AECOM

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April 27, 2009

Mr. Ryan Benefield
Chief of Hazardous Waste Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Subject: **Response to Comments on the Wormald Site Investigation Report**
Tyco Safety Products – Former Cedar Chemical Facility
Helena – West Helena, Arkansas
State EPA ID No. ARD990660649

Dear Mr. Benefield:

This letter is in response to written comments on the *Wormald Site Investigation Report* (AECOM, March 30, 2009) (Wormald SIR) provided by the Arkansas Department of Environmental Quality (ADEQ) in correspondence to AECOM dated April 9, 2009 and will be included with the *Revised Wormald SIR* in response to ADEQ's comments.

1) **Comment:** *Table 1 – The sample results for TSB-1-a, TSB-3, TSB-4, and TSB-5 presented in Table 1 do not match the results in the laboratory report. Also, the results presented in this table for these same samples are presented with either a "J" or "JQ" flag. The laboratory report does not show any flags for these samples. Furthermore, the data validation report states the results for dinoseb by Method 8151A are acceptable and no data flags are required. Please address and correct these discrepancies.*

Response: Preliminary laboratory results received from the analytical laboratory (included as Attachment 1 to this Response to Comments) contained samples qualified with a "J" or "JQ" flag, indicating the results between the Method Detection Limit (MDL) and the Method Quantization Limit (MQL). The preliminary results were inadvertently included in Table 1 instead of the final results. The "J" flagged samples were subsequently analyzed at a lesser dilution factor prior to completion of the final laboratory package (included in Appendix C of the *Wormald SIR*). The statement that "no data flags are required" in the Data Validation Report (DVR) is correct. The table has been updated to reflect the final laboratory results and is included as Table 1 of the *Revised Wormald SIR*.

2) **Comment:** *The Medium-Specific Screening Level of 680 mg/kg for dinoseb is incorrect. This value is taken from an outdated version of the Region 6 Medium-Specific Screening Tables and applies to an industrial outdoor worker with direct exposure to surface soil. The most*

9154516

current version of the Region 6 Medium-Specific Screening Tables is dated September 2008. In this case, the correct soil screening level for dinoseb is 0.051 mg/kg, which is a maximum contaminant level (MCL)-based screening level for protection of groundwater. All dinoseb concentrations collected from the 4'-8' soil interval exceed this screening level. Laboratory analysis for the samples being held that were collected from the 8'-12' soil interval would provide additional information in regards to potential impacts to groundwater. Please amend the narrative accordingly.

Response: A screening level of 680 mg/kg was used in reliance on a review of previous information provided by ADEQ and in two Geomatrix reports as follows:

(1) The screening level used in ADEQ's *Risk Evaluation* included as Appendix D of the *Cedar Chemical Company: Request for Proposal Packet* (ADEQ, August 23, 2005). Page 4 of the *Risk Evaluation* provides a risk based clean-up level of 680 mg/kg for "dry sediment" at Site 3.

(2) The tables in the *Interim Facility Investigation Report* (AMEC Geomatrix, October 2008) and the *Draft Facility Investigation Report* (AMEC Geomatrix, January 2009) list 680 mg/kg as the screening level for dinoseb in soil based on the Industrial Outdoor Worker exposure scenario. The MCL-based Soil Screening Level (SSL) for dinoseb was listed as "NA" on the tables and figures of both the *Interim FIR* (October 2008) and the *Draft FIR* (January 2009). Our understanding was that the *Interim FIR* or this SSL for dinoseb was not objected to by ADEQ.

However, based on ADEQ comment #2, it is now our current understanding that ADEQ has commented that the risk based clean-up level for dinoseb presented in its *Risk Evaluation* and in the AMEC Geomatrix Reports is not the correct SSL

As a result, Table 1 of the *Wormald SIR* has been amended to include the EPA Region 6 screening level (SL) for dinoseb in industrial soil (620 mg/kg) and the MCL-based SSL for dinoseb (5.1E-02 mg/kg) presented on the EPA Region 6 Medium-Specific Screening Level (MSL) tables dated September 2008. The revised table is included as Table 1 of the *Revised Wormald SIR*. Figure 2 of the *Wormald SIR* has also been revised to include the current EPA Region 6 MSL. The text will be amended to reflect comparisons to these screening criteria.

Soil samples collected from the 8-12 foot interval at TSB-1 were extracted on March 9, 2009 and are past the recommended holding time (40 days) specified in the analytical method; therefore, these samples will not be analyzed.

3) **Comment:** *The statement in the conclusions that designates the dinoseb concentration of 13,000 mg/kg for 3SB-6 (4-8') in the 1996 FI as*

being erroneous is subjective. Several factors would cause variance in sample results. These would include, but not limited to, sampling methodologies, analytical procedures, exact duplication of sample locations, and infiltration over a 13 year period. In this case, years of infiltration and duplication of sample locations are likely to be two of the main reasons for differences in dinoseb concentrations from the two sampling events. Please note that concentrations of dinoseb vary throughout the site and will increase and decrease within the borehole. Samples taken at shallow depths may exhibit lower concentrations of dinoseb. The range of dinoseb may increase as the hole advances and then decrease again at the base of the hole. ADEQ does not concur with the statement that the 1996 data is erroneous. There is not sufficient information available to qualify this statement. Please remove this statement from the final SIR and amend the narrative accordingly.

Response: Our rationale for our opinion was based upon the following: The detected dinoseb concentration (13,000 mg/kg) in historic soil sample 3SB-6 (4-8') was more than two orders of magnitude greater than detected concentrations (0.63 mg/kg to 560 mg/kg) in other Site 3 soil samples collected during the Ensafe FI (1996). Based on the range of historic dinoseb detections in soil in the vicinity of Site 3, the concentration detected in historic soil sample 3SB-6 (4-8') appeared anomalous. Therefore, a confirmation soil sampling program was developed for Site 3 in the vicinity of 3SB-6. Detected dinoseb concentrations for the five soil samples collected from the 4-8 foot interval in the vicinity of 3SB-6 range from 31.3 mg/kg to 80.4 mg/kg. Based on these results, the detected dinoseb concentration in historic soil sample 3SB-6 (4-8') does not appear to be consistent with the current Conceptual Site Model (CSM) and is not representative of current Site 3 conditions.

However, sentence two of the last paragraph on page 3 of the *Wormald SIR*, which reads *"confirmation sampling at TSB-1, which is co-located with historic soil sample 3SB-6, indicates that the dinoseb concentration of 13,000 mg/kg reported for 3SB-6 (4 – 8 feet) in the FI (EnSafe, 1996), is erroneous"*, will be revised to say *"confirmation sampling at TSB-1, which is co-located with historic soil sample 3SB-6, indicates that the dinoseb concentration of 13,000 mg/kg reported for 3SB-6 (4 – 8 feet) in the FI (EnSafe, 1996) is not representative of current Site 3 soil conditions.*

4) **Comment:** *The sample location map included with the SIR is the same map that was included with the work plan. The actual surveyed location of the sample collected for this investigation is not included in the SIR. Please provide an updated map showing the surveyed location of each sample location.*

Response: Prior to soil boring installation, historic soil sample 3SB-6 was located and staked by Smith and Weiland Surveyors as the location for TSB-1 using survey coordinates extracted from the basemap. A 10 foot by 10 foot grid centered on TSB-1 was established by the surveyor and the locations for TSB-2 through TSB-5 were staked on this grid as proposed on Figure 3 of the *Wormald Investigation Work Plan* and as shown on Figure 2 of the *Wormald SIR*.

