesticide Data

Response to Fax 5. The raw data for lab sample #9605895 (East UST Bottom G-1), and the check standard, Aroclor 1016 mid, are missing due to computer error.

Inorganics Data

Response to Fax 3.

IV. Preservation and Technical Holding Times

A copy of the chain of custodies was received on 6/2/97. Upon review it was determined that the preservation code was missing as well as the analysis required. The Project Manager, Bill McTigue was contacted on 6/3/97. He said that after speaking with a laboratory representative there was no evidence of sample preservation upon receipt by the laboratory. The Field Summary Notes do not indicate the samples were preserved in the field. Sample 9605883 is a soil sample; and therefore the only required preservation is to be kept cool at 4^0 C.

VOA
The sample was analyzed well within holding time, but since there is no documentation as to whether the sample was kept at 4^0 C or not in the field or during transport and volatiles readily disappear at elevated temperatures the data is judged to be estimated (J).

Problem	Action
No Documentation of Preservation	J - All Data

ABN/PCB/Pesticides/Herbicides
The sample was extracted three to four days after collection and analyzed one to two days after extraction. The laboratory was well within EPA holding time criteria. Semivolatiles are not as likely to disappear if the temperature was above 4^0 C. In the professional judgment of the validator the sample data does not require qualification.

Inorganics
The samples were digested, prepared and analyzed within fourteen days of collection. Using professional judgment the data has not been qualified.

V. Initial and Continuing Calibrations
The laboratory's QAPP (Section 10) specifies that the acceptance criteria between the initial calibration response factors and continuing calibration check response factors for any analyte is 30%D for GC/MS analysis and 15%D for GC analysis.

VOA
The compounds that exceeded the %D criteria of <30%D are summarized in the table below.

Compound	%D CCC 11/6/96 - Low Soil	Action	Affected Sample
Acetone	45.7%	NDs - UJ	9605883
2-Butanone (MEK)	40.2%	NDs - UJ	9605883
4-Methyl-2-Pentanone (MiBK)	38.2%	NDs - UJ	9605883
2-Hexanone	79.6%	NDs - UJ	9605883

These compounds were not detected in sample 9605883. The detection limit has been qualified as estimated (UJ).

ABN
The compounds that exceeded the %D criteria of <30%D are summarized in the table below.

Compound	%D CCC 11/7/96	Action	Affected Sample
n-Nitrosodimethylamine	36.5%	NDs - UJ	9605883

This compound was not detected in sample 9605883. The detection limit has been qualified as estimated (UJ).

Pesticide/PCB
The PEM indicated a high (44%) breakdown of endrin. The detection limit for endrin has been qualified as not usable "R" in the validated sample 9605883.

The compounds that exceeded the %D criteria of <15%D are summarized in the table below.

Compound	%D 11/8/96	Action	Sample
DDD	19%	NDs-UJ	9605883
Dieldrin	19%	NDs-UJ	9605883

These compounds were not detected in sample 9605883. The detection limit has been qualified as estimated (UJ).

Herbicides
Listed in the table below are the compounds that exceeded the %RSD and %D criteria of <15% on the primary column. The confirmational column QC was not evaluated since the validated sample did not need to be confirmed.

Compound	%RSD IC	%D CC 11/6	Action	Sample
DCAA	15.8%	<15% (O.K.)	A	9605883
MCPA	15.5%	16%	NDs - UJ	9605883
Dichloroprop	16.5%	65%	NDs - UJ	9605883
2,4-D	15.2%	48%	NDs - UJ	9605883
2,4-DB	<15% (O.K.)	90%	NDs - UJ	9605883

The %RSD for the surrogate, DCAA, was above the acceptance criteria. The recovery in the associated sample of 125% was well within established acceptance limits of 60-140%; and therefore is judged to be acceptable. Please note the laboratory did not submit its own acceptance limits.

Inorganics
The approved laboratory QAPP (Section 10) states that the acceptance criteria for metals analysis is +/- 20%D between the true and reported values for the calibration standards. This criterion was met for all analytes.

VI. Blanks

The maximum level of contamination in the associated method blanks, trip blanks, and field blank is summarized in the tables below for VOA, ABN, and inorganics:

VOA

Compound	Blank Type	Max. Conc. (ug/l)	Action Level (ug/kg)	CRQL (ug/kg)
Acetone	Method	1.6	16	10
Methylene Chloride	Field	1.4	NA	10

Sample 9605883 contained acetone at 3.2 ug/kg. Acetone is a common laboratory contaminant and therefore the 10x rule applies. Sample 9605883 results for acetone have been qualified as 10 U since they were less than 10x the method blank contamination and were detected below the quantitation limit. The associated field blank also contained methylene chloride at 1.4 ug/l. Sample 9605883 contained methylene chloride at 2.4 ug/kg. Since water blank results can not be applied to soil samples the methylene chloride results have been marked with an "EB" code to indicate that there was contamination in the associated field blank.

ABN

Compound	Blank Type	Max. Conc. (ppb)	Action Level (ug/kg)	CRQL (ug/kg)
Di-n-Butylphthalate	Method	55 ug/kg	550	330

Di-n- butyl phthalate is a common laboratory contaminant; and therefore the 10x rule applies. The sample result of 3400 ug/kg, however, exceeds the action level; and therefore has not been qualified.

In the associated method blank, 1104SBL2, diethylphthalate was also reported. However, the retention time differed from the associated CCC by greater than 0.5 minutes and the spectrum did not meet the criteria of the validation guidelines. Therefore the reported value should be qualified as not detected (U).

Inorganics
Listed in the table below are the blanks that contained target analytes above the detection limit.

Analyte	Blk Type	Max. Conc.	Action Level	CRQL
Be	CCB	0.005 mg/l	0.025 mg/l (0.50 mg/kg)	0.40 mg/kg
Zn	Prep	0.040 mg/l	.200 mg/l (4.0 mg/kg)	2.0 mg/kg

Sample 9605883 contained Be and Zn at 0.42 mg/kg and 42 mg/kg respectively. The Be result has been qualified as not detected "U" since it is less than the action level. The Zn result has not been qualified since it is greater then the action level.

VII. Surrogate Spike Recoveries

VOA
Sample 9605883 had two surrogates outside of recovery limits. See table below:

Surrogate	% Rec.	QC Limits	Action
BFB	114%	59-113%	A- NDs & J-+ Detects
DCE-d4	130%	70-121%	A- NDs & J-+ Detects

The recoveries for BFB and DCE-d4 exceeded the recovery limits. The associated sample, 9605883, has not been qualified since all of the results were below the quantitation limit.

ABN
All criteria were met.

VIII. Matrix Spike/Matrix Spike Duplicate

Although the matrix spike and matrix spike duplicate was not performed on the validated sample for the organics analysis it should be noted that in the pesticide analysis there was no recovery for gamma BHC in the spiked sample which was part of the same sample batch. The laboratory has been asked to look into this discrepancy (Fax #5).

Inorganics
A matrix spike and a matrix spike duplicate was performed for each parameter for the soil matrix. Listed in the table below are the spikes and duplicates that did not meet the criteria of 75-125% recovery and 20% RPD respectively.

Analyte	% Rec.	RPD	Action
Ag	75-125% (O.K.)	26%	J - + Detect, UJ - NDs
Hg	62%	<20 % (O.K.)	J-+Detects, UJ - NDs
Sb	38%	<20 % (O.K.)	J-+Detects, UJ - NDs
Cu	60%	<20 % (O.K.)	J-+Detects, UJ - NDs
Tl	41%	<20 % (O.K.)	J-+Detects, UJ - NDs
Sulfide	75-125% (O.K.)	37%	J-+Detects, UJ - NDs

IX. LCS

Inorganics
The laboratory control sample (LCS) analyzed along with the metals was a PE sample from a commercial vendor. Listed in the table below are the analyte recoveries that were outside of the acceptance criteria.

Analyte	Rec. (mg/kg)	QC Limits	Action	Sample
Sn	170 mg/kg	63.3-145 mg/kg	J-+ Detect, A - NDs	9605883
Ag	23.0 mg/kg	51.4-87.7 mg/kg	J- + Detect, R-NDs	9605883

X. PE Samples - Accuracy Check

The PE sample was obtained from a commercial vendor, Environmental Resource Associates (ERA), and the Performance Acceptance Limits™ closely approximate the 95% confidence interval. They are based on plus or minus two standard deviations from the mean; and therefore are more stringent than the EPA criteria. The PES results have been evaluated based on plus or minus three standard deviations from the mean in order maintain consistency with the EPA criteria.

VOA

In the initial volatiles analysis the compounds benzene and 1,2-dichloroethane were missed. The laboratory had identified these compounds as unknowns. After pointing out this error to them the laboratory reissued a corrected report. However, the results for these compounds in the original sample data associated with this PES is still subject to false negatives. As a result the detection limits for benzene and 1,2-dichloroethane have been qualified as not usable "R". See table below.

Compound	%Rec.	QC Limits	Action	Sample
1,2-Dichloroethane	Missed (0%)	78.2-133 ug/kg	R - ND	9605883
Benzene	Missed (0%)	25.8-42.9 ug/kg	R-ND	9605883

Acetone was detected in the PES sample at 4.3 ug/kg. It is a contaminant that was also detected in the associated blanks. The sample data has already been evaluated and qualified based on the blank results.

ABN

The target analyte, di-n-butylphthalate was detected in the PES at 700 ug/kg even though it was not spiked into this sample. It is a contaminant which was also found in the associated blanks. As a result di-n-butylphthalate is believed to be a laboratory contaminant. The associated sample data has already been evaluated based on the blank results for this compound.

PCB/Pesticides

The PES result for gamma-chlordane was below the ERA acceptance limits. However, when the plus or minus three standard deviations criteria was applied the reported value fell into the acceptance limits (100-317 ug/kg). The data therefore has not been qualified. See table below.

Compound	Conc.	ERA QC Limits	EPA QC Limits	Action
gamma-Chlordane	120 ug/kg	136-281 ug/kg	100-317 ug/kg	None

Inorganics

The PES results for V and Sn were below the quantitation limit (BQL) and below the acceptance limit. The PES result for Ag was below the acceptance limit. The PES result for Se was above the acceptance limit. The acceptance limits were determined using plus or minus three standard deviations. The non detect results for V and Sn in the associated sample have been qualified as not usable "R" due to the possibility of false negatives. The positive result for Ag has been qualified as estimated due to the possibility of a negative bias. The non detect for Se has not been qualified. See the table below.

Analyte	Rec. (mg/kg)	QC Limits	Action	Sample
V	< 20	46-147 mg/kg	J-+ Detect, R - NDs	9605883
Sn	< 30	45-128 mg/kg	J-+ Detect, R - NDs	9605883
Ag	16	56-110 mg/kg	J- + Detect, R-NDs	9605883
Se	98	45-93 mg/kg	J-+ Detect, A - NDs	9605883

XI. Target Compound Identification

PCB/Pesticide & Herbicides

During the Tier I review it was noted that the confirmational analysis was not provided for the sample and some of the quality control runs. The laboratory was asked to provide this data in order to complete the package (see Fax# 2). The PCB/Pesticide & Herbicide result for 9605883 was non detect therefore the laboratory explained they did not need to include the confirmational analysis. However, for the PCB analysis the QC run data was included only for the confirmation column (or identification column) and not the quantitation column. In order to verify the PCB results the data for the quantitation column should be submitted.

XII. System Performance

PCB/Pesticide

The confirmational column had a high baseline and drift. However, the quantitation column looked acceptable. The laboratory should perform system maintenance and check the detector and/or bake out the column. The fact that the confirmation column was used for PCB identification as well as to verify positive results supports the need to include both the quantitative column data and the confirmation column data in order to verify the sample results for PCBs.

If you have any questions concerning this report please contact Althea L. Lindell at (207) 223-9966.

Sincerely,

Althea L. Lindell

Althea L. Lindell
Data Validator

GZA

TABLES

Table 1 - Recommendation Summary Table for Validated Sample 9605883 Qualifiers

Parameter	Matrix	Qualifier
VOA	Soil	J^1, J^2, U, EB, R
ABN	Soil	J
PCB/Pesticide	Soil	R, J
Herbicides	Soil	J
Inorganics	Soil	R, U, J^1, J^2

VOA

J^1 - No evidence of preservation - estimate (J,UJ) all results and detection limits..
J^2 - CCC results for acetone, MEK, MiBK, and 2-Hexanone exceed criteria (>30%D) - UJ all non-detects.
U - Acetone result qualified as non-detect "U" due to method blank contamination.
EB - Methylene chloride detected in the equipment blank.
R - PES - missed 1,2-dichloroethane and benzene - R detection limits.

ABN

J - n-Nitrosodimethylamine exceeded %D criteria (>30%D) - UJ non-detect.

PCB/Pesticide

*R- Endrin detection limit due to high % breakdown.
J - %D>15% for Dieldrin and DDD - UJ non-detects

Herbicides

J - MCPA, Dichloroprop, 2,4-D, and 2,4-DB - exceed calibration criteria of 15% for the analytical column. UJ all non-detects.

Inorganics

R - PES missed for Sn and V - "R" non-detects.
U - Blank contamination for Be - result qualified as not detected.
J^1 - Matrix spikes and duplicates outside of acceptance criteria for Total Ag,Total Hg, Total Sb, Total Cu,Total Tl, and Total Sulfide J all results.
J^2 - Ag - LCS and PES recovery low - J sample result

Table II - Overall Evaluation of Data - Data Validation Memorandum

Volatile Organics					
DQO (List all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability**	Potential Usability Issues
		Analytical Error	Sampling Error*		
Determine level of soil contamination in order to decide whether or not to dispose of off-site.	Analytical Method: SW-846 - EPA Method 8260 Yes	Refer to qualifications in Table I: J [2] U, EB R	Refer to Qualifications in Table I: J[1]		➢ Reject detection limits for 1,2-dichloroethane and benzene due to missed PES Hit and possibility of false negatives ➢ Estimate detection limits for acetone, MEK, MiBK and 2-hexanone due to neg. bias of %D exceedance. ➢ Estimate all results due to neg. bias caused by potential lack of preservation. ➢ Acetone result is qualified as not detected due to contamination in laboratory blanks. MeCl result in sample is marked with EB due to contamination present in equipment blank.

* The evaluation of "sampling error" cannot be completely assessed in data validation.
** Sampling Variability is not assessed in data validation.

Validator: [illegible] Date: 6/23/97

EPA-NE - Data Validation Worksheet

Table II - Overall Evaluation of Data - Data Validation Memorandum

Semivolatile Organics					
DQO (List all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability**	Potential Usability Issues
		Analytical Error	Sampling Error*		
Determine level of soil contamination in order to decide whether or not to dispose of soil off-site.	Analytical Method: SW-846 - EPA Method 8270 Yes SW-846 - EPA Method 8080 Yes SW-846-EPA Method 8150 Yes	Refer to qualifications in Table I: J R, J J	Refer to Qualifications in Table I:		➢ Estimate non detect result for n-nitrosodimethylamine due to neg. bias of %D exceedance. ➢ Estimate detection limits for DDD and Dieldrin due to neg. bias of %D exceedance. ➢ Endrin result of non-detect is unusable due to negative bias caused by elevated %breakdown. Detection limit unusable due to possibility of false negatives. ➢ Estimate non-detect results limits for MCPA, Dichloroprop, 2,4-D, and 2,4-DB due to neg. bias of %D exceedance .

* The evaluation of "sampling error" cannot be completely assessed in data validation.
** Sampling Variability is not assessed in data validation.