No changes to the established sample grid were necessary. Sample location TSB-1 was installed at the location of historic sample 3SB-6 and sample locations TSB-2 through TSB-5 were installed 5-feet away from TSB-1 as shown on Figure 2 of the *Wormald SIR* and as proposed in the work plan. The sample locations and spatial relationships shown on Figure 2 are correct. However, to avoid confusion, Figure 2 has been revised to include an inset table listing the northing and easting of the sample locations referenced to Arkansas State Plane North American Datum 1983 (NAD83). The revised Figure is included as Figure 2 of the *Revised Wormald SIR*.

If you have any questions or require additional information, please contact me at 864-234-2282 or Ms. Ann Faitz at (501)831-5637.

Sincerely,

AECOM

Leslee J. Alexander, P.G.
Project Manager

Attachments: Attachment 1 – Preliminary Results for Dinoseb in Subsurface Soil

c: Mr. Dara Hall, ADEQ Counsel (letter only)
Mr. John Perkins, Tyco Safety Products
Ms. Ann Faitz, Tyco Counsel
Mr. Allan Gates, HCC legal counsel
Mr. Joe Ghormley, Exxon legal counsel
Project File 104366

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ATTACHMENT 1

PRELIMINARY RESULTS FOR DINOSEB IN SUBSURFACE SOIL

ETC ENVIRONMENTAL TESTING & CONSULTING, INC.
www.etcmemphis.com 2709 Whitton Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440
"A Laboratory Management Partner"

CLIENT: AECOM EARTH TECH
Project: Cedar Chemicals
Lab Order Number:

CASE NARRATIVE

Date: 03/19/09

ETCAL

Herbicides by Method 8151A

Sample Analysis
Samples were initially analyzed without dilution. The levels of Dinoseb present indicated that a dilution factor of 1:1000 would be required. Both the un-diluted and diluted sample extracts were analyzed in the same analytical batch. The high levels of Dinoseb caused an elevated result for this target analyte in the ending calibration verification standard for the confirmation column.

Data presented consists of preliminary results. All dilutions will be re-analyzed to ensure data within the calibration range. Some sample results are flagged with the data qualifier J, to indicate results between the MDL and MQL. These samples will be analyzed at a lesser dilution factor.

Method Blank
Dinoseb was detected in the method blank at a concentration of 6.90 J ug/kg. This concentration had no impact on the final sample data and will be re-analyzed to confirm this result.

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AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals**
Project No. **104336**
Site **W. Helena, AR**

Lab Order Number **0903061**
Lab ID **0903061-001A**
Field ID **TSB-1**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 10:10**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units		MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**44,200**	**µg/Kg**		**15,000**	**1,000**	**03/19/09 8:57**	**DPC**	**38386**
Surrogate: DCAA		70 %	Limits:	20-150	1	03/19/09 4:28	DPC	38386

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals**
Project No. **104336**
Site **W. Helena, AR**

Lab Order Number **0903061**
Lab ID **0903061-002A**
Field ID **TSB-1a**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 10:10**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**12100 JQ**	**µg/Kg**	**15,000**	**1,000**	**03/19/09 9:29**	**DPC**	**38386**
Surrogate: DCAA		65 %	Limits: 20-150	1	03/19/09 5:35	DPC	38386

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

03/19/09 5087 AECOM_GREENVILLE

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AECOM EARTH TECH
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Greenville, SC 29615

Project Description **Cedar Chemicals** Site **W. Helena, AR**

Project No. **104336**

Lab Order Number **0903061**
Lab ID **0903061-003A**
Field ID **TSB-2**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 9:38**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units		MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**31,300**	**µg/Kg**		**15,000**	**1,000**	**03/19/09 9:51**	**DPC**	**38386**
Surrogate: DCAA		79 %	Limits:	20-150	1	03/19/09 5:58	DPC	38386

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals** Site **W. Helena, AR**

Project No. **104336**

Lab Order Number **0903061**
Lab ID **0903061-004A**
Field ID **TSB-3**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 9:50**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**13400 J**	**µg/Kg**	**15,000**	**1,000**	**03/19/09 10:14**	**DPC**	**38386**
Surrogate: DCAA		87 %	Limits: 20-150	1	03/19/09 6:20	DPC	38386

Qualifiers/ Definitions				
	*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
	J	Estimated Value Analyte below reported detection limit	M	Minimum value
	MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
	MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
	Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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Building VI, Suite 500
Greenville, SC 29615

Project Description: **Cedar Chemicals**
Site: **W. Helena, AR**
Project No. **104336**

Lab Order Number **0903061**
Lab ID **0903061-005A**
Field ID **TSB-4**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 9:25**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**10600 J**	**µg/Kg**	**15,000**	**1,000**	**03/19/09 10:36**	**DPC**	**38386**
Surrogate: DCAA		79 %	Limits: 20-150	1	03/19/09 6:43	DPC	38386

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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Project Description **Cedar Chemicals**
Project No. **104336**
Site **W. Helena, AR**

Lab Order Number **0903061**
Lab ID **0903061-006A**
Field ID **TSB-5**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 9:10**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**34,500**	**µg/Kg**	**15,000**	**1,000**	**03/19/09 10:59**	**DPC**	**38386**
Surrogate: DCAA		100 %	Limits: 20-150	1	03/19/09 7:05	DPC	38386

Qualifiers/ Definitions				
	*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
	J	Estimated Value Analyte below reported detection limit	M	Minimum value
	MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
	MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
	Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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April 27, 2009

Mr. Ryan Benefield
Chief of Hazardous Waste Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Subject: **Revised Wormald Site Investigation Report**
Tyco Safety Products – Former Cedar Chemical Facility
Helena – West Helena, Arkansas
State EPA ID No. ARD990660649

Dear Mr. Benefield:

On behalf of Tyco Safety Products – Ansul Incorporated, AECOM is pleased to submit two copies of this *Revised Wormald Site Investigation Report* (Revised SIR) that summarizes the subsurface soil sampling activities and analytical results for soil samples collected from Site 3 - Stormwater Ditches at the Former Cedar Chemicals Facility located in Helena – West Helena, Arkansas (Figure 1). The Wormald Site Investigation was conducted in accordance with the *Wormald Site Investigation Work Plan* dated January 22, 2009, the subsequent Arkansas Department of Environmental Quality approval letter dated January 29, 2009, and the *Wormald Separate Agreement Pursuant to Consent Administrative Order LIS No. 07-027 for the Conduct of a Site Investigation and Feasibility Study* (Wormald Separate Agreement) between the Arkansas Department of Environmental Quality (ADEQ), and Ansul Incorporated, Wormald U.S., Inc dated January 9, 2009. This Revised SIR is submitted pursuant to comments provided by ADEQ to AECOM by letter dated April 9, 2009 and received by AECOM on April 13, 2009; and AECOM's letter response to the comments dated April 27, 2009. The comment and response letters are attached and incorporated in Appendix A of this Revised SIR. A summary of field activities, soil sampling procedures, and analytical results is provided below.