Validator: Arthur L. Rockell Date: 6/23/97

EPA-NE - Data Validation Worksheet

Data Summary Table - Volatiles
Sample 9605883
(Sampled 11/1/96, Analyzed 11/6/96)

Compound	Quantitation Limit (ug/kg)	Result (ug/kg)	Qualifier
1,1,1-Trichloroethane	10	10 U	UJ
1,1,2,2-Tetrachloroethane	1.0	10 U	UJ
1,1,2-Trichloroethane	10	10 U	UJ
1,1-Dichloroethane	10	10 U	UJ
1,1-Dichloroethene	10	10 U	UJ
1,2-Dichloroethane	10	10 U	R
1,2-Dichloropropane	10	10 U	UJ
Dibromochloromethane	10	10 U	UJ
2-Chloroethyl vinyl ether	10	10 U	UJ
2-Hexanone	10	10 U	UJ
Acetone	10	3.2 J	10 UJ
Acrolein	100	100 U	UJ
Benzene	10	10 U	R
Bromodichloromethane	10	10 U	UJ
Bromomethane	10	10 U	UJ
Bromoform	10	10 U	UJ
cis-1,2-Dichloroethene	10	10 U	UJ
cis-1,3-Dichloropropene	1.0	1.0 U	UJ
Carbon Disulfide	10	10 U	UJ
Carbon Tetrachloride	10	10 U	UJ
Chloroform	10	10 U	UJ
Chlorobenzene	10	10 U	UJ
Chloroethane	10	10 U	UJ
Chloromethane	6.6	6.6 U	UJ
Ethylbenzene	10	10 U	UJ
Methylene Chloride	10	2.4 J	EB
2-Butanone (MEK)	10	10 U	UJ
4-Methyl-2-Pentanone	10	10 U	UJ
Styrene	10	10 U	UJ
trans-1,2-Dichloroethene	10	10 U	UJ
trans-1,3-Dichloropropene	1.0	1.0 U	UJ
tetrachloroethylene	10	10 U	UJ
Toluene	10	10 U	UJ
Total Xylenes	10	10 U	UJ
Trichloroethylene	10	10 U	UJ
Vinyl Acetate	10	10 U	UJ
Vinyl Chloride	10	10 U	UJ

Data Summary Table - Base/Neutral & Acid Compounds
Sample - 9605883
(Sampled 11/1/96,Extracted 11/4/96, Analyzed 11/7/96)

Compound	Quantitation Limit (ug/kg)	Result (ug/kg)	Qualifier
1,4-Dichlorobenzene	330	330 U	-----
2,4,5-Trichlorophenol	330	330 U	-----
2,4,6-Trichlorophenol	60	60 U	-----
2,4-Dichlorophenol	330	330 U	-----
2,4-Dinitrotoluene	330	330 U	-----
2,6-Dichlorophenol	330	330 U	-----
2-Chlorophenol	330	330 U	-----
2-Methylnaphthalene	330	330 U	-----
Acenaphthene	330	330 U	-----
Anthracene	330	8.6 J	-----
bis(2-ethylhexyl)Phthalate	330	39 J	-----
Butyl Benzylphthalate	330	330 U	-----
Total Cresol	990	990 U	-----
Dibenzofuran	330	330 U	-----
Diethylphthalate	330	330 U	-----
Di-n-octylphthalate	330	330 U	----
Di-n-butylphthalate	330	3400	-----
Fluoranthene	330	100 J	-----
Fluorene	330	330 U	-----
Hexachlorobenzene	330	330 U	-----
Hexachlorobutadiene	330	330 U	-----
Hexachloroethane	330	330 U	-----
m-Cresol	330	330 U	-----
Naphthalene	330	330 U	-----
Nitrobenzene	330	330 U	-----
n-Nitrosodimethylamine	100	100 U	UJ
n-Nitrosodiphenylamine	200	200 U	-----
o-Cresol	330	330 U	-----
p-Cresol	330	330 U	-----
Pentachlorophenol	1000	1000 U	-----
Phenanthrene	330	47 J	-----
Pyrene	330	82 J	-----
Pyridine	330	330 U	-----
Benzo(a)pyrene	330	57 J	-----
Benzo(b)fluoranthene	330	58 J	-----
Benzo(k)fluoranthene	330	63 J	-----

Data Summary Table - PCBs/Pesticides/Herbicides
Sample 9605883
(Sampled 11/1/96, Extracted 11/3/96 &11/5/96, Analyzed 11/6/96 & 11/7/96)

Compound	Quantitation Limit (ug/kg)	Result (ug/kg)	Qualifier
Aroclor 1016	33	33 U	-----
Aroclor 1221	33	33 U	-----
Aroclor 1232	33	33 U	-----
Aroclor 1242	33	33 U	-----
Aroclor 1248	33	33 U	-----
Aroclor 1254	33	33 U	-----
Aroclor 1260	33	33 U	-----
4,4'-DDD	4.0	4.0 U	UJ
4,4'-DDE	4.0	4.0 U	-----
4,4'-DDT	4.0	4.0 U	-----
Aldrin	2.0	2.0 U	-----
Dieldrin	1.0	1.0 U	UJ
Endosulfan Sulfate	4.0	4.0 U	-----
Endrin Aldehyde	4.0	4.0 U	-----
Endrin	4.0	4.0 U	R
Endrin Ketone	4.0	4.0 U	-----
Heptachlor	2.0	2.0 U	-----
Heptachlor Epoxide	2.0	2.0 U	-----
Methoxychlor	20	20 U	-----
a-BHC	0.40	0.40 U	-----
a-Chlordane	4.0	4.0 U	-----
Endosulfan I	4.0	4.0 U	-----
b-BHC	2.0	2.0 U	-----
g-Chlordane	4.0	4.0 U	-----
Endosulfan II	4.0	4.0 U	-----
d-BHC	2.0	2.0 U	-----
g-BHC (lindane)	2.0	2.0 U	-----
Chlordane	30	30 U	-----
Toxaphene	40	40 U	-----
2,4,5-T	10	10 U	-----
2,4,5-TP	10	10 U	-----
2,4-D	50	50 U	UJ
2,4-DB	50	50 U	UJ
Dalapon	1000	1000 U	-----
Dicamba	10	10 U	-----
Dichloroprop	50	50 U	UJ
Dinoseb	10	10 U	-----
MCPA	10000	10000 U	UJ
MCPP	10000	10000 U	-----

Data Summary Table - Inorganics
Sample 9605883
(Sampled 11/1/96, Digested 11/5/96-11/6/96, Analyzed 11/5/96-11/12/96)

Analyte	Quantitation Limit (mg/l)*	Result (mg/l)**	Qualifier
Silver, Leachate	0.035	0.035 U	
Arsenic, Leachate	0.050	0.050 U	-----
Barium, Leachate	1.0	1.0 U	-----
Beryllium, Leachate	0.0010	0.0010 U	-----
Cadmium, Leachate	0.0050	0.0050 U	-----
Cobalt, Leachate	0.050	0.050 U	-----
Chromium, Leachate	0.050	0.050 U	----
Copper, Leachate	0.20	0.20 U	-----
Mercury, Leachate	0.0020	0.0020 U	-----
Nickel, Leachate	0.030	0.030 U	-----
Lead, Leachate	0.015	0.015 U	-----
Antimony, Leachate	0.0050	0.0050 U	-----
Selenium, Leachate	0.050	0.050 U	-----
Tin, Leachate	1.5	1.5 U	-----
Thallium, Leachate	0.0050	0.0050 U	-----
Vanadium, Leachate	0.050	0.050 U	-----
Zinc, Leachate	1.0	1.0 U	
Silver, Total	0.70	1.2	J
Arsenic, Total	1.0	1.0 U	-----
Barium, Total	20	20 U	-----
Beryllium, Total	0.40	0.42	0.42 U
Cadmium, Total	0.10	0.44	-----
Cobalt, Total	1.0	4.8	-----
Chromium, Total	1.0	28	-----
Copper, Total	0.40	64	J
Mercury, Total	0.10	0.10 U	UJ
Nickel, Total	0.60	15	-----
Lead, Total	1.2	10	-----
Antimony, Total	10	10 U	UJ
Selenium, Total	1.0	1.0 U	-----
Tin, Total	30	30 U	R
Thallium, Total	0.40	0.40 U	UJ
Vanadium, Total	20	20 U	R
Zinc, Total	2.0	42	-----
Cyanide - Leachable	0.10	0.10 U	-----
Cyanide, Total	5.0	5.0 U	-----
Sulfide, Total	10	19	J
TPH	40	40 U	----

* Total - mg/kg

** Results for leachable: Ag and Zn were not verified since the data was not provided in the data package. The laboratory has been asked to submit the data (see fax 3).

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APPENDIX A

The data validator generates a Data Validation Report, applicable to Data Validation Tiers II and III, that consists of the following components in the order specified below: (Refer to Section 11 for a description of each of the Data Validation Report components).

1. Organic Regional Data Assessment/Inorganic Regional Data Assessment (ORDA/IRDA) Form
2. Data Validation Memorandum
   a. Narrative
   b. Table I-Qualifier Recommendation Summary Table
   c. Table II-Overall Evaluation of Data
   d. Table III-Tentatively Identified Compounds
   e. Data Summary Tables
3. Standard Data Validation Worksheets
   a. Manual
   b. Automated Data Review Reports (i.e., CADRE)
4. Support Documentation
   a. Copy of non-CLP analytical method, e.g., DAS methods, modified EPA methods
   b. Copies of EPA PES Score Reports and/or non-EPA PES results with Vendor PES QC Acceptance Limits
   c. Copies of Telephone Logs/Communication Forms for:
      - RSCC communications
      - Requests for laboratory data resubmissions/clarifications
      - Communications with samplers resolving sampling problems
      - Communications with TPO/Lead Chemist to report contractually-deficient data for rejection/reduced payment
      - Communications with EPA Site Manager concerning possible data rejection
      - EPA Site Manager authorization for alternate DV tier
   d. Copies of data supporting recommendations for reduced payment resulting from CSF Audit and/or PE sample result evaluation
   e. Original data to support recommendations for data rejection/non-payment identified from Tier II or Tier III data validation
   f. Copies of field sampling notes and/or field report supplied by field sampler
   g. Copies of EPA-approved amendments to QAPjP and/or SAP describing modified criteria to be used for validating site data
5. CSF Completeness Evidence Audit
6. DQO Summary Form

The data validator is responsible for implementing all corrective actions required by the contractor Lead Chemist in response to EPA-NE data validation oversight findings.

ENVIRITE CORPORATION
620 West Germantown Pike
Plymouth Meeting, PA 19462-

Location Collected: 198 Old Waterbury Rd. Thomaston, CT
Date Sample Collected: 11/01/1996
Sample Description: PE Sample
EAS Project Number: 1306-96
EAS Sample Number: 9605900
Date Sample Received: 11/02/1996

Parameter	Data	Quantitation Limit	Units	Analysis Date
Solid Pesticide/PCB Extraction				11/05/96
Cyanide, Total	170.	10.	mg/kg	11/05/96
Metal's Digestion for Solid Samples - Method SW-846-3050				11/06/96
Silver, Total	16.	3.5	mg/kg	11/11/96
Arsenic, Total	200.	10.	mg/kg	11/06/96
Barium, Total	490.	50.	mg/kg	11/12/96
Beryllium, Total	110.	2.0	mg/kg	11/11/96
Cadmium, Total	120.	5.0	mg/kg	11/08/96
Cobalt, Total	84.	5.0	mg/kg	11/11/96
Chromium, Total	99.	5.0	mg/kg	11/08/96
Copper, Total	140.	2.0	mg/kg	11/08/96
Mercury, Total	2.7	0.20	mg/kg	11/08/96
Nickel, Total	76.	3.0	mg/kg	11/08/96
Lead, Total	87.	6.0	mg/kg	11/08/96
Antimony, Total	BQL	50.	mg/kg	11/08/96
Selenium, Total	98.	20.	mg/kg	11/06/96
Tin, Total	BQL	30.	mg/kg	11/12/96
Thallium, Total	95.	10.	mg/kg	11/08/96
Vanadium, Total	BQL	20.	mg/kg	11/12/96
Zinc, Total	280.	10.	mg/kg	11/08/96
Base/Neutral and Acidic Extractable - Method SW-846-8270				11/04/96
Semi-Volatiles List - Thomaston RFI - Method 8270				
2,4,5-Trichlorophenol	3600.	330.	ug/kg	11/07/96
2,4,6-Trichlorophenol	3500.	330.	ug/kg	11/07/96
2,4-Dichlorophenol	BQL	330.	ug/kg	11/07/96
2,6-Dichlorophenol	BQL	330.	ug/kg	11/07/96
2-Chlorophenol	BQL	330.	ug/kg	11/07/96
2-Methylnaphthalene	BQL	330.	ug/kg	11/07/96
Acenaphthene	2500.	330.	ug/kg	11/07/96
Anthracene	5100.	330.	ug/kg	11/07/96
Bis (2-ethylhexyl) phthalate	~~BQL~~ 4500	330.	ug/kg	11/07/96
Butyl benzylphthalate	3100. per resp 6/18/97	330.	ug/kg	11/07/96
Dibenzofuran	1900. AL 6/13/97	330.	ug/kg	11/07/96
Diethylphthalate	BQL	330.	ug/kg	11/07/96
Di-n-octylphthalate	BQL	330.	ug/kg	11/07/96
Di-n-butylphthalate	700.	330.	ug/kg	11/07/96
Fluoranthene	3700.	330.	ug/kg	11/07/96
Fluorene	BQL	330.	ug/kg	11/07/96

ENVIRITE CORPORATION
620 West Germantown Pike
Plymouth Meeting, PA 19462-

Location Collected: 198 Old Waterbury Rd. Thomaston, CT
Date Sample Collected: 11/01/1996
Sample Description: PE Sample
EAS Project Number: 1306-96
EAS Sample Number: 9605900
Date Sample Received: 11/02/1996

Parameter	Data	Quantitation Limit	Units	Analysis Date
Naphthalene	1700.	330.	ug/kg	11/07/96
N-Nitrosodimethylamine	BQL	330.	ug/kg	11/07/96
N-Nitrosodiphenylamine	BQL	330.	ug/kg	11/07/96
Phenanthrene	1700.	330.	ug/kg	11/07/96
Pyrene	7200.	330.	ug/kg	11/07/96
Benzo (a) pyrene	BQL	330.	ug/kg	11/07/96
Benzo (b) fluoranthene	3900.	330.	ug/kg	11/07/96
Benzo (k) fluoranthene	BQL	330.	ug/kg	11/07/96
Solid Matrix PCB's - Method 608/8080				
Aroclor 1016	BQL	0.033	mg/kg	11/08/96
Aroclor 1221	BQL	0.033	mg/kg	11/08/96
Aroclor 1232	BQL	0.033	mg/kg	11/08/96
Aroclor 1242	BQL	0.033	mg/kg	11/08/96
Aroclor 1248	BQL	0.033	mg/kg	11/08/96
Aroclor 1254	BQL	0.033	mg/kg	11/08/96
Aroclor 1260	BQL	0.033	mg/kg	11/08/96
Solid Matrix Pesticides - Method 608/8080				
4,4'-DDD	230.	4.0	ug/kg	11/08/96
4,4'-DDE	140.	4.0	ug/kg	11/08/96
4,4'-DDT	170.	4.0	ug/kg	11/08/96
Aldrin	270.	2.0	ug/kg	11/08/96
Dieldrin	140.	1.0	ug/kg	11/08/96
Endosulfan sulfate	BQL	4.0	ug/kg	11/08/96
Endrin aldehyde	BQL	4.0	ug/kg	11/08/96
Endrin	210.	4.0	ug/kg	11/08/96
Endrin ketone	BQL	4.0	ug/kg	11/08/96
Heptachlor	260.	2.0	ug/kg	11/08/96
Heptachlor epoxide	110.	2.0	ug/kg	11/08/96
Methoxychlor	BQL	20.	ug/kg	11/08/96
a-BHC	130.	0.40	ug/kg	11/08/96
a-Chlordane	140.	4.0	ug/kg	11/08/96
Endosulfan I	BQL	4.0	ug/kg	11/08/96
b-BHC	140.	2.0	ug/kg	11/08/96
g-Chlordane	120.	4.0	ug/kg	11/08/96
Endosulfan II	BQL	4.0	ug/kg	11/08/96
d-BHC	BQL	2.0	ug/kg	11/08/96
g-BHC (Lindane)	190.	2.0	ug/kg	11/08/96

ENVIRITE CORPORATION
620 West Germantown Pike
Plymouth Meeting, PA 19462-

Location Collected: 198 Old Waterbury Rd. Thomaston, CT
Date Sample Collected: 11/01/1996
Sample Description: PE Sample
EAS Project Number: 1306-96
EAS Sample Number: 9605900
Date Sample Received: 11/02/1996

Parameter	Data		Quantitation Limit	Units	Analysis Date
Solid Matrix Toxaphene/Chlordane - Method 608/8080					
Chlordane	BQL		30.	ug/kg	11/08/96
Toxaphene	BQL		40.	ug/kg	11/08/96
RFI Volatile list - Soils - Method 8260					
1,1,1-Trichloroethane	49.		10.	ug/kg	11/06/96
1,1,2,2-Tetrachloroethane	BQL		10.	ug/kg	11/06/96
1,1,2-Trichloroethane	BQL		10.	ug/kg	11/06/96
1,1-Dichloroethane	BQL		10.	ug/kg	11/06/96
1,1-Dichloroethene	BQL		10.	ug/kg	11/06/96
1,2-Dichloroethane	128.		10.	ug/kg	11/06/96
1,2-Dichloropropane	BQL		10.	ug/kg	11/06/96
Dibromochloromethane	89.		10.	ug/kg	11/06/96
2-Chloroethyl vinyl ether	BQL		10.	ug/kg	11/06/96
2-Hexanone	BQL		10.	ug/kg	11/06/96
Acetone	4.3	J	10.	ug/kg	11/06/96
Acrolein	BQL		100.	ug/kg	11/06/96
Benzene	48.		10.	ug/kg	11/06/96
Bromodichloromethane	84.		10.	ug/kg	11/06/96
Bromomethane	BQL		10.	ug/kg	11/06/96
Bromoform	98.		10.	ug/kg	11/06/96
cis-1,2-Dichloroethene	BQL		10.	ug/kg	11/06/96
cis-1,3-Dichloropropene	BQL		1.0	ug/kg	11/06/96
Carbon disulfide	BQL		10.	ug/kg	11/06/96
Carbon tetrachloride	68.		10.	ug/kg	11/06/96
Chloroform	68.		10.	ug/kg	11/06/96
Chlorobenzene	30.		10.	ug/kg	11/06/96
Chloroethane	BQL		10.	ug/kg	11/06/96
Chloromethane	BQL		6.6	ug/kg	11/06/96
Ethylbenzene	29.		10.	ug/kg	11/06/96
Methylene chloride	74.		10.	ug/kg	11/06/96
2-Butanone (MEK)	BQL		10.	ug/kg	11/06/96
4-Methyl-2-Pentanone	16.		10.	ug/kg	11/06/96
Styrene	BQL		10.	ug/kg	11/06/96
trans-1,2-Dichloroethene	BQL		10.	ug/kg	11/06/96
trans-1,3-Dichloropropene	BQL		1.0	ug/kg	11/06/96
Tetrachloroethylene	65.		10.	ug/kg	11/06/96
Toluene	37.		10.	ug/kg	11/06/96
Total Xylenes	140.		10.	ug/kg	11/06/96
Trichloroethylene	52.		10.	ug/kg	11/06/96

NVIRITE CORPORATION
20 West Germantown Pike
lymouth Meeting, PA 19462-

ocation Collected: 198 Old Waterbury Rd. Thomaston, CT
ate Sample Collected: 11/01/1996
Sample Description: PE Sample
AS Project Number: 1306-96
AS Sample Number: 9605900
ate Sample Received: 11/02/1996

Parameter	Data	Quantitation Limit	Units	Analysis Date
Vinyl acetate	BQL	10.	ug/kg	11/06/96
Vinyl chloride	BQL	10.	ug/kg	11/06/96

* Comments *

VOA TIC's
1,3-Dichlorobenzene 49 ug/kg.
1,4-Dichlorobenzene 52 ug/kg.
1,2-Dichlorobenzene 70 ug/kg.

BNA TIC's
Phenol 2800 ug/kg
1,2-Dichlorobenzene 3000 ug/kg
2-Methylphenol 2700 ug/kg
4-Methylphenol 3200 ug/kg
1,2,4-Trichlorobenzene 4500 ug/kg
2,4-Dinitrotoluene 5000 ug/kg
4-Chlorophenylphenylether 4300
Pentachlorophenol 4900 ug/kg
Benzo(a)anthracene 4500 ug/kg
Chrysene 4700 ug/kg

BQL = Below Quantitation Limit

* Certification *

Connecticut Certified Laboratory Number: PH 0558

ew York Certified Laboratory Number: 10916

Massachusetts Certified Laboratory Number: CT 020

The above analyses were conducted in accordance with:

1. APHA Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992.

2. Clean Water Act, List of Approved Test Procedures, 40 CFR.

3. EPA Test Methods for the Evaluation of Solid Waste, SW-846, 3rd Edition, December, 1987.

Lab Name: EAS Laboratories

Project: Envirite - Thomaston

Solid LCS Source: ERA Lot 230

Aqueous LCS Source: See Comments

Compound	Aqueous (ug/L)			Solid (mg/kg)					
	TRUE	Found	%R	TRUE	Found	C	Limit (mg/kg)		%R
Antimony	5000	5400	108	51.2	26.0		12.2	90.1	50.8
Arsenic	20.0	14.2	71.0	62.7	66.5		43.9	81.5	106
Barium	5000	5120	102	260	304		190	330	117
Beryllium	250	241	96.4	87.2	84.8		67.0	107	97.2
Cadmium	250	245	98.0	77.4	78.7		51.4	103	102
Chromium	750	706	94.1	76.9	80.3		59.4	94.6	104
Cobalt	1000	960	96.0	101	109		76.8	125	108
Copper	500	470	94.0	58.2	58.0		45.9	70.4	100
Lead	1000	940	94.0	122	110		82.7	160	90.2
Mercury				2.51	2.65		1.60	3.41	106
Nickel	750	750	100	163	167		122	204	102
Selenium	40.0	32.5	81.3	91.7	117		65.5	118	128
Silver	500	550	110	69.6	23.0		51.4	87.7	33.0
Tin	10000	11000	110	104	170		63.3	145	163
Thallium				50.5	64.0		24.0	76.8	127
Vanadium	10000	9400	94.0	142	143		89.2	195	101
Zinc	200	197	98.5	114	122		84.1	144	107
Total Cyanide	10000	10700	107						
Total Sulfate	640	701	110						
TPH	10200	9830	96.4						

Total Sulfide

Comments: The liquid laboratory control sample sources are as follows: As - EM Science lot #35193(1000 ppm); Se - Spectrum Chemical lot #LA152 (1000 ppm); CN - lab ref. - 95001-04-22; Sulfide - Sigma lot #73H0167; TPH - Lab ref. - 95001-04-20; all others - Solutions Plus lot # 960301. TPH concentration units are mg/L.

Cyanide LCS Calculation - True value - 10000, ug/L From prep sheet 95001-04 p. 22.

0.214 mg/L CN from instrument printout x 0.05 L Final distilled volume = 0.0107 mg CN

$\frac{0.0107 \text{ mg CN}}{0.001 \text{ L}}$ ← initial volume QC added = 10.7 mg/L CN recovered

Form VII

ENVIRONMENTAL
RESOURCE ASSOCIATES
ARVADA, COLORADO 1-800-372-0122

Certification

PriorityPollutnT™/CLP Inorganic Soils — Quality Control Standards

Catalog Nº PPS-46 — Lot Nº 230

Parameter	Certified Value	Performance Acceptance Limits™
TRACE METALS PriorityPollutnT™ (Catalog No 540)	mg/Kg	mg/Kg
aluminum	6210	3870 - 8570
antimony	51.2	12.2 - 90.1
arsenic	62.7	43.9 - 81.5
barium	260	190 - 330
beryllium	87.2	67.0 - 107
boron	83.2	53.5 - 113
cadmium	77.4	51.4 - 103
calcium	2760	1770 - 3750
chromium	76.9	59.4 - 94.6
cobalt	101	76.8 - 125
copper	58.2	45.9 - 70.4
iron	15300	8840 - 21700
lead	122	82.7 - 160
magnesium	1800	1440 - 2160
manganese	232	178 - 285
mercury	2.51	1.60 - 3.41
molybdenum	152	109 - 195
nickel	163	122 - 204
potassium	2020	1410 - 2630
selenium	91.7	65.5 - 118
silver	69.6	51.4 - 87.7
sodium	474	305 - 645
strontium	76.8	43.2 - 111
thallium	50.5	24.0 - 76.8
tin	104	63.3 - 145
titanium	341	194 - 488
vanadium	142	89.2 - 195
zinc	114	84.1 - 144
CYANIDE PriorityPollutnT™ (Catalog No 541)	mg/Kg	mg/Kg
total cyanide	96.1	49.6 - 142

LC55370

The *Trace Metals Certified Values* are equal to the mean recoveries for each parameter as determined in an interlaboratory round robin study. The standard was digested using various EPA methods such as Method 3050, 3051, etc. and the digest analyzed by ICP and atomic absorption spectroscopy.

The *Cyanide Certified Value* is equal to the mean recovery as determined in an interlaboratory round robin study. The standard was distilled and analyzed following the procedure outlined in Method 9010, SW-846.

The *Performance Acceptance Limits (PALs™)* are listed as guidelines for acceptable analytical results given the limitations of the USEPA methodologies commonly used to determine these parameters and closely approximate the 95% confidence interval. The PALs™ are based on data generated by your peer laboratories in ERA's InterLab™ programs. If your result falls outside of the PALs™, ERA recommends that you investigate potential sources of error in your preparation and/or analytical procedures. For further technical assistance, call ERA at 1-800-372-0122.

For users of internal standards, ERA has determined that scandium is present in this soil at 1.86 mg/Kg and that yttrium is present at 9.43 mg/Kg.

ENVIRONMENTAL
RESOURCE ASSOCIATES
ARVADA, COLORADO 1-800-372-0122

Analytical Verification Summary

PriorityPollutnT™/CLP Inorganic Soils — Quality Control Standards

Catalog No PPS-46 Lot No 231

Parameter	Made-to Value	Mean Recovery	Mean Recovery	Percent RSD	n
TRACE METALS PriorityPollutnT™ (Catalog No 540)	mg/Kg	mg/Kg	%	%	
aluminum	7040	6990	99.3%	20.3%	23
antimony	121	35.0	28.9%	45.4%	23
arsenic	199	164	82.2%	14.6%	30
barium	512	439	85.8%	12.4%	30
beryllium	110	97.8	88.9%	10.8%	26
boron	91.3	82.5	90.3%	15.8%	15
cadmium	125	112	89.9%	13.5%	31
calcium	2780	2620	94.2%	10.5%	22
chromium	109	96.2	88.3%	11.8%	30
cobalt	95.5	83.6	87.5%	9.18%	25
copper	157	140	88.9%	8.58%	30
iron	13600	17000	125%	29.6%	25
lead	109	96.1	88.2%	12.8%	30
magnesium	2020	1750	86.6%	14.6%	23
manganese	335	314	93.8%	9.75%	24
mercury	4.59	2.60	56.5%	27.1%	24
molybdenum	104	84.7	81.5%	9.80%	22
nickel	80.7	72.0	89.2%	12.7%	30
potassium	2280	2170	95.2%	21.8%	24
selenium	80.8	68.9	85.3%	11.6%	28
silver	95.6	82.5	86.2%	10.9%	27
sodium	272	288	106%	15.3%	17
strontium	151	133	87.8%	9.73%	13
thallium	101	86.0	85.2%	13.8%	24
tin	104	86.3	83.0%	15.8%	17
titanium	414	350	84.5%	24.4%	12
vanadium	108	96.7	89.5%	17.5%	24
zinc	319	275	86.6%	12.1%	31
CYANIDE PriorityPollutnT™ (Catalog No 541)	mg/Kg	mg/Kg	%	%	
total cyanide	250	203	81.0%	26.8%	10

The ***Made-to Values*** are equal to the actual amounts of each parameter spiked onto the soil plus the measured background concentrations of each parameter. The background concentrations for metals were determined by digesting the sample using EPA method 3050, SW-846 and analysis by ICP and AA spectroscopy. The background concentration for total cyanide was determined by EPA method 9010, SW-846.

The ***Mean Recoveries*** and ***Percent Relative Standard Deviation (RSD)*** data were obtained in an interlaboratory round robin study using the same samples you are analyzing.

PriorityPollutnT™/CLP Inorganic Soils Lot No. 231

ENVIRONMENTAL
RESOURCE ASSOCIATES
ARVADA, COLORADO 1-800-372-0122

Certification

PriorityPollutnT™/CLP Organic Soils — Quality Control Standards

Catalog Nº PPS - 45 Lot Nº 342

Parameter	Certified Value	Performance Acceptance Limits™
SEMIVOLATILES		
BASE/NEUTRALS	µg/Kg	µg/Kg
(Catalog No. 720)		
Acenaphthene	4370	1420 - 4590
Anthracene	10200	1380 - 10700
Benzo(a)anthracene	4500	1320 - 4740
Benzo(b)fluoranthene	6270	1330 - 6880
Butylbenzylphthalate	3810	1510 - 4490
4-Chlorophenyl-phenylether	7470	3450 - 7880
Chrysene	6490	2520 - 7030
Dibenzofuran	3160	975 - 3360
1,2-Dichlorobenzene	9600	920 - 10100
2,4-Dinitrotoluene	6610	1900 - 6940
bis(2-Ethylhexyl)phthalate	5950	2350 - 7450
Fluoranthene	4890	1140 - 5890
Naphthalene	3240	881 - 3400
Phenanthrene	2090	803 - 2190
Pyrene	13000	3640 - 14900
1,2,4-Trichlorobenzene	8660	2140 - 9090
ACIDS	µg/Kg	µg/Kg
(Catalog No. 720)		
2-Methylphenol	7010	1690 - 7360
4-Methylphenol	8780	1720 - 9220
Pentachlorophenol	12400	3220 - 13500
Phenol	5110	727 - 5770
2,4,5-Trichlorophenol	9030	1420 - 9970
2,4,6-Trichlorophenol	7380	1100 - 7810
PESTICIDES	µg/Kg	µg/Kg
(Catalog No. 720)		
Aldrin	397	182 - 478
alpha-BHC	199	62.6 - 234
beta-BHC	289	98.8 - 343
gamma-BHC(Lindane)	395	151 - 495
alpha-Chlordane	198	64.2 - 238
gamma-Chlordane	246	136 - 281
4,4'-DDD	380	156 - 467
4,4'-DDE	247	127 - 292
4,4'-DDT	344	85.9 - 409
Dieldrin	127	55.2 - 155
Endrin	198	95.3 - 243
Heptachlor	395	200 - 479
Heptachlor epoxide	205	78.2 - 250

continued on back

PriorityPollutnT™/CLP Organic Soils Lot No. 342

ENVIRONMENTAL
RESOURCE ASSOCIATES
ARVADA, COLORADO 1-800-372-0122

Certification

PriorityPollutnT™/CLP Organic Soils — Quality Control Standards

Catalog Nº PPS - 45 Lot Nº 342

Parameter	Certified Value	Performance Acceptance Limits™
VOLATILES (Catalog No. 721)	µg/Kg	µg/Kg
Benzene	34.4	25.8 - 42.9
Bromodichloromethane	72.5	57.7 - 91.1
Bromoform	88.0	67.8 - 117
Carbon tetrachloride	57.8	40.7 - 74.8
Chlorobenzene	31.0	24.8 - 38.3
Chlorodibromomethane	84.0	62.2 - 106
Chloroform	62.5	48.2 - 78.6
1,2-Dichlorobenzene	72.0	53.6 - 93.8
1,3-Dichlorobenzene	52.6	38.9 - 69.4
1,4-Dichlorobenzene	55.5	40.5 - 70.9
1,2-Dichloroethane	104	78.2 - 133
Ethylbenzene	31.4	23.7 - 40.3
Methylene chloride	76.5	43.9 - 101
4-Methyl-2-pentanone (MIBK)	16.8	11.9 - 24.6
Tetrachloroethylene	67.4	50.2 - 87.6
Toluene	35.8	28.0 - 44.0
1,1,1-Trichloroethane	42.7	31.0 - 53.7
Trichloroethylene	57.9	42.2 - 70.8
o-Xylene	63.1	47.8 - 82.5
p-Xylene	87.2	66.0 - 114

The ***Certified Values*** are equal to 100% of the parameters in the indicated standard.