Investigation Objectives

During the 1996 Facility Investigation, dinoseb was reported at a concentration of 13,000 milligrams per kilogram (mg/kg) in subsurface soil sample 3SB-6 (4 to 8 feet below ground surface (bgs)) and identified as a contaminant of concern (COC) for Site 3 in the Risk Assessment (EnSafe, 1996; ADEQ, 2005). The Wormald Site Investigation focused on the collection of additional subsurface soil samples at Site 3 to confirm the concentration of dinoseb in subsurface soil at historic sample location 3SB-6 and to evaluate possible dinoseb concentrations in the vicinity of 3SB-6.

Site Reconnaissance

Prior to soil boring installation, historic soil sample 3SB-6 was located and staked by Smith and Weiland Surveyors, an Arkansas licensed land surveyor, as the location for TSB-1 using survey coordinates extracted from the basemap. A 10 foot by 10 foot grid centered on TSB-1 was established by the surveyor and the locations for TSB-2 through TSB-5 were staked on this grid as proposed on Figure 3 of the *Wormald*

Investigation Work Plan. Utility clearance for all environmental sample locations was provided by Arkansas One-Call prior to intrusive work. Site surveying and utility clearance activities were conducted on March 4, 2009 and were overseen by the AECOM Project Geologist/Field Manager as documented in the Daily Quality Control Report included in Appendix B.

Borehole Installation, Lithologic Sampling and Headspace Screening

On March 5, 2009, five soil borings (TSB-1 through TSB-5) were installed within Site 3 for the collection of soil samples for dinoseb analysis (Figure 2). The additional analytical data were needed to confirm the reported concentration of dinoseb (13,000 mg/kg) at historical sample location 3SB-6 (EnSafe, 1996) and to assess the occurrence of dinoseb concentrations in the subsurface.

Soil borings were installed by Tri-State Testing Services, Inc., located in Memphis, Tennessee, using a Direct Push Technology (DPT) Geoprobe® rig. Continuous soil samples were collected from each soil boring and were logged for lithology by an AECOM Geologist. Lithologic classification was conducted in accordance with the Unified Soil Classification System (USCS) and soil descriptions were recorded on Test Boring Reports (Appendix B). A Photo Ionization Detector (PID) Organic Vapor Analyzer (OVA) was used to assess the qualitative concentration of potential volatile organic vapors present in vadose zone soil core samples. PID headspace results were recorded on Test Boring Reports (Appendix B).

Soil Sampling Program

Five soil borings, designated TSB-1 through TSB-5 (Figure 2), were installed at Site 3 to confirm and/or assess the occurrence of dinoseb concentrations in subsurface soil at historic soil sample location 3SB-6, collected from 4-8 feet bgs in lithologic boring LB-6 during the 1996 *Facility Investigation* (EnSafe). One primary soil sample was collected from 4-8 feet bgs at each boring for analysis of dinoseb. Two additional soil samples, one from 1-4 feet bgs and one from 8-12 feet bgs, were collected from TSB-1 and held for analysis pending dinoseb results from the 4-8 foot interval.

Soil was collected from the desired sample interval at each boring using DPT Geoprobe® rig with disposable acetate sample sleeves lining the core barrel. Soil samples were collected from the acetate sleeve using a decontaminated stainless steel spoon, were placed new, disposable zip-lock bags, and were thoroughly homogenized in the bags prior to containerization. A portion of the sample was later screened for organic vapors utilizing a PID OVA. Soil samples for laboratory analysis were containerized in laboratory supplied bottleware and placed in an ice filled cooler pending delivery to the laboratory.

Soil samples were analyzed for dinoseb by Environmental Testing and Consulting, Inc., located in Memphis, Tennessee, using Environmental Protection Agency (EPA) SW846 Method 8151A. Environmental Testing and Consulting, Inc. has been certified under the ADEQ Laboratory Certification Program and a copy of the certification is provided in Appendix C.

QA/QC Program

The quality assurance/quality control (QA/QC) program was implemented to provide a system of documented checks that ensures the authenticity and validity of the environmental data. QA/QC samples, including one field duplicate (soil) sample, one equipment rinsate blank sample, and one matrix spike/matrix spike duplicate (MS/MSD) sample, were collected and analyzed for dinoseb by EPA SW-846 Method

8151A. Results from the QA/QC samples were used during the data validation process as discussed in Data Validation Report (DVR) in Appendix D.

Analytical Test Results

Table 1 summarizes the results for dinoseb in subsurface soil samples collected from the 4 to 8 foot depth interval at Site 3. Dinoseb was reported in all samples at concentrations ranging from 31.3 milligrams per kilogram (mg/kg) in TSB-2 to 80.4 mg/kg at TSB-3. All results were significantly below the EPA Region 6 Medium-Specific Screening Level (MSL; 620 mg/kg) for dinoseb in industrial soil; however, the soil samples exceeded the EPA Region 6 Maximum Contaminant Level (MCL)-based soil screening level (SSL; 5.10E-02 mg/kg) for dinoseb (US EPA Region 6, September 2008).

Soil samples from the 1 to 4 foot and 8 to 12 foot interval at TSB-1 were prepped and held pending the analysis of the 4 to 8 foot sample but were not analyzed since the concentration of dinoseb at TSB-1 (4 to 8 foot) was less than the EPA Region 6 MSL and required no further delineation.

The relative percent difference between the primary sample (TSB-1) and the field duplicate sample (TSB-1-a) was calculated and was less than the threshold established in the Data Quality Objectives of the *Wormald Site Investigation Work Plan* (AECOM, January 22, 2009). Results of the data validation indicate the data associated with this laboratory batch should be considered compliant and adequate for its intended use. The Data Validation Report is provided in Appendix D along with the Chain of Custody forms and analytical laboratory Certificate of Analysis.

Solid IDW Characterization and Management

All sampling equipment was pre-cleaned and wrapped in plastic prior to mobilization; therefore, on-Site equipment decontamination was not necessary. Used PPE, disposable sampling equipment, and other miscellaneous trash was consolidated in trash bags at the end of each day and sealed for subsequent off-Site disposal.

Soil generated during soil sampling activities was contained in a new 55-gallon drum approved by the Department of Transportation (DOT) and staged at a central location in accordance with all Federal, State and local requirements. The drum was labeled to indicate the type of material contained, place of origin, Site number and location, boring numbers, and date on which materials were initially placed in the container. An Investigation Derived Waste (IDW) Management Form was completed to document IDW generated during field activities and is include in Appendix B.

At the completion of field activities, a representative sample of solid IDW was collected for analysis of toxicity characteristic leaching procedure (TCLP) volatile organic compounds (VOCs) by EPA SW-846 Method 8260B, TCLP semi-volatile organic compounds (SVOCs) by EPA SW-846 Method 8270C, TCLP pesticides by EPA SW-846 Method 8081A, TCLP herbicides by EPA SW-846 8151A, and TCLP metals by EPA SW-846 Methods 6010B/7470A to evaluate disposal options. The TCLP results are presented in Table 2 and Certificates of Analysis are presented in Appendix D. The IDW soil sample results were below the Hazardous Waste Characterization Thresholds for all constituents analyzed. The drum of IDW soil is currently staged on Site pending the selection and scheduling of an IDW disposal contractor. Once the disposal contractor has been procured, the drum of soil will be disposed of in accordance with Federal, State, and local requirements.