The ***Performance Acceptance Limits (PALs™)*** are listed as guidelines for acceptable analytical results given the limitations of the USEPA methodologies commonly used to determine these parameters and closely approximate the 95% confidence interval. The PALs™ are based on data generated by your peer laboratories in ERA's InterLaB™ program using the same samples you are analyzing and data from USEPA methods, WP, WS and CLP interlaboratory studies. If your result falls outside of the PALs™, ERA recommends that you investigate potential sources of error in your preparation and/or analytical procedures. For further technical assistance, call ERA at 1-800-372-0122.

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB

COMPLETE SDG FILE (CSF) AUDIT
(Also see Faxes #1-8)

Organic Fractions: VOA & SV

	Missing Information	Date Lab Contacted	Date Received
VOA - (see Fax 5/30)	Form VIII - 11/6/96 - Low Water	5/21/97	5/30/97
	Sample 9605882 raw data	5/21/97	"
	Form IV - 11/4 - correction	5/21/97	
	Init Cal Summary - low soil - correction	5/21/97	"
	Init Cal Summary - 11/4 correction	5/21/97	"
	Form V - 11/1/96 - correction	5/21/97	"
	Form VIII - correction	5/21/97	"
	9605882 & 9605883 - Form I - corrections	5/21/97	"
ABN (Fax 5/28)	9605881 - mass spectra for cpd #77	5/28	6/11
	9605896 - page 5 of QC report	5/28	
	CCL2 (1106050 & 1107C502) - pg 5 of QC Rep	5/28	
	Blank - 1104A581 - page 5 of QC report	5/28	
	9605900 - mass spectra for cpd hits	5/28	
	9605900D - mass spectra for cpd #85	5/28	
	Extraction Log	5/28	
	Form V - correct m/z 365		

Validator: Arthur R. Gordon

Date: 6/18/97

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB

COMPLETE SDG FILE (CSF) AUDIT

Organic Fractions: PCB/Pest + Herbicide
(Also see faxes 1-8)

	Missing Information	Date Lab Contacted	Date Received
PCB/Pest xo (x 5/28)	9605895 - raw data	5/28	NA
	Confirmation column (channel 4) raw data	5/28	NA
	Analytical Seq. corrections	5/28	6/11
	Form 1's for 5892 5893 + 5896 - corrections	5/28	NA
	1016 - mid std 11/6 - raw data	5/28	NA
	Sample calculation	5/28	NA
Herbicides xi (x 5/28)	Confirm column raw data for	5/28	NA
	5880 - 5881, 5883, 5884, 5897, 5892		
	5893, 1102SHBLK1, 1103AHBLK2		
	5880 - 5884 - Form 1 corrections	5/28	NA
	s		

Validator: Arthur L. Lindell

Date: 6/15/97

EPA-NE - Data Validation
VOA/SV - Pest/PCB-1

12/96

Sampler: Rick V, Joe P. & Rob R. ~~Bill McLague~~ John Krida

Company: AARON Environmental ~~Envirite~~ & Envirite

Contacted: (Yes) No

Date: 6/3/97

I. PRESERVATION AND HOLDING TIMES - Circle sample numbers with exceeded technical holding times or omitted preservation.
List all required preservation codes and circle omitted preservation codes.
Circle all exceeded technical holding times.
Identify extraction technique after "# of Days"/(*Extraction Code).

Sample No. (TR No.)	Matrix	Prep. Code	Date Sampled	VOA			BNA					PEST/PCB				
				Date Analyzed	# of Days from Samp. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action
9W05683	soil	?	11/1	11/6	5	J	11/4	3	11/5	1	A	11/5	4	11/7	2	A

Preservation Code:
1. Cool @ 4°C (± 2°)
2. Preserve with HCl to at least pH 2
3. Protect from light
4. Freeze
5. Room Temperature (Avoid excessive heat)

(*Extraction Code:)
L/L - Liquid/Liquid
SON - Sonication
SEP - Separatory Funnel
SOX - Soxhlet
SPE - Solid Phase Extraction

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Validator: William R. Luckett

Date: 6/3/97

EPA-NE - Data Validation Worksheet
VOA/SV-IV

IV. CONTINUING CALIBRATION - List all analytes that are outside calibration criteria.

	Date of ICAL	Date of CCAL	Instrument	Parameter	Matrix	Compound	%D	RRF	Samples Affected (Validated 898 only)	Action
SV	11/4/96	11/7/96	FINN	SV	SOIL	N-nitrosodimethylamine	36.56	0.669	898, 897,	DL. UJ
						Pyridine	27.4	1.108		~~DL. UJ~~ *
						2,4-dinitrophenol	29.6	0.057		~~DL. UJ~~ *
						hexachlorobenzene	27.9	0.371		~~DL. UJ~~ *
VOA	11/1/96	11/6/96	MSI	VOA	SOIL	acetone	45.7		9605883	DL. UJ
						MEK	40.2			
						MIBK	38.2			
						2-Hexanone	39.6			

Comments: Ask Lab. Types on Form VIII's. * Lab QAP specifies 30% D as acceptable ∴ Only N-Nitrosodimethylamine. DL ⇒ UJ

Validator: Arthur L. Lindell

Date: 6/3/97

V. BLANK ANALYSIS

List the blank contamination below.

Concentration Level: (w)

Sampler: Rick V. Joe P. Bob R. John Krupk Company: Aaron Env. & Envirite Contacted: Yes (No) Date: 6/3/97

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
	11/6/96	VOA-soil	11016VWB-HB	MSA	acetone	1.61 ug/g
	~~11/6/96~~	~~VOA-WATER~~	~~96058848-FB~~			

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
	11/6/96	VOA water	96058848 - Field Blk	MSB	Acetone	8.3 ug/l
					MeCl	1.39 ug/l
	11/6/96	VOA water	96058899 - Trip Blk	MSB	Acetone	4.37 ug/l

Validator: Arthur L. Fuchell Date: 6/3/97

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-B

3. **Blank Actions** - List the maximum concentrations of blank compounds.

Compound	Type of Blank	Date Blank Sampled/Originated	Max. Conc. (units)	Action Level (units)	Sample QL	Samples Affected	Action
Acetone	Method Blk	11/6/96	1.61 ug/l	16.1 ug/l	10 ug/kg	9605883	10 u
no cal. inst.	~~(FB)~~					~~9605898~~	~~10 u~~
	~~(FB)~~					~~9605899~~	~~10 u~~
Methylene Chloride	(FB)	11/6/96	1.37 ug/l	13.7	10 ug/kg	9605883	"EB"

Comments: Only sample for Tur III valid is 9605883.

Validator: Allen L. Lindell

Date: 6/3/97

V. BLANK ANALYSIS

List the blank contamination below. Concentration Level: Low

Sampler: Rick V. Jr. P. Rob R John Krupa Company: Aaron Env. & Envirite Contacted: Yes (No) Date: 6/3/97

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
11/04/97	11/05/97	WATER ~~SOIL~~ ABN	1104ASB1 Method blk	FINN	Di-n-butylphthalate	0.63 NQ
					bis(2-ethylhexyl)phthalate	0.62 NQ
					di-n-octylphthalate	0.61 NQ
11/04/97	11/04/97	SOIL ABN ~~WATER~~	1104SB2 - Method Blk	FINN	di-n-butylphthalate	1.66 NQ
					diethylphthalate	1.14 **

** Review of raw data → R.T & spectra - indicates incorrect ID - ∴ ND

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
11/4	11/7	ABN WATER	9605897 Field Blk - East UST	FINN	bis(2-eth)phth	1.1 ug/l
					Di-n-butylphth	1.1 ug/l
11/4	11/7	ABN WATER	9605898 Field Blk - West UST	FINN	Di-n-butylphthalate	1.2 ug/l

Validator: Allen L Rudd Date: 6/3/97

* Note: No storage blks were analyzed

PCB/Pest - All associated blks NDV SOR-V

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-B

3. **Blank Actions** - List the maximum concentrations of blank compounds.

Compound	Type of Blank	Date Blank Sampled/Originated	Max. Conc. (units)	Action Level (units)	Sample QL	Samples Affected	Action
Di-n-butylphthalate	Method - water	11/4/97	0.63 NG	6.3 NG	10 ug/l	96005898 (1.2 J)	ID U
bis(2EH)phth	~~Method Soil~~ water	"	0.60 NG	6.0 NG	10 ug/l	ND	None
di-n-octylphth	Method - water	"	0.61 NG	6.0 NG	10 ug/l	ND	None
di-n-butylphth	Method - soil	"	1.66 NG	16.6 NG	330 ug/kg	96005883	None >10x
bis(2EH)phth	Field - water	11/1/97	1.1 ug/l	11 ug/l		NA	
di-n-butylphth	"	"	1.1 ug/l	11 ug/l		NA	
di-n-butylphth	Field - water	11/1	1.2 ug/l	12 ug/l	330 ug/kg	96005883	None >10x

NA Valid 5883 only

Comments: _____

Validator: Allen L. Lindell

Date: 6/3/97

EPA-NE - Data Validation Worksheet
VOA-VI

VI. VOA SURROGATE SPIKE RECOVERIES - List all surrogate compound recoveries that are outside method QC acceptance criteria.

Method	Volatile Method QC Acceptance Criteria				
	Toluene-d_8	BFB	DCE-d_4	Other:	
OLM03.2	Water 88-110 Soil 84-138	Water 86-115 Soil 59-113	Water 76-114 Soil 70-121		
OLC02.1	NA	80-120	NA		
Other:					
Sample Number/Matrix	**% Recovery**	**% Recovery**	**% Recovery**	**% Recovery**	**Action**
V 960558483 f SOIL	---	114 %	130 %		None - A. all ND
960558482 MS/SOIL	---	---	122 %		
	---	120 %	138 %		

Validator: Arthur L. Lindell

Date: 6/3/97

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XI

XI. ACCURACY CHECK (Performance Evaluation Results) - List all analytes that are outside criteria.

SDG No: 9605880 CASE: _____

Are more than one-half of the PES analytes within criteria for each parameter. ✓ (Y) N

PE Sample Number	Ampule Number	Parameter	Type of PES	Matrix	Analyte	Conc. ug/kg	Region I EPA PES Scores*	Non-EPA PES Scores**	Samples Affected	Action
LOT # 342		VOA	ERA	SOIL	Benzene	34.4		PES (PD MISS	9605883	R - D.L.
					1,2-dichloroethane	104		PES (PD MISS)	"	R - D.L
					Acetone	(4.3 J)		PES (PD CONT)	"	comment
		ABN	ERA	SOIL	di-n-butylphthalate	700		PES (PD CONT)	"	comment
		PEST	ERA	SOIL	γ-chlordane 23	(136.581) 100		PES (PD Action Low)	"	~~R - A.L.~~ Δ

O.K. see report 33 is OK

▲ also in ABN. blks.

* For Region I PESs indicate the Region I PES Score Report Result: Action High; Action Low; TCL MISS; TCL CONTAMINANT; TIC HIT; TIC MISS; TIC CONTAMINANT

** For Non-EPA PESs indicate the Non-EPA PES Score: PES COMPOUND MISS; PES COMPOUND CONTAMINANT; PES COMPOUND HIT (% Recovery Limits)

Validator: Allen L. Lundell Date: 6/17/97

XII. TARGET COMPOUND IDENTIFICATION - List the analytes that are outside the acceptance criteria.

Sample Number	Compound	MS Ions	RRT	Action
1104SBL2	Diethylphthalate	177, 121, 150 163 in sample not in CCC.	20:55 vs 19:09 (CC)	change to ND in blk

Validator: Allen L. Lindell

Date: 6/3/97

XIII. SAMPLE QUANTITATION

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although Section XIII, C.1.a, requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? Y N
If no, list sample numbers Not Available

Fraction		Calculation
VOA		Acetone = $\frac{50}{352.63} \times \frac{1982(5)}{0.874(5)}$ = 3.22 ug/kg ✓
Sample No.:	9605883 (K)	
Reported Compound:	Acetone	
Reported Value:	3.2 ug/kg	
Not Detected Compound:	Chloroform	
Reported Quantitation Limit:	10 ug/kg	
BNA		Phenanthrene: $\frac{40 \times 139186 \times 1000\ ul\ (1.1)}{435420 \times 0.992\ 30g \times 1ul}$ = 47 ug/kg ✓
Sample No.:	9605883	
Reported Compound:	Phenanthrene	
Reported Value:	47 ug/kg	~~water = 10 ug/L × 1000 ul / 30g × 1ul = 333~~
Not Detected Compound:	Dibenzofuran	
Reported Quantitation Limit:	330 ug/kg	
Pesticide/PCB	ND	
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		

Validator: Alicia L. Kirkell Date: 6/18/97

GZA

APPENDIX B

REGION I
Data Review Worksheets

Site Name Envirite
Reference Number

REGION I REVIEW OF INORGANIC CONTRACT LABORATORY DATA PACKAGE

The hardcopied (laboratory name) EAS data package received at Region I has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No.		SAS No.		Sampling Date(s)	10/24 - 11/1/96
SDG. No.	96058840	Matrix	SOIL	Shipping Date(s)	10/24 - 11/1/96
No. of Samples	12 soils + 2 FB + 1 EB			Date Rec'd by Lab	11/1 - 11/2/96

Traffic Report Nos:

Trip Blank No.: 96058899
Equipment Blank No.: 96058897 + 96058898
Field Dup Nos: Not Available (NA)

SOW No. ~~Not Applicable~~ - Non CLP requires that specific analytical work be done and that associated reports be provided by the laboratory to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- -Data Completeness
- -Holding Times
- -Calibrations
- -Blanks
- -ICP Interference Check Results
- -Matrix Spike Recoveries
- -Laboratory Duplicates
- -Field Duplicates
- -Lab Control Sample Results
- -Furnace AA Results
- -ICP Serial Dilution Results
- -Detection Limit Results
- -Sample Quantitation

Overall Comments: Only sample evaluated using Tier III was 96058883

Definitions and Qualifiers:

A - Acceptable data.
J - Approximate data due to quality control criteria.
R - Reject data due to quality control criteria.
U - Analyte not detected.

Reviewer: [signature] Date: 6/3/97

REGION I
Data Review Worksheets

I. DATA COMPLETENESS
(Also see Fax #713)

MISSING INFORMATION	DATE LAB CONTACTED	DATE REC'D
corrected Form I's	6/2/97	~~6/6/97~~ NA see response 6/10/97
corrected Form II	↓	NA ↓
Additional Summary Forms	↓	NA

REGION I
Data Review Worksheet

IV A. BLANK ANALYSIS RESULTS (Sections 1-3)

List the blank contamination in Sections 1 & 2 below. A separate worksheet should be used for soil and water blanks.

1. Laboratory Blanks MATRIX: SOIL

DATE	ICB/CCB#	PREP BL	ANALYTE	CONC./UNITS
11/11/96	CCB		Be	0.005 mg/l
11/8/96		LCB	Zn	0.040 mg/l

2. Equipment/Trip Blanks - 9605898 - BDL ✓

DATE	EQUIP BL#	ANALYTE	CONC./UNITS

3. Frequency Requirements

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes or No

B. Was a calibration blank run every 10 samples or every 2 hours whichever is more frequent? Yes or No

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below, and list the samples affected.

~~9605883 - Be - 0.42 ug/g → ← 5x ∴ g~~

0.005 mg/l or $\frac{0.005 \text{ ug/ml} \times 100 \text{ ml}}{5 \text{ g}}$ = 0.000 ug/g × 5 = 0.50 ug/g

IV B. BLANK ANALYSIS RESULTS (Section 4)

4. Blank Actions

The Action Levels for any analyte is equal to five times the highest concentration of that element's contamination in any blank. The action level for samples which have been concentrated or diluted should be multiplied by the concentration/dilution factor. No positive sample result should be reported unless the concentration of the analyte in the sample exceeds the Action Level (AL). Specific actions are as follows:

1. When the concentration is greater than the IDL, but less than the Action Level, report the sample concentration detected with a U.
2. When the sample concentration is greater than the Action Level, report the sample concentration unqualified.

MATRIX: Soil

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS	ELEMENT	MAX. CONC./ UNITS	AL/ UNITS
Be	0.005 mg/l	0.5 mg/kg			
Zn	0.040 mg/l	4.0 mg/kg			

MATRIX: _____

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS

∴ 9605883 Be result of 0.42 mg/kg is qualified as 0.42 U mg/kg, Zn result is > 5x do not qualify.

NOTE: Blanks analyzed during a soil case must be converted to mg/kg in order to compare them with the sample results.

$$\text{Conc. in ug/L} \times \frac{\text{Volume diluted to (200ml)}}{\text{Weight digested (1gram)}} \times \frac{1\text{L}}{1000\text{ml}} \times \frac{1000\text{gm}}{1\text{kg}} \times \frac{1\text{mg}}{1000\text{ug}} = \text{mg/kg}$$

Multiplying this result by 5 to arrive at the action level gives a final result in mg/kg which can then be compared to sample results.

$$\frac{5\ \text{ug/l} \times 100 \times 1\ \text{l} \times 1000 \times 1}{.5\text{g} \times 1000 \times 1 \times 1000\ 10} = \frac{5}{50} = 0.1\ \text{mg/kg}$$

REGION I
Data Review Worksheets

VI. MATRIX SPIKE

TR # _____ MATRIX: SOIL

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added
SSR - spikes sample result
SR - sample result

Analyte	SSR	SR	S	%R	Action
Hg, Tot				62%	ND - UJ
Sb,				38%	ND - UJ
Cu,				60%	- J
Tl,				41%	UJ

Matrix Spike Actions apply to all samples of the same matrix.

ACTIONS:

1. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.

2. If any analyte does not meet the %R criteria follow the actions stated below:

	PERCENT RECOVERY		
	<30%	30%-74%	>125%
Positive Sample Results	J	J	J
Non-detected Results	R	UJ	A

2. Frequency Criteria

A. Was a matrix spike prepared at the required frequency? Yes or No

B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? Yes or No

A separate worksheet should be used for each matrix spike pair.

VII. LABORATORY DUPLICATES

List the concentrations of any analyte not meeting the criteria for duplicate precision. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evaluate precision by circling either the RPD or CRDL for each element.

MATRIX: SOIL

Element	CRDL (Quantitation Limit) water ug/L	CRDL (Quantitation Limit) soil mg/kg	Sample # 9605883	Duplicate# 9605883MSD	RPD <20%	Action
NA Aluminum	200	NA				
Antimony	60	10			✓	
Arsenic	10	1.0			✓	
Barium	200	20			✓	
Beryllium	5	0.40			✓	
Cadmium	5	0.10			✓	
NA Calcium	5000	~~1.0~~ NA				
Chromium	10	1.0			✓	
Cobalt	50	1.0			✓	
Copper	25	0.40			✓	
Iron	100	NA				
Lead	5	1.2				
NA Magnesium	5000					
NA Manganese	15					
Mercury	0.2	0.10			✓	
Nickel	40	0.60			✓	
NA Potassium	5000	NA				
Selenium	5	1.0			✓	
Silver	10	0.10			25.1%	J - lab criteria = 20% RPD
NA Sodium	5000	NA				
Thallium	10	0.40			✓	
Vanadium	50	20			✓	
Zinc	20	2.0			✓	
Cyanide	10	5.0			✓	
Sulfide		10			37.1%	J
Tin		30			✓	

Laboratory Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >20% for waters and >35% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >CRDL, (2xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

IX. LABORATORY CONTROL SAMPLE

1. Aqueous LCS Not Available

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

2. Solid LCS

List any analytes that were not within the control windows set by the EPA for the solid LCS sample. The 80-120% criteria is not used to evaluate solid LCS results.

ELEMENT	LCS CONC.	CONTROL WINDOWS	ACTION	SAMPLES AFFECTED
Sn	170 mg/kg	63.3-145 mg/kg	A - ND	9605883
Ag	23.0 mg/kg	51.4-87.7 mg/kg	J + result	9605883

ACTIONS:

AQUEOUS LCS	Percent Recovery <50%	51-79%	>120%
Positive Results	R	J	J
Non-detected Results	R	UJ	A

SOLID LCS	<EPA Control Windows	>EPA Control Windows
Positive Results	J	J
Non-detected Results	UJ	A

3. Frequency Criteria

A. Was an LCS analyzed for every matrix, every digestion batch, and every 20 samples? Yes or No

XIII. SAMPLE QUANTITATION

✓ Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.

NA Sample results were beyond the linear range/ calibration range of the instrument for the following samples/elements:

_____

In the space below, please show a minimum of one sample calculation per method:

ICP NA

FURNACE 9605483

AA - Cu - $\frac{3.22 \text{ ug/ml} \times 100 \text{ mls}}{5g} = 64.4 \text{ ug/g} (\approx \text{mg/kg})$ ✓

MERCURY - BDL.

CYANIDE - BDL

For soil samples, the following equation may be necessary to convert raw data values (usually reported in ug/L) to actual sample concentrations (mg/kg):

The lab is required to use 1 gram sample (wet weight) to 200 ml.
LAB USES 5gm → 100 mls

Wet weight concentration =

$$\text{digest conc. in } \frac{ug}{L} \times \frac{200ml}{1\ gm} \times \frac{1L}{1000\ ml} \times \frac{1000gm}{1kg} \times \frac{1mg}{1000ug} = \frac{mg}{kg}$$

In addition the sample results are converted to dry weight using the percent solids calculations:

$$\frac{\text{Wet weight conc.}}{\%\text{solids}} \times 100 = \text{final concentration, dry weight (mg/kg)}$$

GZA

APPENDIX C

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET

LABORATORY NAME Envirite Analytical Services Laboratories (EAS)
CITY/STATE ~~Plymouth Meeting, PA~~ Waterbury, Conn

CASE NO. _____ SDG NO. 9605880 SDG NOS. TO FOLLOW _____
_____ _____ SAS NO. _____

CONTRACT NO. _____
SOW NO. _____

All documents delivered in the Complete SDG File must be original documents where possible.

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK EPA
1. Inventory Sheet (Form DC-2) (Do not number)				
2. SDG Case Narrative				
3. SDG Cover Sheet/Traffic Report				
4. Volatiles Data				
a. QC Summary				
System Monitoring Compound Summary (Form II VOA)			✓	
Matrix Spike/Matrix Spike Duplicate Summary (Form III VOA)			✓	
Method Blank Summary (Form IV VOA)			✓	
GC/MS Instrument Performance Check (Form V VOA)			✓	
Internal Standard Area and RT Summary (Form VIII VOA)			✓	
b. Sample Data				
1 TCL Results - (Form I VOA)			1 Y	
2 Tentatively Identified Compounds (Form I VOA-TIC)			2 NE	
3 Reconstructed total ion chromatograms (RIC) for each sample			3 ✓	
For each sample:				
4 Raw spectra and background-subtracted mass spectra of target compounds identified			4 ✓	
5 Quantitation reports			5 ✓	
6 Mass spectra of all reported TICs with three best library matches			6 NA	
c. Standards Data (All Instruments)				
Initial Calibration Data (Form VI VOA)			✓	
RICs and Quan Reports for all Standards			✓	
Continuing Calibration Data (Form VII VOA)			✓	
RICs and Quantitation Reports for all Standards			✓	
d. Raw QC Data				
BFB			✓	
Blank Data			✓	
Matrix Spike/Matrix Spike Duplicate Data			✓	

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET (Cont.)

CASE NO. _____ SDG NO. 9605885 SDG NOS. TO FOLLOW _____
_____ _____ SAS NO. _____

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK EPA
5. **Semivolatiles Data**				
a. QC Summary				
Surrogate Percent Recovery Summary (Form II SV)			✓	
MS/MSD Summary (Form III SV)			✓	
Method Blank Summary (Form IV SV)			✓	
GC/MS Instrument Performance Check (Form V SV)			✓	
Internal Standard Area and RT Summary (Form VIII SV)			✓	
b. Sample Data				
TCL Results (Form I SV-1, SV-2)			✓	
Tentatively Identified Compounds (Form I SV-TIC)			✓	
Reconstructed total ion chromatograms (RIC) for each sample			✓	
For each sample:				
Raw spectra and background-subtracted mass spectra of target compounds			✓	
Quantitation reports			✓	
Mass spectra of TICs with three best library matches			NA	
GPC chromatograms (if GPC performed)			NA	
c. Standards Data (All Instruments)				
Initial Calibration Data (Form VI SV-1, SV-2)			✓	
RICs and Quan Reports for all Standards			✓	
Continuing Calibration Data (Form VII SV-1, SV-2)			✓	
RICs and Quantitation Reports for all Standards			✓	
d. Raw QC Data				
DFTPP			✓	
Blank Data			✓	
Matrix Spike/Matrix Spike Duplicate Data			✓	
e. Raw GPC Data			NA	
6. **Pesticides**				
a. QC Summary				
Surrogate Percent Recovery Summary (Form II PEST)			✓	
MS/MSD Duplicate Summary (Form III PEST)			✓	
Method Blank Summary (Form IV PEST)			NA	

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET (Cont.)

CASE NO. _____ SDG NO. 9605880 SDG NOS. TO FOLLOW _____
_____ _____ SAS NO. _____

	PAGE NOs FROM	PAGE NOs TO	CHECK LAB	CHECK EPA
5. **Pesticides** (Cont.)				
b. Sample Data				
TCL Results - Organic Analysis Data Sheet (Form I PEST)			✓	
Chromatograms (Primary Column)			Ø *	
Chromatograms from second GC column confirmation		Not Applicable for 9605883 'ND'	Ø *	
GC Integration report or data system printout			Ø *	
Manual work sheets			NA	
For pesticides/Aroclors confirmed by GC/MS, copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)			NA	
c. Standards Data				
Initial Calibration of Single Component Analytes (Form VI PEST-1 and PEST-2)			NA	
Initial Calibration of Multicomponent Analytes (Form VI PEST-3)			NA	
Analyte Resolution Summary (Form VI PEST-4)			NA	
Performance Evaluation Mixture (Form VI PEST-5)			NA	
Individual Standard Mixture A (Form VI PEST-6)			NA	
Individual Standard Mixture B (Form VI PEST-7)			NA	
Calibration Verification Summary (Form VII PEST-1)			NA	
Calibration Verification Summary (Form VII PEST-2)			NA	
Analytical Sequence (Form VIII PEST)			Ø	
Florisil Cartridge Check (Form IX PEST-1)			NA	
Pesticide GPC Calibration (Form IX PEST-2)			NA	
Pesticide Identification Summary for Single Component Analytes (Form X PEST-1)			NA	
Pesticide Identification Summary for Multicomponent Analytes (Form X PEST-2)			NA	
Chromatograms and data system printouts				
* A printout of retention times and corresponding peak areas or peak heights			* Ø	
d. Raw QC Data				
Blank Data			✓	
Matrix Spike/Matrix Spike Duplicate Data			Ø	

* Note: Missing raw data for Aroclor 1016 mid & sample 9605895 - due to computer system failure in lab

FULL INORGANICS
COMPLETE SDG FILE (CSF)
INVENTORY SHEET

Lab Name: Envirite Analytical Services - Laboratories City/State: Plymouth Meeting, PA

Case No. _____ SDG No. 9605880 SDG Nos. to Follow: _____ _____ _____

SAS No. _____ Contract No. _____ SOW No. _____

All documents delivered in the Complete SDG File must be original documents where possible. (Reference Exhibit B, Section II F and Section III U)

		Page Nos. From	Page Nos. To	(Please Check:) Lab	(Please Check:) Region
1.	Inventory Sheet (DC-2) (Do not number)				
2.	Cover Page			NA	
3.	Inorganic Analysis Data Sheet (Form I-IN)				
4.	Initial & Continuing Calibration Verification (Form IIA-IN)			✓	
5.	CRDL Standards For AA and ICP (Form IIB-IN)			NA	
6.	Blanks (Form III-IN)			NA	
7.	ICP Interference Check Sample (Form IV-IN)			NA	
8.	Spike Sample Recovery (Form VA-IN)			✓	
9.	Post Digest Spike Sample Recovery (Form VB-IN)			NA	
10.	Duplicates (Form VI-IN)			✓	
11.	Laboratory Control Sample (Form VII-IN)			✓	
12.	Standard Addition Results (Form VIII-IN)			NA	
13.	ICP Serial Dilutions (Form IX-IN)			NA	
14.	Instrument Detection Limits (Form X-IN)			NA	
15.	ICP Interelement Correction Factors (Form XIA-IN)			NA	
16.	ICP Interelement Correction Factors (Form XIB-IN)			NA	
17.	ICP Linear Ranges (Form XII-IN)			NA	
18.	Preparation Log (Form XIII-IN)			✓	
19.	Analysis Run Log (Form XIV-IN)			NA	
20.	ICP Raw Data			NA	
21.	Furnace AA Raw Data			✓	
22.	Mercury Raw Data			✓	

		Page Nos. From	Page Nos. To	(Please Check:) Lab	(Please Check:) Region
23.	Cyanide Raw Data			✓	
24.	Preparation Logs Raw Data			✓	
25.	Percent Solids Determination Log			NA	
26.	Traffic Report			NA	
27.	EPA Shipping/Receiving Documents				
	Airbill (No. of Shipments ____)			NA	
	Chain-of-Custody Records			Ø	
	Sample Tags			NA	
	Sample Log-in Sheet (Lab & DCI)			NA	
	SDG Cover Sheet			NA	
28.	Misc. Shipping/Receiving Records (list all individual records)				
	Telephone Logs			NA	
	_____				
	_____				
29.	Internal Lab Sample Transfer Records & Tracking Sheets (describe or list)			NA	
	_____				
	_____				
30.	Internal Original Sample Prep & Analysis Records (describe or list)				
	Prep Records Sulfide, CN, TPH			✓	
	Analysis Records Sulfide, CN, TPH			✓	
	Description _____				
31.	Other Records (describe or list)				
	Telephone Communications Log			NA	
	_____				
	_____				

32. Comments:

_____

_____

Completed by (CLP Lab): VALIDATOR

(Signature)	(Print Name & Title)	(Date)
Allen P. Cordell		6/18/97

Audited by (EPA):

(Signature)	(Print Name & Title)	(Date)

GZA

APPENDIX D

Fax #1

Green Mountain Laboratories, Inc.

FAX Transmission

From: Althea L. Lindell
To: Mr. Greg Lawrence
Company: EAS
CC: Tyler Griffith, GZA GeoEnvironmental-Connecticut

Date: May 20, 1997
Time: 1:37PM
FAX #: (203) 945-0449

Mr. Lawrence,

Listed below are questions I have concerning the data for SDG 9605880 - Envirite:

1) Could you please send me a copy of the Case Narrative and the chain of custody records.

VOA Data

1) What was the amount of BFB injected?
2) On the Form 1s the EPA Method is 8260, but the raw data indicates 8240 as well as the target compound list. What is the method that the lab followed?
3) The instrument ID on the initial calibration summary for the low level soils and the Form IV-VOA for 11/4/96 should be MSA not MSB. Could the lab please correct these forms.
4) The headings on the initial calibration summary table for 11/6/96 do not match the raw data. Could the lab please correct them.
5) On Form V for 11/1/96 the CCC (1101HV3) was analyzed at 1046 not 0954.
6) Form VIII is missing for the low level waters on 11/6/96.
7) Form 1s were not included for the method blanks. Did the QAPP require them?
8) On Form VIII VOA the IS3 area is incorrect for 5882MS. It should be 78931 not 78218.
9) Was there a PE sample and MS/MSD performed for the water samples?
10) For sample 9605883 the raw data does not match the Form I - instead the Form I for 9605882 matches the raw data for 9605883. Also the raw data for 9605882 was not included. Could the lab please look into this and provide a sample calculation of the concentration of the analytes in sample 9605883.
11) 1,2-dichloroethane and benzene were not reported in the PE sample eventhough they were present. Instead an unknown was reported. Could the lab please look into this.