Conclusions

Although dinoseb was detected in soil samples from borings TSB-1 through TSB-5, all reported concentrations were below the EPA Region 6 MSL for industrial soil. Furthermore, confirmation sampling at TSB-1, which is co-located with historic soil sample 3SB-6, indicates that the dinoseb concentration of 13,000 mg/kg reported for 3SB-6 (4 – 8 feet) in the FI (EnSafe, 1996), is not representative of current Site 3 soil conditions. Based on this information, the assessment of dinoseb in soil at Site 3 is complete and all results are below the EPA Region 6 MSL.

Upon approval of this Revised SIR, Tyco Safety Products – Ansul Incorporated will prepare a Feasibility Study for submittal to the ADEQ on or before June 30, 2009. If you have any questions or require additional information, please contact me at 864-234-2282 or Ms. Ann Faitz at (501)831-5637.

Sincerely,

AECOM

Leslee J. Alexander

Leslee J. Alexander, P.G.
Project Manager

Attachments:
- Figure 1 – Site Location Map
- Figure 2 – Results for Dinoseb in Subsurface Soil at Site 3
- Table 1 – Summary of Dinoseb Results in Soil Samples
- Table 2 – Summary of TCLP Results in IDW Soil Sample
- Appendix A – Comments and Response to Comments on the *Wormald Site Investigation Report*
- Appendix B – Field Investigation Forms
- Appendix C – Analytical Laboratory Certification
- Appendix D - Data Validation Report/Certificates of Analysis

c:
- Mr. Dara Hall, ADEQ Counsel (letter only)
- Mr. John Perkins, Tyco Safety Products
- Ms. Ann Faitz, Tyco Counsel
- Mr. Allan Gates, HCC legal counsel
- Mr. Joe Ghormley, Exxon legal counsel
- Project File 104366

104336:\ADMIN\Reports\Wormald SI\Revised Final\Revised Wormald SIR (Rev00).doc

FIGURES

Source: TerraServer DRG
(West Helena, Arkansas, United States)

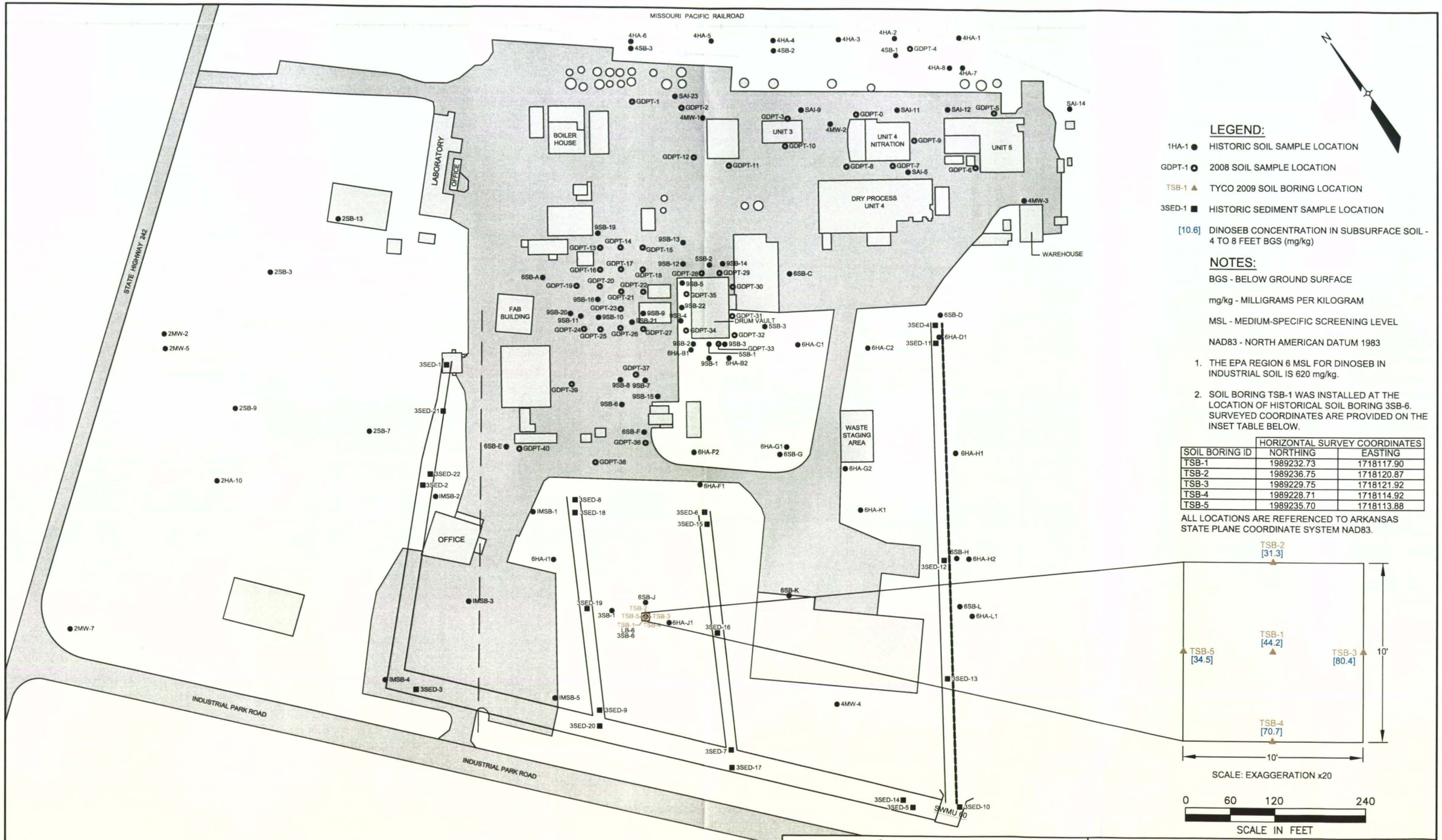
AECOM

FIGURE 1
SITE LOCATION MAP

FORMER CEDAR CHEMICAL FACILITY
HELENA – WEST HELENA, ARKANSAS

APRIL 2009 104336

work\104336\ADMIN\Workplans\Tyco SI\Figures\For Site Location Map\Fig._1 SiteLocMap(2).doc



SOIL BORING ID	HORIZONTAL SURVEY COORDINATES NORTHING	EASTING
TSB-1	1989232.73	1718117.90
TSB-2	1989236.75	1718120.87
TSB-3	1989229.75	1718121.92
TSB-4	1989228.71	1718114.92
TSB-5	1989235.70	1718113.88

FIGURE 2
RESULTS FOR DINOSEB IN SUBSURFACE SOIL AT SITE 3

FORMER CEDAR CHEMICAL FACILITY
HELENA - WEST HELENA, ARKANSAS

APRIL 2009

104336

\\USGRNS01\data\work\104336\CADD\104336_013 Results for Dinoseb in Subsurface Soil at Site 3.dwg, 4/22/2009 11:26:19 AM, mandy.splawn

TABLES

Table 1
Summary of Dinoseb Results in Soil Samples
Former Cedar Chemicals Facility
Helena-West Helena, Arkansas

Sample ID	EPA	EPA	TSB-1	TSB-1-a	TSB-2	TSB-3	TSB-4	TSB-5
Lab Sample ID	Region 6	Region 6	0903061-001A	0903061-002A	0903061-003A	0903061-004A	0903061-005A	0903061-006A
Sample Depth (feet bgs)	MSL	MCL-based	4 - 8	4 - 8	4 - 8	4 - 8	4 - 8	4 - 8
Date Collected	(Industrial Soil)	SSL	3/5/2009	3/5/2009	3/5/2009	3/5/2009	3/5/2009	3/5/2009
Herbicides by Method 8151A (mg/kg)								
Dinoseb	680	5.10E-02	**44.2**	**33.8**	**31.3**	**80.4**	**70.7**	**34.5**

Notes:
-a - Indicates a field duplicate sample.
bgs - below ground surface
EPA - Environmental Protection Agency
MSL - Medium Specific Screening Level for Subsurface Soil
MCL - Maximum Contaminant Level
SSL - Soil Screening Level
Bold font indicates the analyte was detected.
Gray shading indicates the detected concentration exceeded the EPA Region 6 MCL-based SSL.