If you have any questions please call me. Thank you.

Althea L. Lindell

VOICE: (207) 223-9966 FAX: (207) 223-9964

RR#1, Box 520, Frankfort, Maine 04438

Fax 2

Green Mountain Laboratories, Inc.

FAX Transmission

From: Althea L. Lindell
To: Mr. Greg Lawrence
Company: EAS
Date: May 28, 1997
Time: 3:19PM
FAX #: (203) 945-0449
CC: Tyler Griffith, GZA GeoEnvironmental-Connecticut

Mr. Lawrence,

I have completed a Tier I evaluation of the data for SDG 9605880. Listed below are the questions concerning the completeness of the data package.

1) Could you please send me a copy of the Field Sampling Notes.

ABN Data

1) Sample 9605881 - the spectra data for compound #77 was missing
2) Sample 9605896, CCC 1106C050, CCC 1107C502, and 1104ASB1 are missing page 5 of the quant report.
3) Sample 9605900 - no mass spectras were included for the target compound hits.
4) 9605900D - mass specta for compound #85 is missing.
5) The extraction logs were not included.

Pesticide/PCB Data

1) The raw data for 9605895 was not included and Form II and the analytical sequence do not include this sample.
2) The raw data for the confirmation column - channel A - was not included for , 1105SBLK1, 9605880,9605882, and 9605885. Also, for the IBLK there was no Mix B Scan confirmation on channel A, for 9605892 there was no Mix B Scan confirmation on Channel B or Mix A Scan confirmation for Channel A, for 9605893 there was no Mix A Scan confirmation on channel A, and for 9605882 MS & 9605882MSD there was only raw data for channel A not for channel B.
3) If the multicomponent analysis was only verified using channel A then all the raw data for the samples should include channel A as well as channel B.
4) Was the water MS/MSD performed on the method blank ?
5) In the analytical sequence the Channel A information was not filled in for 9605896.
6)At the bottom of the analytical sequence Mix A Ver & Mix B Ver were analyzed on 11/8/97 not 11/7/97.
7) The Form I's for 9605892, 9605893, and 9605896 indicated that the analysis was performed on 11/8/97, but the raw data indicates that the analysis was performed on 11/7/97.
8) The raw data for 1016-mid is missing for 11/6/97.
9) The injection log does not match the analysis run log for dates of analysis.
10) What were the concentrations of the standards used in the calibration?
11) Could the lab please provide a sample calculation of the concentration of an analyte in a soil and a water.

Herbicides

1) Samples 5880, 5881, 5883, 5884, 5897, 5898, 5893, and 1102SHBLK1, 1103AHBLK2 need the raw data for channel A.
2) The injection log does not match the analysis run log for dates of analysis
3) The Form I's for samples 9605880-9605884 indicate the samples were extracted on 11/3, but the extraction log indicates they were extracted on 11/2/97.

If you have any questions please call me. Thank you.

Althea L. Lindell

VOICE: (207) 223-9966 FAX: (207) 223-9964

RR#1, Box 520, Frankfort, Maine 04438

Fax 3

Green Mountain Laboratories, Inc.

FAX Transmission

From:	Althea L. Lindell	Date:	May 28, 1997
To:	Mr. Greg Lawrence	Time:	3:19PM
Company:	EAS	FAX #:	(203) 945-0449

CC: Tyler Griffith, GZA GeoEnvironmental-Connecticut

Mr. Lawrence,

I have completed a Tier I evaluation of the data for SDG 9605880. Listed below are the questions concerning the completeness of the data package.

Metals Data

1) The raw data for sample 9605898 is missing for Barium, Tin, and Beryllium.
2) The prep log for mercury is missing sample 9605893.
3) The leachate raw data is missing for Sn, Co, Ba, Cd(5893), Zn,Tl, and Pb (5886, and 5894).

Inorganics Data

1) The raw data for the leachable CN is missing.
2) TPH - What are the units for the "amount added" - grams or mls?

If you have any questions please call me. Thank you.

Althea L. Lindell

VOICE: (207) 223-9966 FAX: (207) 223-9964

RR#1, Box 520, Frankfort, Maine 04438

Fax # 4

Green Mountain Laboratories, Inc.

FAX Transmission

From:	Althea L. Lindell	Date:	May 29, 1997
To:	Mr. Greg Lawrence	Time:	4:10PM
Company:	EAS	FAX #:	(203) 945-0449

CC: Tyler Griffith, GZA GeoEnvironmental-Connecticut

Mr. Lawrence,

I have completed a Tier III evaluation of 10 % of the ABN sample data for SDG 9605880. Listed below are the questions concerning the data.

ABN Data

1) Form Vs - m/e 365 and 441 should be compared to m/e 443 not 198. The note 1 at the bottom of the table should be "value is % mass 198" not "% mass 69".
2) Form V (11/7/97 at 1010) - there is a typo for the relative abundance of m/e 51.
3) Form VIII (11/5/97 at 0824) - typo - IS2 is at 13:27 not 13:47.
4) Form VIII (11/7/97 at 1032) - typo- IS3 area is 263446 not 263634 and for sample 1104ASB1 IS6 is at 34:36 not 10:36.
5) Form II - What are the surrogate concentrations in the waters and the soils supposed to be?
6) In the method blank 1104SBL2 the diethylphthalate seems to be misidentified. The retention time is greater than 0.50 minutes different than the associated CCC and the spectra does not match.
7) In the method blank, 1104ASB1, the reference spectra from 1107C502 is missing for compound #79.
8) The Form 1 for the validated sample 9605883 is missing the target compounds indeno(1,2,3-cd)pyrene, and benzo(g,h,i)perylene. These compounds had hits in the sample. The target compound list is shorter than for the water samples - why?
9) In the PE sample bis(2-ethylhexyl)phthalate was not reported on the Form 1, but it was detected in the sample.
10) What are the acceptance limits for the PE samples (for all analytes - VOA, ABN etc). The mean % recovery is provided but no acceptance limits.

If you have any questions please call me. Thank you.

Althea L. Lindell

VOICE: (207) 223-9966 FAX: (207) 223-9964

RR#1 Box 520 Frankfort Maine 04438

Fax #5

Green Mountain Laboratories, Inc.

FAX Transmission

From:	Althea L. Lindell	Date:	May 30, 1997
To:	Mr. Greg Lawrence	Time:	11:33AM
Company:	EAS	FAX #:	(203) 945-0449

CC: Tyler Griffith, GZA GeoEnvironmental-Connecticut

Mr. Lawrence,

I have completed a Tier III evaluation of 10 % of the PCB/Pest sample data for SDG 9605880. Listed below are the questions concerning the data.

PCB/Pesticide Data

1) In the inirial calibration for the Pest Mix B - low endrin ketone was not found in the raw data , but it was entered into the calibration table. Was the raw data reprocessed?
2) It appears that the PEM on 11/7/97 at 0147 indicates a % breakdown of DDT of 12% and a % breakdown of Endrin of 44%. Does the lab agree ?. Have there been any corrective actions?
3) In the MS/MSD performed on 1104APBLK endrin was miscalculated on the summary form. It should be 147% and 144% not 180% and 184% respectively. Was *gamma* - BHC actually spiked?
4) In the surrogate summary table DCB was miscalculated for Mix B Ver (11th row from the bottom), Mix A Ver (3rd row from the bottom), and Mix B Ver (2nd row from the bottom). TMX was miscalculated for Mix A Ver (3rd row from the bottom). Could the lab please correct these errors..
5) What are the % solids for the soils? Were sample results reported on a dry weight basis for ABN, Herbicides and PCB/Pesticides?

If you have any questions please call me. Thank you.

Althea L. Lindell

VOICE: (207) 223-9966 FAX: (207) 223-9964

RR#1, Box 520, Frankfort, Maine 04438

Fax Up

Green Mountain Laboratories, Inc.

FAX Transmission

From:	Althea L. Lindell	Date:	May 30, 1997
To:	Mr. Greg Lawrence	Time:	2:25PM
Company:	EAS	FAX #:	(203) 945-0449

CC: Tyler Griffith, GZA GeoEnvironmental-Connecticut

Mr. Lawrence,

I have completed a Tier III evaluation of 10 % of the Herbicide sample data for SDG 9605880. Listed below are the questions concerning the data.

PCB/Pesticide Data

1) Form 1 - the pesticide target is gamma chlordane not beta chlordane.

Herbicide Data

1) The calibration factors in the initial calibration tables do not agree with the raw data. They are off by a factor of 2x. The results for the target analytes in the associated data files seem to have considered this discrepancy. Could the lab please look into this.

2) The MS/MSD results summary table seems to have a few errors. The units should be mg/kg not ug/kg. The result for dinoseb for the MSD should be 0.0004 not 0.004. What are the acceptance limits? The raw data seems to have been reprocessed a few times. For example on Channel "B" dalapon was identified on 11/27 at 1336, but not 11/6/96 at 1316 for the MS and 2,4-DB was identified on 11/6 at 1316 but not 11/27 at 1336. Channel "A" was used for the MCF and Dinoseb results. Could the lab please review the MS results and summary table.

3) What are the concentrations of the target analytes in the HerbQC. Is it a mid level standard?

If you have any questions please call me. Thank you.

Althea L. Lindell

VOICE: (207) 223-9966 FAX: (207) 223-9964

RR#1 Box 520 Franklin Maine 04634

Fax 4

Green Mountain Laboratories, Inc.

FAX Transmission

From:	Althea L. Lindell	Date:	June 2, 1997
To:	Mr. Greg Lawrence	Time:	10:00AM
Company:	EAS	FAX #:	(203) 945-0449

CC: Tyler Griffith, GZA GeoEnvironmental-Connecticut

Mr. Lawrence,

I have completed a Tier III evaluation of 10 % of the Inorganics data for SDG 9605880. Listed below are the questions concerning the data.

Metals Data

1) Form 1s - the dates of analysis for a few of the metals do not agree with the raw data. For example - vanadium was analyzed on 11/11/96 for the soil for 9605883 not for the leachate and cobalt for sample 9605898 was analyzed on 11/1196 not 11/12/96. Could the lab please look into this.
2) On Form 1 for sample 9606883 the barium result was BQL, but the raw data indicates that the result is 39 mg/kg.
3) Is the LCB the same as the prep blank?
4) On the Form II the selenium result for CCV1 was 22.1 not 22.5.
5) The summary forms were not completed for some of the water/leachate results.
6) The prep log for mercury indicates that 10 mls of sample 9605883 was prepared, but it is a soil sample. According to the raw data 5g with a additional dilution factor of 10x must have been prepared or 0.5 grams. Could the lab please recheck the prep log.

Cyanide Data

1) Where does the aqueous LCS value come from in the LCS summary form?

Sulfate Data

1) Could the lab please provide the calculation for the sulfate amount in sample 9605883?

If you have any questions please call me. Thank you.

Althea L. Lindell

VOICE: (207) 223-9966 FAX: (207) 223-9964

RR#1, Box 520, Frankfort, Maine 04438

Miscellaneous Phone Conversations

May 15, 1996 Received data package. Called GCA & left message for Tyler Griffith to send ~~for~~ missing Form 1's and Case Narrative

May 19 Received Form 1's. Called Tyler Griffith - need LOCs and I was informed that a Tier 1 validation needs to be performed on entire SDG.

Called Steve Skodola at EPA & requested documents and updated guidelines.

May 22 Received updated Documents from EPA

May 23 Called Steve Skodola and requested attachments J, M, & N.

Called Tyler Griffith at GCA & requested QAPP & DQO summary

May 24 Received Attachments from EPA & Lab QAPP from Tyler but not DQO

Called EAS & left message for Greg Lawrence about Fax 5/21/96.

May 28 Greg Lawrence returned call & said he had not looked a Fax, but would call me 5/28 PM or 5/29.

Ty Griffith called & said he needed report by early next week. I explained lab hadn't got back to me on Fax 1, & that I just received appropriate documents to perform validation.

Tom Stark called from GCA - said they had to have report by early next wk. and that I needed to have some form of report done.

May 29 Left 2 messages for Tyler Griffith. Tyler returned calls & said next Wednesday was deadline for report. I told him I would try to put a report together as complete as I could

Miscellaneous Phone Conversations

June 2 Left message for Tyler Griffith. Need at least copies of COCs.
Bill McTigue from Envirite faxed COCs late in afternoon.

June 3 Called Tyler. Told him I was still missing a lot of data, but would fax copy of report tomorrow and Fed-X hard copies of report (unfinished) ~~a long with~~ for tomorrow.

1115 Bill McTigue called - I asked about preservation. He said he would look into it. I also asked about DQO's. He said he would fax today. (received ✓)

1390 Bill McTigue called - no evidence of preservation for 9605883 - actually appears there may have been no ice in cooler since no cooler temp was reported.
I asked about FB - he said he would call back.

1345 Bill McTigue called back. Field notes imply FB is an 'EB'.
He will fax copy of field note summary. (received) ✓

June 18. Greg Lawrence - Endrin Breakdown is 44%

eas LABORATORIES

FACSIMILE COVER PAGE

Date: May 30, 1997

To: Alisha L. Lindell

Firm: Green Mountain Laboratories, Inc.

Fax Number: (207) 223-5964

From: Greg Lawrence

Total number of pages to be sent (including cover sheet): 24
Copy to follow: YES _____ NO _____

Message:

VOA Data Questions
1) The BFB amount injected was 25 ng
2) Method 8260.
3) Forms corrected and attached
4) Corrected and attached
5) Corrected and attached
6) Attached
7) No Form I's were requested for the Method Blanks
8) Corrected and attached
9) No. All of the water samples were blanks
10) Information attached
11) Forms corrected and attached

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105 Commercial Street, Waterbury, CT 06795 Ph. (800) 276-5861 FAX: (860) 921-0449

eas LABORATORIES

June 11, 1997

Althea Lindell
Green Mountain Laboratories, Inc.
RR#1
Box 520
Frankfort, Maine 04438

Dear Ms. Lindell:

Enclosed please find all of the information from the facsimiles I sent the last couple of days.

If you have any questions, please give me a call at (860) 274-5461.

Thank you.

Sincerely,

Gregory C. Lawrence
Laboratory Director

encl.

105 COMMERCIAL STREET WATERTOWN, CT 06795 PHONE (860) 274-5461 FAX (860) 945-0449

recycled paper

eas LABORATORIES

FACSIMILE COVER PAGE

Date: **June 11, 1997**

To: **Althea Lindell**

Firm: **Green Mountain Laboratories, Inc.**

Fax Number: **(207) 223-9964**

From: **Greg Lawrence**

Total number of pages to be sent (including cover sheet): 2.
Copy to follow: YES __X___ NO _____

All w/ Attachments coming by Fed-Ex

Message:

May 28, 1997

ABN
1. Attached
2. Attached
3. Attached
4. Not present in the sample.
5. Attached

Pesticides/PCB Data
1. This raw data could be located. This may have been attributed to a computer problem we had.
2. Since no target compounds were detected we only needed one channel.
3. Only one channel is needed for identification the other is used for quantification.
4. Yes
5. Only one channel was needed.
6. Okay.
7. The raw data reflects the date the samples were run. The Form I' indicate the day the data was verified and completed. The date on the Form is always later than the date on the raw data.
8. Raw data is lost. (See #1 above)
9. The injection log reflects the date the auto-sampler was setup.
10. Standard CLP concentration found in OLM 1.8.

105 Commercial Street, Watertown, CT 06795 Ph.(860)274-5461 FAX:(860) 945-0449

Pesticides/PCB Data - Continued

11. The formula in OLM 1.8 was used.

Herbicides

1. Since no target compounds were detected, channel A was not needed for confirmation.
2. The injection log reflects the date the auto- samples was setup.
3. See Number 7 above.

May 29, 1997

ABN

1. Forms are correct.
2. Corrected form V is attached.
3. Corrected form VIII is attached.
4. Corrected form VIII is attached.
5. Water surrogate conc. 25 ng B/N compounds injected, 37.5 acidic compounds injected. For soils it is 100 ng for B/N compounds and 200 ng acidic compounds injected.
6. This is a weak hit. The major ion match was included in the package for review.
7. The spectra is attached.
8. Those two compounds are not in the target list for the project. The target compound list for the soils was project specific. The TCL for waters is the lab's typical 8270 TCL.
9. The detected concentration was 4500 ug/kg.
10. These were not supplied to the laboratory.

May 30, 1997

PCB/Pesticide Data

1. Correct, the target compound is gamma chlordane. This was a typo on the report.

Herbicides

1. This is because we used a 2 ul injection.
2. We have reviewed the summary table and made corrections.
3. Yes, the QC is a mid-level standard.

This message is intended only for the use of the individual to whom, or entity to which, it is addressed and may contain information that is privileged, confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is prohibited. If you have received this communication in error, please notify us immediately by telephone (collect), and return the original message to us at the above address. Thank you.

105 Commercial Street, Watertown, CT 06795 Ph.(860)274-5461 FAX:(860) 945-0449

eas LABORATORIES

FACSIMILE COVER PAGE

Date: **June 10, 1997**

To: **Althea Lindell**

Firm: **Green Mountain Laboratories**

Fax Number: **(207) 223-9964**

From: **Greg Lawrence**

Total number of pages to be sent (including cover sheet): 10
Copy to follow: YES __X ___ NO ___ ___

Message:

GZA Project - Envirite Corporation

Metals.

1. The date on the raw data is the date the sample was tested. The date on the Form I is the date the data was validated and enter into LIMS. The raw data date should always be before the "Analysis Date" on the report.

2. The correct concentration is 39 mg/kg.

3. Yes, the LCB stands for laboratory control blank or prep. Blank.

4. The is not correct. The data for CCV1 was not used due to the failure of the second CCV.

5. To the best of our knowledge, all forms were completed. If there are specific examples, please let me know.

6. The corrected prep log is attached.

105 Commercial Street, Watertown, CT 06795 Ph.(860)274-5461 FAX:(860) 945-0449

Cyanide Data

1. Please see attached.

Sulfate Data

1. These samples were tested for sulfide and not sulfate. Please see attached.

All of this data will follow by mail, in addition to the other information you requested.

Thank you.

****

This message is intended only for the use of the individual to whom, or entity to which, it is addressed and may contain information that is privileged, confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is prohibited. If you have received this communication in error, please notify us immediately by telephone (collect), and return the original message to us at the above address. Thank you.

****

105 Commercial Street, Watertown, CT 06795 Ph.(860)274-5461 FAX:(860) 945-0449

GZA

APPENDIX E

11/4/96

ENVIRITE UST CLOSURES, THOMASTON, CT
AARON PROJECT #1793

SUMMARY OF FIELD WORK

10/30/96

8:30 am - AARON on-site (Rich V., Joe P. & Rob R.) with John Krupa of Envirite and a representative from US EPA Region I.

Set up equipment, work zone and decon area One hour delay getting power washer to operate. Rain showers began around 9:45 +/-.

10:30 am - Postponed field work for remainder of the day due to weather

10/31/96

7:45 am - Field staff at site, set up work area.

8:00 am - Began to excavate the first 5 feet of overburden soil from over the West UST. Stockpiled soil on poly sheeting, discontinued excavation at 8:30 am.

8:35 am - Collected eight grab type soil samples from the 0-5 ft. overburden soil pile Samples collected using a 5 oz. stainless steel trowel Two soil jars provided by Envirite and one ziplock bag provided by AARON were filled for each soil sample location. Jars were labeled and immediately placed in a cooler maintained at 4 degrees C. Bags were sealed and left in the sun.

9:10 am - PID headspace field screening was completed on the eight soil sampled collected from the 0-5 ft. range. PID was a Photovac MicroTip 2000, 10.6 eV lamp, calibrated to 100 ppmv isobutylene. Field readings were below 10 ppmv.

9:30 am - Began to excavate the West UST 5 foot below grade to tank bottom range.

10:00 am - Checked work area for air contaminants using the PID, CGI and a Drager Tube for Acid Gases. Results were below detection levels for each.

11:30 am - West UST pulled from the ground; however, to heavy to lift out of the excavation. Reviewed options for removal with J Krupa.

12:15 pm - Lunch Break.

12:45 pm - Decision made to cut off upper 2/3rds of the tank then clean out the bottom third

in the excavation

1:15 pm - Upper 2/3rds of the tank was removed. Roll-off relocated to the east side of the work area. Began manually removing soil and solids from the tank bottom, to the backhoe bucket, to the roll-off.

3:00 pm - Complete cleaning the tank bottom to the roll-off. Bottom 1/3rd of the tank was removed and placed in the roll-off.

3:30 pm - Decontaminated the backhoe bucket into the roll-off. Break down equipment and cover the soil piles. Secure the site with fence and signs.

4.15 pm - All parties off-site.

11/1/96

7:30 am - AARON staff and J. Krupa of Envirite at site, set up equipment and work areas

7:45 am - Excavated displaced overburden material from West UST tank grave back to tank bottom location, approximately 11-12 feet below grade

8:00 am - Collected soil samples from the West tank grave, four sidewall samples along the tank centerline, and two bottom hole samples. Sidewall samples were collected from 8-9 feet below grade while bottom hole samples were collected from 12-13 feet below grade. Sidewall samples were collected using a pond sampler, bottom hole samples using the backhoe bucket. Sampling equipment was decontaminated between each collection point.

9:45 am - Began excavation of the 0-5 foot range over the East UST.

10:30 am - Conducted PID field screening on the West grave soil samples and the 5 ft. to tank bottom range (level 2) soil samples. Field readings were below 10 ppmv.

12.00 pm - 2/3rds of the East tank and contents excavated into a roll-off. Break 1/2 hour for lunch

1:15 pm - East tank bottom and contents removed to the roll-off. Began to clean out the grave bottom. Discolored soils beneath the tank bottom level (11-14 ft. below grade). Dug to machine limits 14-14.5 feet below grade.

1.40 pm - Collected soil samples from the East tank grave (4 sidewalls and 2 bottom) and the 0-5 foot range overburden pile.

3:00 pm - Set-up field blanks for East and West work zones, filled laboratory supplied containers with de-ionized water in the field. Collected eight grab samples from

the East tank roll-off. Completed field PID screening on the East UST grave soil samples, readings were below 10 ppmv.

3:30 pm - Completed Chain of Custody's for the laboratory. Fenced off-work areas, covered soil piles and tank graves with poly sheeting.

4:00 pm - Finish-up, clean site

4:15 pm - All parties off-site

4:45 pm - Dropped off soil samples at EAS in Watertown.

11/14/96

ENVIRITE UST CLOSURES, THOMASTON, CT
AARON PROJECT #1793

SUMMARY OF FIELD WORK

11/12/96

8:00 am - AARON on-site (Rich V.& Rob R.) with John Krupa of Envirite.

Took down fences, removed poly sheeting from over the excavations, set up equipment & work zone. Recovered the East tank roll-off.

9:00 am - EPA Region I representative on-site. Scott's Excavating on-site with track excavator. Scott Hoyt (machine operator) given full length version of the Site Specific Health & Safety Plan to review and sign off on.

9:30 am - Backfilled West UST grave with the 0-5 ft. overburden material and several yards of off-site bank run provided by O&G.

10:15 am - Began to overexcavate the East tank grave. Overburden material stockpiled on poly, widened excavation and increased the depth until stained soil was apparent. Collected a representative sample of the East tank contents from the East roll-off.

11:15 am - Excavated stained soil into the East roll-off (#2). Material appeared to be native organic material 15 feet below current grade elevation. Two bottom hole samples were collected, one duplicate was run to EAS for a quick analysis of sulfides, pH and VOC's.

12:00 pm - Lunch Break.

1:00 pm - Collected 5 grab samples from the Level 2 East tank overburden material, cleaned up area, transferred excess material from East tank roll-off #1 to the #2 East tank roll-off. Decontaminated the excavator bucket following the material transfer.

2:30 pm - Results were below detection levels for sulfides and VOC's on the bottom hole sample analyzed. Backfilled the East excavation with the 0-5 ft. overburden material.

3:30 pm - Cleaned up site, covered roll-offs and put up fencing

4:15 pm - Off site. Rich V. to EAS to drop off soil samples collected.

5:00 pm - Returned to AARON.

October 30, 1996

From: John Krupa
To: File

Re: **Field Notes -UST Remediation Project**

8:15 AM - Mobilization - Aaron Environmental crew on site. Ray Cody of EPA Region I also on site.

Set up decon/staging area; poly sheeting spread over area of appx 40'X50' for stockpiling of excavated soils. Decon materials and field supplies set up in this area. See photo. We agree that this area and the immediate excavation area will be designated the exclusion zone.

appx. 9:30 AM - Roll-off containers arrived (via Envirite truck).

appx. 9:45 AM - Rain begins, becoming steady.

10:30 AM - decision made to quit for the day; work to resume 10/31/96, 7:30 AM.
No excavation initiated.

October 31, 1996

7:30 AM - Aaron crew on site; continued with the construction of the exclusion zone.
Ray Cody of EPA Region I also on site.

8:00 AM - Began excavation of the west UST. 0-5 foot level soils stockpiled on poly sheeting.
Samples collected by Aaron crew.

Appx. 9:00 AM - Greg Lawrence on site.

Discussed with Greg and Rich sample labeling format; agreed to use EAS labeling format.

Discussed with Ray Cody and Greg Lawrence rationale for analysis of total PCBs. We had proposed to use decachlorobiphenyls as the identifier of total PCBs. We agree that this approach would prove to be confusing since decachlors are not EPA or DEP target compound; Ray suggests we resubmit table of analytes edited to show total PCBs instead of decachlors, list individual PCBs if detected, and footnote to clarify rationale. If EAS detects any decachlors, then they will run the individual PCBs, total the concentrations, and report as total PCBs.

Took PID (Photovac Micro Tip H-2000) headspace readings on eight 0-5 foot level samples; readings are in the 0-5 ppm range.

10:00 AM - Approx. 5 cu yds removed from >5 fbg level; see photo #13.
Photo #15 is >5 fbg soil pile.

Soil color variation at <5 fbg level at west wall; PID reading = <1.6, acid gas(Accuro detector) = BDL); concluded that it is soil variation, not contamination.

Top of tank exposed at appx 5 fbg.
Top of tank breached; back hoe pierces hole of appx. 2 ft sq. in top of tank.
Took flammable gas readings in and around tank; LEL = BDL.

Excavated around tank to most of tank depth; attempted to lift tank from excavation (by way of chains attached to side lifting lugs), but tank does not yield; continued excavation of soils from around tank and make several attempts to move tank; tank successfully lifted from base of excavation, but cannot clear sidewall of excavation to remove tank.

Decision made to place tank on backfilled soils to afford contractor safe work area to cut tank in situ and remove solids from tank.

1:30 PM - Top 4 feet of tank removed from excavation.

Tank measures 62" ID X 6.5 feet = 127.1 cu ft = 957 gallons cap.

Aaron crew manually shovels solids from tank bottom; total of appx. 1 cu yd removed.
Grab sample taken from roll-off container.

Tank put into roll-off (with tank contents) in two pieces.

4:00 PM - Roll-off covered; two soil piles covered with double layer of poly sheeting. Fencing and signs erected around work area and equipment.

November 1, 1996

7:30 AM - Rob and Rich of Aaron on site.

Measured west UST excavation; excavation measures 13' X 16' X 6' deep.

Contractor excavates west UST to original depth.

Samples (2) taken from excavation bottom; one sample collected from center of each (4) sidewall; no unusual staining observed.
10 samples taken from the <5 fbg soil stockpile.

East UST Excavation -

9:15 AM -set up plastic sheeting; installed second liner in roll-off container as first liner appeared to be inadequate.

9:45 AM - Commenced excavation.

0-5 fbg level appears to be clean, sandy soil with occasional pieces of white PVC pipe. All soil from this level stockpiled on plastic sheeting; operator hand picks plastic from soil.

> 5 fbg - Remnants of tank encountered at 5 fbg; appear to be clean of chemical contamination; all material (soil and tank remnants) placed in roll-off.
Excavated to 10 fbg.

"Sounded" for bottom of tank by poking with metal rod. bottom of tank detected at appx. 15 inches below the 10 fbg level. Measuring stick comes up stained with black, sludge-like material with sulfide odor.

12:15 PM - broke for lunch; I go to my Watertown office.

Appx 1:00 PM - Returned to site. Contractor has resumed excavation of soil/sludge from dish of UST; soils collapse from side walls making operation tedious. In process of digging, excavator bucket breaches tank bottom.

1:15 PM - Entire tank dish is removed from the pit by the excavator. Black solid material observed to be adhering to the inside surface of the tank dish; tank dish placed in roll-off.

Continued to excavate bottom of the excavation from 12 foot to 14 foot level in an attempt to remove dark colored solids. Sidewall cave-ins slow progress.

A dark band of material is observed at the 14 fbg level; appx. 3 inches thick.

All dark colored solids are removed from the bottom of the excavation with the exception of appx. 1/2 cu foot. Any further attempt to remove more material prove futile with present equipment. Decision made to continue excavation with a larger machine.

2:30 PM - Field crew secures site; parked the back-hoe at edge of pit with boom over pit; draped plastic sheeting over boom and pit; installed five-foot chain link fencing around work area with orange construction fencing around this.

Rich collects samples - four sidewall, two bottom, five grabs from 0-5 fbg stockpile.

Covered soil pile with plastic and secured cover.

4:00 PM - Sampled roll-off contents; eight samples. Gave Rich QC samples of field blanks and PE samples for transfer to lab with field samples.

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November 12, 1996

To: File
From: John Krupa

Re: Field Notes - UST Excavation Project; Continuation of East UST Excavation

---

Aaron crew (Rich and Rob) arrived on site 8:00 AM.

Ray Cody of EPA on site (appx. 8:30 am) to observe activities.

Disassembled fencing and removed covers from soil piles.

Scott's Landscaping tracked (1/2 yd?) excavator on site 8:45 am.

Backfilled west UST with 0-5 fbg soil and finished grade with purchased soils.

10:00 AM - Commenced continuation of east UST excavation; excavated to approx. 16 fbg; encountered a dark gray stratification appx. 4-6" thick at perimeter of excavation at the 14 foot level.

Excavated appx. 5 cu yds. of dark soil and placed in empty roll-off container.

Material sampled from excavator bucket and examined; material has sulfur-like odor and contains pieces of twigs. We (Ray, Rich, and I) that this material may be remnant of historic flood plain. A sample is transported to EAS Labs for analysis;

Results: pH = 6.9
Sulfide = neg.
VOC scan - neg.

Appx. 2:30 PM - Decision was made based on analytical results to backfill the excavation with 0-5 fbg soils. Backfill deemed sufficient to afford escape route from excavation.

Soils excavated today from east UST = appx. 3 cu yds.; stockpiled on poly sheeting and covered. Five grab samples were taken from this pile for analysis to assess soil quality (for subsequent backfilling).

Two samples were taken from the UST bottom for site-specific analysis.
Sample of east UST contents was collected from roll-off container for VOC analysis.

Material from first roll-off was transferred to second roll-off to equalize volumes. Both containers appx. 2/3 full.

Decontaminated excavator bucket with pressure-wash over roll-off.

Rich Vocke transports samples to EAS Labs.

Site fenced and secured by 4:30 PM.

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APPENDIX F

GZA GEOENVIRONMENTAL, INC.
ENGINEERS AND SCIENTISTS
27 Naek Road
Vernon, Connecticut 06066
203-875-7655
FAX 203-872-2416

LETTER OF TRANSMITTAL

DATE June 24, 1997	JOB NO. 41875.00
ATTENTION Mr. Raphael J. Cody	
RE. Envirite Corporation: RCRA Docket NO. I-90-1032, Thomaston, Connecticut	

TO Office of Site Remediation and Restoration
~~Corrective Action Section-HBT~~
U.S. Environmental Protection Agency
~~J.F.K. Federal Building~~
15 New Sudbury Road
~~Boston, MA 02203~~

GENTLEMEN:

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items.