1. The 1 - 4 foot bgs and 8 - 12 foot bgs soil samples from TSB-1 were collected, prepped, and held for analysis pending the results from the 4 - 8 foot sample. These samples were not analyzed since the 4 - 8 foot sample results were less than the EPA Region 6 MSL for dinoseb in industrial soil.
2. EPA Region 6 MSL and SSL for dinoseb were downloaded from the EPA Region 6 Human Health MSL web site - http://www.epa.gov/region6/6pd/rcra_c/pd-n/screen.htm. These screening levels included in these tables were finalized in September 2008.

Table 2
Summary of TCLP Results in IDW Soil Sample
Former Cedar Chemicals Facility
Helena-West Helena, Arkansas

Sample ID **Lab Sample ID** **Date Collected**	EPA Hazardous Waste Characterization Threshold	IDW-4 0903061-010B 3/5/2009	
TCLP Volatile Organic Compounds by Method 8260B (mg/L)			
Benzene	0.5	<	0.01
2-Butanone (MEK)	200	<	0.2
Carbon tetrachloride	0.5	<	0.01
Chlorobenzene	100	<	0.01
Chloroform	6	<	0.01
1,4-Dichlorobenzene	7.5	<	0.01
1,2-Dichloroethane	0.5	<	0.01
1,1-Dichloroethene	0.7	<	0.01
Tetrachloroethene	0.7	<	0.01
Trichloroethene	0.5	<	0.01
Vinyl chloride	0.2	<	0.01
TCLP Semivolatile Organic Compounds by Method 8270C (mg/L)			
2,4-Dinitrotoluene	0.13	<	0.02
Hexachlorobenzene	0.13	<	0.02
Hexachlorobutadiene	0.5	<	0.02
Hexachloroethane	3	<	0.02
2-Methylphenol	200	<	0.02
3&4-Methylphenol	200	<	0.02
Nitrobenzene	2	<	0.02
Pentachlorophenol	100	<	0.04
Pyridine	5	<	0.04
2,4,5-Trichlorophenol	400	<	0.02
2,4,6-Trichlorophenol	2	<	0.02
TCLP Pesticides by Method 8081A (mg/L)			
gamma-BHC	0.4	<	0.00016
Chlordane	0.03	<	0.001
Endrin	0.02	<	0.00016
Heptachlor	0.008	<	0.00016
Heptachlor epoxide	0.008	<	0.00016
Methoxychlor	10		**0.00704** Q
Toxaphene	0.5	<	0.0012
TCLP Herbicides by Method 8151A (mg/L)			
2,4-D	10	<	0.002
2,4,5-TP (Silvex)	1	<	0.0006
TCLP Metals by Method 6010B (mg/L)			
Arsenic	5	<	0.025
Barium	100		**1.02**
Cadmium	1	<	0.005
Chromium	5	<	0.01
Lead	5	<	0.01
Selenium	1	<	0.05
Silver	5	<	0.005
TCLP Mercury by Method 7470A (mg/L)			
Mercury	0.2	<	0.001

Notes:
EPA - Environmental Protection Agency
TCLP - Toxicity Characteristic Leaching Procedure
Bold font and shading indicates the analyte was detected.
Q - RPD >40% between primary and confirmation columns.

APPENDIX A

COMMENTS AND RESPONSE TO COMMENTS ON THE *WORMALD SITE INVESTIGATION REPORT*

ADEQ

A R K A N S A S
Department of Environmental Quality

April 9, 2009

AECOM
Attn: Leslee J. Alexander, P.G.
Project Manager
10 Patewood Drive, Building VI, Suite 500
Greenville, South Carolina 29615

RE: Wormald Site Investigation Report for Cedar Chemical Company (March 30, 2009)
EPA ID Number ARD990660649; AFIN 54-00068

Dear Ms. Alexander:

The Arkansas Department of Environmental Quality – Hazardous Waste Division (ADEQ) has reviewed the Wormald Site Investigation Report (SIR) dated March 30, 2009. Based on ADEQ review, the following deficiencies and/or concerns have been noted:

- Table 1 – The sample results for TSB-1-a, TSB-3, TSB-4, and TSB-5 presented in Table 1 do not match the results in the laboratory report. Also, the results presented in this table for these same samples are presented with either a "J" or "JQ" flag. The laboratory report does not show any flags for these samples. Furthermore, the data validation report states the results for dinoseb by Method 8151A are acceptable and no data flags are required. Please address and correct these discrepancies.

- The Medium-Specific Screening Level of 680 mg/kg for dinoseb is incorrect. This value is taken from an outdated version of the Region 6 Medium-Specific Screening Tables and applies to an industrial outdoor worker with direct exposure to surface soil. The most current version of the Region 6 Medium-Specific Screening Tables is dated September 2008. In this case, the correct soil screening level for dinoseb is 0.051 mg/kg, which is a maximum contaminant level (MCL)-based screening level for protection of groundwater. All dinoseb concentrations collected from the 4'-8' soil interval exceed this screening level. Laboratory analysis for the samples being held that were collected from the 8'- 12' soil interval would provide additional information in regards to potential impacts to groundwater. Please amend the narrative accordingly.

- The statement in the conclusions that designates the dinoseb concentration of 13,000 mg/kg for 3SB-6 (4'-8') in the 1996 FI as being erroneous is subjective. Several factors would cause variance in sample results. These would include, but not limited to, sampling methodologies, analytical procedures, exact duplication of sample locations, and infiltration over a 13 year period. In this case, years of infiltration and duplication of sample locations are likely to be two of the main reasons for differences in dinoseb concentrations from the two sampling events. Please note that concentrations of dinoseb vary throughout the site and will increase and decrease within the borehole. Samples

taken at shallow depths may exhibit lower concentrations of dinoseb. The range of dinoseb may increase as the hole advances and then decrease again at the base of the hole. ADEQ does not concur with the statement that the 1996 data is erroneous. There is not sufficient information available to qualify this statement. Please remove this statement from the final SIR and amend the narrative accordingly.

- The sample location map included with the SIR is the same map that was included with the workplan. The actual surveyed location of the sample collected for this investigation is not included in SIR. Please provide an updated map showing the surveyed location of each sampling location.