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	6/24/97		Response to EPA Comments, RCRA Facility Investigation Phase I Report

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS cc: Mr. William McTigue
Envirite Corporation
620 West Germantown Pike
Plymouth Meeting, PA 19462
(5 copies)

Mr. Clifford Brammer
Town of Thomaston
158 Main Street
Thomaston, CT 06787
(1 copy)

COPY TO

Mr. Thomas Mueller, P.E.
Town of Thomaston
158 Main Street
Thomaston, CT 06787
(1 copy)

Ms. Diane Duva & Mr. Jeff Wilcox
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106
(1 copy)

SIGNED: Thomas F. Stark

If enclosures are not as noted, kindly notify us at once.

ENVIRITE CORPORATION
TECHNOLOGY FOR THE ENVIRONMENT

November 6, 1996

Via Facsimile and U.S. Mail

Mr. Raphael J. Cody
U.S. Environmental Protection Agency
Office of Site Remediation & Site Restoration
Corrective Action Section -HBT
J.F.K. Federal Building
Boston, MA 02203-0001

Re; Underground Storage Tank (UST) Removal Project: Parameter List Amendment; RCRA Docket I-90-1032

Dear Mr. Cody,

On October 31, 1996, Greg Lawrence and I discussed with you Envirite's site-specific parameter list with respect to the total PCB analytical method. Envirite had listed decachlorobiphenyl as the indicator parameter for total PCBs. We discussed the ambiguity inherent with associating a decachlorobiphenyl concentration value with state and federal PCB clean-up levels. We agreed that a more appropriate approach would be to analyze for the standard seven Aroclors (1016, 1221, 1232, 1242, 1248,1254,1260) identified in the analytical method, sum the results, and report the summation of the concentrations as total PCBs.

Attached please find amended pages 3 and 4 of the parameter list reflecting this approach.

Should you have any questions, please do not hesitate to contact me at (860) 274-3789.

Very truly yours,

John Krupa
Compliance Specialist

enc.
cc: D. Duva, F. Marrazza, T. Mueller, W.R. McTigue, G. Lawrence

HEMINWAY CENTER 473 MAIN STREET WATERTOWN CT 06795 PHONE (860) 274-3789 FAX (860) 945-2373

Recycling Paper

Table 1

A Comparison of Soil Constituent Concentrations to Applicable Cleanup Standards

No	Compound	Min. Conc. Detected	Max. Conc. Detected	CT GA Mobility Std. *	CT Residen. Dir.Exp.**	EPA Risk-Based Levels ***
	Volatile Compounds					
1	1,1,1-Trichloroethane	0.0083	0.0083	4.	500.	0.9
2	1,1,2-Trichloroethane	BQL	BQL	0.1	11.	0.01
3	1,1-Dichloroethene	0.0005	0.0005	0.14	1.	0.03
4	1,2-Dichloroethane	BQL	BQL	0.02	6.3.	0.01
5	1,2-Dichloropropane	BQL	BQL	0.1	9.	0.02
6	1,1,2,2-Tetrachloroethane	BQL	BQL	0.01	3.1	0.001
7	2-Butanone (MEK)	0.18	0.18	8.	500.	1,000,000 $_1$
8	2-Chloroethyl vinyl ether	BQL	BQL	NL	NL	51,000$_1$
9	2-Hexanone	0.0012	0.0012	NL	NL	NL
10	4-Methyl-2-pentanone (MIBK)	0.0066	0.0066	7.	500.	160,000 $_1$
11	Acetone	0.007	0.13	14.	500.	8.
12	Acrolein	BQL	BQL	NL	NL	41,000 $_1$
13	Benzene	BQL	BQL	0.02	21.	0.02
14	Bromoform	BQL	BQL	0.08	78.	0.5
15	Bromomethane	BQL	BQL	NL	NL	0.1
16	Bromodichloromethane	BQL	BQL	NL	NL	0.3
17	Carbon disulfide	0.0015	0.0015	NL	NL	14.
18	Carbon tetrachloride	BQL	BQL	0.1	4.7	0.03
19	Chlorobenzene	0.0013	0.0013	2.	500.	0.6
20	Chloroform	0.11	0.11	0.12	100.	0.3
21	Chloroethane	BQL	BQL	NL	NL	33.
22	Chloromethane	BQL	BQL	NL	NL	0.0066
23	Cis-1,2-Dichloroethene	BQL	BQL	1.4	500.	0.2
24	Cis-1,3-Dichloropropene	BQL	BQL	0.01	3.4	0.001
25	Dibromochloromethane	BQL	BQL	0.01	7.3	NL
26	1,1-Dichloroethane	BQL	BQL	1.4	500.	11.
27	Ethylbenzene	0.05	0.05	10.1	500.	5.
28	Methylene Chloride	0.002 (J)	0.003 (J)	0.1	82.	0.01
29	Styrene	0.01	0.01	2.	500.	2.
30	Tetrachloroethene	0.26	0.26	0.1	12.	0.04
31	Toluene	0.0016	0.0016	20.	500.	5.
32	Trans-1,2-Dichloroethene	BQL	BQL	2.	500.	0.3
33	Trans-1,3-Dichloropropene	BQL	BQL	0.01	3.4.	0.001
34	Trichloroethene	0.11	0.11	0.1	56.	0.02
35	Xylenes (total)	0.1	0.1	19.5	500.	74.
36	Vinyl Acetate	BQL	BQL	NL	NL	84.
37	Vinyl Chloride	BQL	BQL	0.04	0.32	0.01
	Semi-Volatiles					
38	2,4-Dichlorophenol	BQL	BQL	1.	200.	0.5
39	2,6-Dichlorophenol	BQL	BQL	NL	NL	NL

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A Comparison of Soil Constituent Concentrations to Applicable Cleanup Standards

No	Compound	Min. Conc. Detected	Max. Conc. Detected	CT GA Mobility Std. *	CT Residen. Dir.Exp.**	EPA Risk-Based Levels ***
40	2-Methylnaphthalene	0.033	0.033	NL	NL	NL
41	2,4,5-Trichlorophenol	BQL	BQL	NL	NL	120.
42	2,4,6-Trichlorophenol	BQL	BQL	NL	NL	0.06
43	Acenaphthene	BQL	BQL	8.4	1,000.	200.
44	Anthracene	0.019	0.019	40.	1,000.	4,300.
45	Benzo(a)pyrene	0.1	0.1	1.	1.	4.
46	Benzo(b)fluoranthene	0.089	0.089	1.	1.	4.
47	Benzo(k)fluoranthene	0.1	0.1	1.	8.4	4.
48	Bis(2-ethylhexyl)phthalate	0.16	0.31	1.	44.	11.
49	Butylbenzylphthalate	0.029	0.029	20.	1,000.	68.
50	2-Chlorophenol	BQL	BQL	1.	340.	2.
51	Diethylphthalate	BQL	0.041 (J)	NL	NL	110.
52	Di-n-butylphthalate	0.03 (J)	0.650 (J)	14.	1,000.	NL
53	Di-n-octylphthalate	0.041 (J)	0.041 (J)	2.	1,000.	1,000,000
54	Dibenzofuran	0.02	0.02	NL	NL	120.
55	Diethylphthalate	15 (J)	61 (J)	NL	NL	110.
56	Fluoranthene	0.01	0.21	5.6	1,000	980.
57	Fluorene	0.02	0.02	5.6	1,000	160.
58	Naphthalene	0.015	0.015	5.6	1,000	30.
59	N-Nitrosodiphenylamine	BQL	BQL	NL	NL	0.2
60	N-Nitrosodimethylamine	BQL	BQL	NL	NL	0.11
61	Phenanthrene	0.011 (J)	0.12	4.	1,000.	NL
62	Pyrene	0.010 (J)	0.16	4.	1,000.	1,400.
	Pesticides & PCBs					
63	Alpha-BHC	NA	NA	NL	NL	0.0004
64	Beta-BHC	BQL	BQL	NL	NL	0.002
65	Delta-BHC	0.0011	0.0011	NL	NL	NL
66	Gamma-BHC (Lindane)	0.0005	0.001	0.02	20.	0.006
67	Heptachlor	BQL	BQL	0.013	NL	0.06
68	Aldrin	BQL	BQL	NL	NL	0.005
69	Heptachlor Epoxide	BQL	BQL	0.02	0.063	0.03
70	Dalapon	BQL	BQL	NL	NL	61,000
71	Dieldrin	BQL	BQL	0.007	0.038	0.001
72	Dinoseb	BQL	BQL	NL	NL	2,000
73	4,4-DDE	BQL	BQL	NL	NL	0.5
74	4,4-DDT	0.0005	0.0005	NL	NL	1.
75	Endosulfan I	BQL	BQL	NL	NL	3.
76	Endosulfan II	BQL	BQL	NL	NL	3.
77	4,4-DDD	BQL	BQL	NL	NL	0.7
78	Endosulfan Sulfate	BQL	BQL	NL	NL	NL
79	Methoxychlor	BQL	BQL	0.8	340.	62.
80	Endrin Aldehyde	BQL	BQL	NL	NL	NL

Table 1

A Comparison of Soil Constituent Concentrations to Applicable Cleanup Standards

No	Compound	Min. Conc. Detected	Max. Conc. Detected	CT GA Mobility Std. *	CT Residen. Dir.Exp.**	EPA Risk-Based Levels ***
81	Gamma-Chlordane	BQL	BQL	NL	NL	2.
82	Tetrachloro-m-xylene	BQL	BQL	NL	NL	NL
83	Total PCBs	BQL	BQL	0.0005	1.	0.74 [1]
84	Aroclor 1016	BQL	BQL	NL	NL	140 [1]
85	Aroclor 1221	BQL	BQL	NL	NL	NL
86	Aroclor 1232	BQL	BQL	NL	NL	NL
87	Aroclor 1242	BQL	BQL	NL	NL	NL
88	Aroclor 1248	BQL	BQL	NL	NL	NL
89	Aroclor 1254	0.0077	0.021	NL	NL	41 [1]
90	Aroclor 1260	BQL	BQL	NL	NL	NL
	Herbicides					
99	2,4-D	BQL	BQL	1.4	680.	1.7
100	2,4-DB	BQL	BQL	NL	NL	16,000 [1]
101	2,4,5-TP (Silvex)	BQL	BQL	NL	NL	16,000 [1]
102	2,4,5-T	BQL	BQL	NL	NL	20,000 [1]
103	Dicamba	BQL	BQL	NL	NL	61,000 [1]
104	Dichloroprop	BQL	BQL	NL	NL	NL
105	MCPA	BQL	BQL	NL	NL	1,000 [1]
106	MCPP	BQL	BQL	NL	NL	2,000 [1]
	Total Petroleum Hydrocarbons (TPH)					
107	TPH, by EPA Method 418.1	NA	NA	500	500.	NL
	Metals				Leachable units are mg/l	
108	Antimony, total	BQL	BQL	NL	27.	820 [1]
109	Antimony, leachable	BQL	BQL	0.006		NL
110	Arsenic, total	0.26	0.28	NL	10.	15.
111	Arsenic, leachable	BQL	BQL	0.05		NL
112	Barium, total	23.	87.	NL	4700.	32.
113	Barium, leachable	BQL	BQL	1.0		NL
114	Beryllium, total	0.6	0.62	NL	2.	180
115	Beryllium, leachable	BQL	BQL	0.004		NL
116	Cadmium, total	1.1	1.1	NL	34.	6.
117	Cadmium, leachable	BQL	BQL	0.005		NL
118	Chromium, total	8.4	50.	NL	100. [3]	19. [3]
119	Chromium, leachable	BQL	BQL	0.05		NL
120	Cobalt, total	4.0	8.8	NL	NL	120,000 [1]
121	Cobalt, leachable	BQL	BQL	NL		NL
122	Copper, total	27.	110	NL	2,500.	82,000 [1]
123	Copper, leachable	BQL	BQL	1.3		NL
124	Lead, total	1.6	14.	NL	500.	400. [4]
125	Lead, leachable	BQL	BQL	0.015		NL
126	Mercury, total	BQL	BQL	BQL	20.	3.
127	Mercury, leachable	BQL	BQL	0.002		NL
128	Nickel, total	9.6	19.	BQL	1,400.	21.

Table 1

A Comparison of Soil Constituent Concentrations to Applicable Cleanup Standards

No	Compound	Min. Conc. Detected	Max. Conc. Detected	CT GA Mobility Std. *	CT Residen. Dir.Exp.**	EPA Risk-Based Levels ***
129	Nickel, leachable	BQL	BQL	0.1		NL
130	Selenium, total	BQL	BQL	BQL	340.	3.
131	Selenium, leachable	BQL	BQL	0.05		NL
132	Silver, total	0.60	1.2	NL	340.	10,000 1
133	Silver, leachable	BQL	BQL	0.036		NL
134	Thallium, total	BQL	BQL	NL	5.4	0.4
135	Thallium, leachable	BQL	BQL	0.005		NL
136	Tin, Total	BQL	BQL	NL	NL	1,000,000 1
137	Tin, Leachable	BQL	BQL	NL		NL
138	Vanadium, total	33.	40.	NL	470.	14,000 1
139	Vanadium, leachable	BQL	BQL	0.05		NL
140	Zinc, total	29.	83.	NL	20,000.	42,000
141	Zinc, leachable	0.062	0.080	5.		NL
	Inorganics					
142	Cyanide, Total	5.8	5.8	NL	1,400	41,000. 2
143	Cyanide, leachable	NA	NA	0.2 by SPLP		
144	Sulfide, Total	15.	30.	NL	NL	NL

Notes:

All units are mg/kg unless noted otherwise.

NA - Not analyzed
NL - Not listed in agency risk guidance
BQL - Below Method Detection Limit
1 - Soil ingestion, industrial, risk-based concentration
2 - As free cyanide, soil ingestion, industrial, risk-based concentration
3 - $Cr+^{6}$ criterion
4 - De facto residential soil value
5 - As endosulfan

* December 1995 State of Connecticut Remediation Standards, section 22a-430 of the General Statutes; Pollutant Mobility Criteria for Soil, GB Mobility Criteria.

** December 1995 State of Connecticut Remediation Standards, section 22a-430 of the General Statutes; Direct Exposure Criteria for Soil, Industrial/Commercial

*** EPA Region III Risk-Based Concentration Table, July - December 1995; from Roy L. Smith, Office of RCRA, Technical and Program Support Branch (3HW70). Soil Screening Levels - Transfers from Soil to Groundwater.

Shaded cells represent exceedences of either a State or Federal clean-up standard.

Table 2

Additional Parameters for Toxicity Characteristic Determination

No.	Compound	CT GA Mobility Standard *	EPA Risk-Based Standard ***	CT Residntl. Direct Exposure	TC Regulatory Level
1	Chlordane	0.066	2.	0.49	0.03
2	o-Cresol	NL	NL	NL	200.0
3	m-Cresol	NL	NL	NL	200.0
4	p-Cresol	NL	NL	NL	200.0
5	Cresol	NL	NL	NL	200.0
6	1,4-Dichlorobenzene	1.5	1.	26.	7.5
7	2,4-Dinitrotoluene	NL	0.2	NL	0.13
8	Endrin	NL	0.4	20.	0.02
9	Hexachlorobenzene	1.	0.8	3.6	0.13
10	Hexachlorobutadiene	NL	0.1	NL	0.5
11	Hexachloroethane	1.	0.2	44.	3.0
12	Nitrobenzene	NL	0.09	NL	2.0
13	Pentachlorophenol	1.	0.2	5.1	100.0
14	Pyridine	NL	2,000 [1]	NL	5.0
15	Toxaphene	0.33	0.04	0.56	0.5

Notes:

All units are mg/kg unless noted otherwise.

NL - Not listed in agency risk guidance
[1] - Soil ingestion, industrial, risk-based concentration

* December 1995 State of Connecticut Remediation Standards, under section 22a-430 of the General Statutes; Pollutant Mobility Criteria for Soil, GA Mobility Criteria.

** December 1995 State of Connecticut Remediation Standards, section 22a-430 of the General Statutes; Direct Exposure Criteria for Soil, Residential Criteria.

*** EPA Region III Risk-Based Concentration Table, July - December 1995; from Roy L. Smith, Office of RCRA, Technical and Program Support Branch (3HW70). Soil Screening Levels - Transfers from Soil to Groundwater.