Please prepare a response to each of the items noted above and submit to ADEQ within fifteen (15) days of receipt of this letter. If you have any questions or need additional information, please feel free to contact Tammie J. Hynum of my staff at (501) 682-0856 or hynum@adeq.state.ar.us or myself at (501) 682-0831 or at benefield@adeq.state.ar.us.

Sincerely,

J. Ryan Benefield, P.E.
Acting Hazardous Waste Division Chief

cc: Mark Hemingway, P.G., (Amec Consultants, Inc.; 5725 Hwy 290 West, Suite 200B, Austin, TX 78735)
Kelly Beck, P.G., (Amec Consultants, Inc.; 5725 Hwy 290 West, Suite 200B, Austin, TX 78735)
Dave Roberson (DeMaximis, Inc. 2203 Timberloch Place, Suite 213 The Woodlands, TX 77380)
Anne Weinstein, Attorney Specialist, ADEQ
Dara Hall, Attorney Specialist, ADEQ
Allan Gates (Mitchell Williams Selig Gates & Woodyard, PLLC, 425 West Capitol Avenue, Suite 1800, Little Rock, AR 72201-3525)
Joe Ghormley (Quattlebaum, Grooms, Tull & Burrow, PLLC, 111 Center Street, Suite 1900, Little Rock, AR 72201
Deborah D. Kuchler (Abbott, Simeses & Kuicher, 400 Lafayette St. Suite 200, New Orleans, LA 70130)
Edward Brister (Helena Chemical Co., 225 Schilling Blvd. , Suite 300, Collierville, TN 38017)
Dan Burnham (3225 Gallows Road, Suite 8B 0607, Fairfax, VA 22037)
Ann Faitz (Attorney at Law, 585 Silverwood, North Little Rock, AR 72116)
David Hawkins (General Counsel & Assistant Secretary, 225 Schilling Blvd., Suite 300, Collierville, TN 38017)
Kim Burke (Taft, Stettinius & Hollister LLP, 425 Walnut Street, Suite 1800, Cincinnati, OH 45202-3957)
Mark Zuschek (3225 Gallows Road, Suite 3D 2110, Fairfax, VA 22039)

AECOM

AECOM
10 Patewood Drive, Building VI, Suite 500, Greenville, SC 29615
T 864.234.3000 F 864.234.3069 www.aecom.com

April 27, 2009

Mr. Ryan Benefield
Chief of Hazardous Waste Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Subject: **Response to Comments on the Wormald Site Investigation Report**
Tyco Safety Products – Former Cedar Chemical Facility
Helena – West Helena, Arkansas
State EPA ID No. ARD990660649

Dear Mr. Benefield:

This letter is in response to written comments on the *Wormald Site Investigation Report* (AECOM, March 30, 2009) (Wormald SIR) provided by the Arkansas Department of Environmental Quality (ADEQ) in correspondence to AECOM dated April 9, 2009 and will be included with the *Revised Wormald SIR* in response to ADEQ's comments.

1) **Comment:** *Table 1 – The sample results for TSB-1-a, TSB-3, TSB-4, and TSB-5 presented in Table 1 do not match the results in the laboratory report. Also, the results presented in this table for these same samples are presented with either a "J" or "JQ" flag. The laboratory report does not show any flags for these samples. Furthermore, the data validation report states the results for dinoseb by Method 8151A are acceptable and no data flags are required. Please address and correct these discrepancies.*

Response: Preliminary laboratory results received from the analytical laboratory (included as Attachment 1 to this Response to Comments) contained samples qualified with a "J" or "JQ" flag, indicating the results between the Method Detection Limit (MDL) and the Method Quantization Limit (MQL). The preliminary results were inadvertently included in Table 1 instead of the final results. The "J" flagged samples were subsequently analyzed at a lesser dilution factor prior to completion of the final laboratory package (included in Appendix C of the *Wormald SIR*). The statement that "no data flags are required" in the Data Validation Report (DVR) is correct. The table has been updated to reflect the final laboratory results and is included as Table 1 of the *Revised Wormald SIR*.

2) **Comment:** *The Medium-Specific Screening Level of 680 mg/kg for dinoseb is incorrect. This value is taken from an outdated version of the Region 6 Medium-Specific Screening Tables and applies to an industrial outdoor worker with direct exposure to surface soil. The most*

current version of the Region 6 Medium-Specific Screening Tables is dated September 2008. In this case, the correct soil screening level for dinoseb is 0.051 mg/kg, which is a maximum contaminant level (MCL)-based screening level for protection of groundwater. All dinoseb concentrations collected from the 4'-8' soil interval exceed this screening level. Laboratory analysis for the samples being held that were collected from the 8'-12' soil interval would provide additional information in regards to potential impacts to groundwater. Please amend the narrative accordingly.

Response: A screening level of 680 mg/kg was used in reliance on a review of previous information provided by ADEQ and in two Geomatrix reports as follows:

(1) The screening level used in ADEQ's *Risk Evaluation* included as Appendix D of the *Cedar Chemical Company: Request for Proposal Packet* (ADEQ, August 23, 2005). Page 4 of the *Risk Evaluation* provides a risk based clean-up level of 680 mg/kg for "dry sediment" at Site 3.

(2) The tables in the *Interim Facility Investigation Report* (AMEC Geomatrix, October 2008) and the *Draft Facility Investigation Report* (AMEC Geomatrix, January 2009) list 680 mg/kg as the screening level for dinoseb in soil based on the Industrial Outdoor Worker exposure scenario. The MCL-based Soil Screening Level (SSL) for dinoseb was listed as "NA" on the tables and figures of both the *Interim FIR* (October 2008) and the *Draft FIR* (January 2009). Our understanding was that the *Interim FIR* or this SSL for dinoseb was not objected to by ADEQ.

However, based on ADEQ comment #2, it is now our current understanding that ADEQ has commented that the risk based clean-up level for dinoseb presented in its *Risk Evaluation* and in the AMEC Geomatrix Reports is not the correct SSL

As a result, Table 1 of the *Wormald SIR* has been amended to include the EPA Region 6 screening level (SL) for dinoseb in industrial soil (620 mg/kg) and the MCL-based SSL for dinoseb (5.1E-02 mg/kg) presented on the EPA Region 6 Medium-Specific Screening Level (MSL) tables dated September 2008. The revised table is included as Table 1 of the *Revised Wormald SIR*. Figure 2 of the *Wormald SIR* has also been revised to include the current EPA Region 6 MSL. The text will be amended to reflect comparisons to these screening criteria.

Soil samples collected from the 8-12 foot interval at TSB-1 were extracted on March 9, 2009 and are past the recommended holding time (40 days) specified in the analytical method; therefore, these samples will not be analyzed.

3) **Comment:** *The statement in the conclusions that designates the dinoseb concentration of 13,000 mg/kg for 3SB-6 (4-8') in the 1996 FI as*

being erroneous is subjective. Several factors would cause variance in sample results. These would include, but not limited to, sampling methodologies, analytical procedures, exact duplication of sample locations, and infiltration over a 13 year period. In this case, years of infiltration and duplication of sample locations are likely to be two of the main reasons for differences in dinoseb concentrations from the two sampling events. Please note that concentrations of dinoseb vary throughout the site and will increase and decrease within the borehole. Samples taken at shallow depths may exhibit lower concentrations of dinoseb. The range of dinoseb may increase as the hole advances and then decrease again at the base of the hole. ADEQ does not concur with the statement that the 1996 data is erroneous. There is not sufficient information available to qualify this statement. Please remove this statement from the final SIR and amend the narrative accordingly.

Response: Our rationale for our opinion was based upon the following: The detected dinoseb concentration (13,000 mg/kg) in historic soil sample 3SB-6 (4-8') was more than two orders of magnitude greater than detected concentrations (0.63 mg/kg to 560 mg/kg) in other Site 3 soil samples collected during the Ensafe FI (1996). Based on the range of historic dinoseb detections in soil in the vicinity of Site 3, the concentration detected in historic soil sample 3SB-6 (4-8') appeared anomalous. Therefore, a confirmation soil sampling program was developed for Site 3 in the vicinity of 3SB-6. Detected dinoseb concentrations for the five soil samples collected from the 4-8 foot interval in the vicinity of 3SB-6 range from 31.3 mg/kg to 80.4 mg/kg. Based on these results, the detected dinoseb concentration in historic soil sample 3SB-6 (4-8') does not appear to be consistent with the current Conceptual Site Model (CSM) and is not representative of current Site 3 conditions.

However, sentence two of the last paragraph on page 3 of the *Wormald SIR*, which reads *"confirmation sampling at TSB-1, which is co-located with historic soil sample 3SB-6, indicates that the dinoseb concentration of 13,000 mg/kg reported for 3SB-6 (4 – 8 feet) in the FI (EnSafe, 1996), is erroneous"*, will be revised to say *"confirmation sampling at TSB-1, which is co-located with historic soil sample 3SB-6, indicates that the dinoseb concentration of 13,000 mg/kg reported for 3SB-6 (4 – 8 feet) in the FI (EnSafe, 1996) is not representative of current Site 3 soil conditions.*

4) **Comment:** *The sample location map included with the SIR is the same map that was included with the work plan. The actual surveyed location of the sample collected for this investigation is not included in the SIR. Please provide an updated map showing the surveyed location of each sample location.*

Response: Prior to soil boring installation, historic soil sample 3SB-6 was located and staked by Smith and Weiland Surveyors as the location for TSB-1 using survey coordinates extracted from the basemap. A 10 foot by 10 foot grid centered on TSB-1 was established by the surveyor and the locations for TSB-2 through TSB-5 were staked on this grid as proposed on Figure 3 of the *Wormald Investigation Work Plan* and as shown on Figure 2 of the *Wormald SIR*.

No changes to the established sample grid were necessary. Sample location TSB-1 was installed at the location of historic sample 3SB-6 and sample locations TSB-2 through TSB-5 were installed 5-feet away from TSB-1 as shown on Figure 2 of the *Wormald SIR* and as proposed in the work plan. The sample locations and spatial relationships shown on Figure 2 are correct. However, to avoid confusion, Figure 2 has been revised to include an inset table listing the northing and easting of the sample locations referenced to Arkansas State Plane North American Datum 1983 (NAD83). The revised Figure is included as Figure 2 of the *Revised Wormald SIR*.

If you have any questions or require additional information, please contact me at 864-234-2282 or Ms. Ann Faitz at (501)831-5637.

Sincerely,

AECOM

Leslee J. Alexander

Leslee J. Alexander, P.G.
Project Manager

Attachments: Attachment 1 – Preliminary Results for Dinoseb in Subsurface Soil

c: Mr. Dara Hall, ADEQ Counsel (letter only)
Mr. John Perkins, Tyco Safety Products
Ms. Ann Faitz, Tyco Counsel
Mr. Allan Gates, HCC legal counsel
Mr. Joe Ghormley, Exxon legal counsel
Project File 104366

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ATTACHMENT 1

PRELIMINARY RESULTS FOR DINOSEB IN SUBSURFACE SOIL

ETC ENVIRONMENTAL TESTING & CONSULTING, INC.
www.etcmemphis.com 2700 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440
"A Laboratory Management Partner"

CLIENT: AECOM EARTH TECH
Project: Cedar Chemicals
Lab Order Number:

CASE NARRATIVE

Date: 03/19/09

ETCAL

Herbicides by Method 8151A

Sample Analysis
Samples were initially analyzed without dilution. The levels of Dinoseb present indicated that a dilution factor of 1:1000 would be required. Both the un-diluted and diluted sample extracts were analyzed in the same analytical batch. The high levels of Dinoseb caused an elevated result for this target analyte in the ending calibration verification standard for the confirmation column.

Data presented consists of preliminary results. All dilutions will be re-analyzed to ensure data within the calibration range. Some sample results are flagged with the data qualifier J, to indicate results between the MDL and MQL. These samples will be analyzed at a lesser dilution factor.

Method Blank
Dinoseb was detected in the method blank at a concentration of 6.90 J ug/kg. This concentration had no impact on the final sample data and will be re-analyzed to confirm this result.

ETC ENVIRONMENTAL TESTING & CONSULTING, INC.
www.etcmemphis.com 2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440
"A Laboratory Management Partner"

AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals**
Project No. **104336**
Site **W. Helena, AR**

Lab Order Number **0903061**
Lab ID **0903061-001A**
Field ID **TSB-1**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 10:10**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units		MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**44,200**	**µg/Kg**		**15,000**	**1,000**	**03/19/09 8:57**	**DPC**	**38386**
Surrogate: DCAA		70 %	Limits:	20-150	1	03/19/09 4:28	DPC	38386

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

ETC ENVIRONMENTAL TESTING & CONSULTING, INC.
www.etcmemphis.com 2790 Winnan Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440
"A Laboratory Management Partner"

AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals**
Site **W. Helena, AR**
Project No. **104336**

Lab Order Number **0903061**
Lab ID **0903061-002A**
Field ID **TSB-1a**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 10:10**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units		MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**12100 JQ**	**µg/Kg**		**15,000**	**1,000**	**03/19/09 9:29**	**DPC**	**38386**
Surrogate: DCAA		65 %	Limits:	20-150	1	03/19/09 5:35	DPC	38386

Qualifiers/ Definitions				
	*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
	J	Estimated Value Analyte below reported detection limit	M	Minimum value
	MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
	MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
	Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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www.etcmemphis.com 2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440
"A Laboratory Management Partner"

AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals**
Site **W. Helena, AR**
Project No. **104336**

Lab Order Number **0903061**
Lab ID **0903061-003A**
Field ID **TSB-2**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 9:38**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units		MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**31,300**	**µg/Kg**		**15,000**	**1,000**	**03/19/09 9:51**	**DPC**	**38386**
Surrogate: DCAA		79 %	Limits:	20-150	1	03/19/09 5:58	DPC	38386

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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www.etcmemphis.com 2700 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440
"A Laboratory Management Partner"

AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals**
Project No. **104336**
Site **W. Helena, AR**

Lab Order Number **0903061**
Lab ID **0903061-004A**
Field ID **TSB-3**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 9:50**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units		MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**13400 J**	**µg/Kg**		**15,000**	**1,000**	**03/19/09 10:14**	**DPC**	**38386**
Surrogate: DCAA		87 %	Limits:	20-150	1	03/19/09 6:20	DPC	38386

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals**
Project No. **104336**
Site **W. Helena, AR**

Lab Order Number **0903061**
Lab ID **0903061-005A**
Field ID **TSB-4**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 9:25**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**10600 J**	**µg/Kg**	**15,000**	**1,000**	**03/19/09 10:36**	**DPC**	**38386**
Surrogate: DCAA		79 %	Limits: 20-150	1	03/19/09 6:43	DPC	38386

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals**
Project No. **104336**
Site **W. Helena, AR**

Lab Order Number **0903061**
Lab ID **0903061-006A**
Field ID **TSB-5**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 9:10**

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**34,500**	**µg/Kg**	**15,000**	**1,000**	**03/19/09 10:59**	**DPC**	**38386**
Surrogate: DCAA		100 %	Limits: 20-150	1	03/19/09 7:05	DPC	38386

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

APPENDIX B

FIELD INVESTIGATION FORMS

Test Boring Reports

Daily Quality Control Reports

Investigation Derived Waste Management Form

AECOM

Test Boring Report

BORING NO. TSB-1
PAGE 1 OF 1

PROJECT: Cedar Chemical
CLIENT: Tyco
CONTRACTOR: Tri-State Testing
EQUIPMENT: 54DT - Track-mounted DPT Rig

PROJECT NO: 104336
LOCATION:
ELEVATION:
DATE START: 03/05/09
DATE FINISH: 03/05/09
DRILLER: Ken Boles
PREPARED BY: K.E. Owens

GROUND WATER NA DEPTH TO: —

DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE		CASING	SAMPLER	CORE BARREL
					TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
	0.6			0-0.3	Dk Brown silty clay, moist
				0.3-4.5	Brown silty clay, some fine sand, damp
					1" gravel @ 3' BGS
5.0				4.5-4.8	SAND, sm gravel, tan-white, moist
				4.8-7.5	Dk Brown silt, fine sand, wet
				7.5-8.0	Brown silty clay, orange & gray mottles, damp
				8-9.5	Dk Brown silty clay
10.0				9.5-12	Light Brown (yellow?) silt, wet
					TD 12.0' BGS
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. TSB-2
PAGE 1 OF 1

PROJECT: Cedar Chemical
CLIENT: Tyco
CONTRACTOR: Tri-State Testing
EQUIPMENT: 54DT - Track-mounted DPT Rig

PROJECT NO: 104336
LOCATION:
ELEVATION:
DATE START: 03/05/09
DATE FINISH: 03/05/09
DRILLER: Ken Boles
PREPARED BY: K.E. Owens

GROUND WATER: NA DEPTH TO: —

DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE

	CASING	SAMPLER	CORE BARREL
TYPE			
SIZE ID			
HAMMER WT			
HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
	0.2			0-0.2	OH Brown silt moist
				0.2-3.0	Brown silt, damp
				3.0-5.0	Brown clay, yellow mottles - Damp
5.0	0.0			5.0-5.3	Black sand, 1/2" gravel
				5.3-6.2	Brown silt, moist
				6.2-8.0	Gray & Black silty clay, orange brown mottles, moist
					TD 8.0' BGS
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. TSB-3
PAGE 1 OF 1

PROJECT: Cedar Chemical
CLIENT: Tyco
CONTRACTOR: Tri-State Testing
EQUIPMENT: 54DT - Track-mounted DPT Rig

PROJECT NO: 104336
LOCATION:
ELEVATION:
DATE START: 03/05/09
DATE FINISH: 03/05/09
DRILLER: Ken Boles
PREPARED BY: K.E. Owens

GROUND WATER: NA DEPTH TO: —

DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE		CASING	SAMPLER	CORE BARREL
					TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
	0.4			0-0.3	Dk Brown silt, damp
				0.3-7.0	Brown silt, trace clay, damp
5.0	1.0				
				7-7.5	Black to Gray silty clay, moist
				7.5-8.0	Brown silty clay, some V. fine sand, moist
					TD 8.0' BGS
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

Test Boring Report

BORING NO. TSB-4
PAGE 1 OF 1

PROJECT: Cedar Chemical
CLIENT: Tyco
CONTRACTOR: Tri-State Testing
EQUIPMENT: 54DT - Track-mounted DPT Rig

PROJECT NO: 104336
LOCATION:
ELEVATION:
DATE START: 03/05/09
DATE FINISH: 03/05/09
DRILLER: Ken Boles
PREPARED BY: K.E. Owens

GROUND WATER NA DEPTH TO: —

DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE

	CASING	SAMPLER	CORE BARREL
TYPE			
SIZE ID			
HAMMER WT			
HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
	0.4			0-0.3	~~0-0.3~~ DK BROWN SILTY CLAY
				0.3-5.5	Brown silty clay, v. fine sand, damp
5.0					
				5.5-6.0	Brown ~~gray~~ silty-clay moist
				6-6.5	GRAY TO BLACK SILT
	0.2				Brown silty clay - moist
					TD 8.0' BGS
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY
0-4	VERY LOOSE
5-10	LOOSE
11-30	MEDIUM DENSE
31-50	DENSE
50+	VERY DENSE

BLOWS/FT.	CONSISTENCY
0-2	VERY SOFT
3-4	SOFT
5-8	MEDIUM STIFF
9-15	STIFF
16-30	VERY STIFF
31+	HARD

SAMPLER ID.	
SS	SPLIT SPOON
ST	SHELBY TUBE
G	GRAB SAMPLE
MC	MACRO-CORE

DESCRIPTIONS	
MOSTLY	50-100%
SOME	30-45%
LITTLE	15-25%
FEW	5-10%
TRACE	<5%

NOTES	
WD	WHILE DRILLING
NE	NOT ENCOUNTERED
UR	NOT READ
NR	NO RECOVERY

AECOM

Test Boring Report

BORING NO. TSB-5
PAGE 1 OF 1

PROJECT: Cedar Chemical
CLIENT: Tyco
CONTRACTOR: Tri-State Testing
EQUIPMENT: 54DT - Track-Mounted DPT Rig

PROJECT NO: 104336
LOCATION:
ELEVATION:
DATE START: 03/05/09
DATE FINISH: 03/05/09
DRILLER: Ken Boles
PREPARED BY: K.E. Owens

GROUND WATER: NA DEPTH TO: —

DATE	HRS AFTER COMP	WATER	BOTTOM OF CASING	BOTTOM OF HOLE		CASING	SAMPLER	CORE BARREL
					TYPE			
					SIZE ID			
					HAMMER WT			
					HAMMER FALL			

DEPTH IN FEET	ORGANIC VAPOR SCREENING (PPM)	SAMPLER BLOWS PER 6 INCHES	SAMPLE NUMBER	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
	1.0			0-0.5	0-0.5' DK BROWN SILTY CLAY
				0.5-7.0	0.5-4' BROWN SILTY CLAY, V. FINE SAND, DAMP
5.0	1.2				
				7.0-7.5	7.0-7.5 - Brown gray clay - Moist
				7.5-8.0	7.5-8.0 - Mottled Brown clayey silt - Moist
					TD - 8.0' BGS
10.0					
15.0					
20.0					

BLOWS/FT.	DENSITY	BLOWS/FT.	CONSISTENCY	SAMPLER ID.		DESCRIPTIONS		NOTES	
0-4	VERY LOOSE	0-2	VERY SOFT	SS	SPLIT SPOON	MOSTLY	50-100%	WD	WHILE DRILLING
5-10	LOOSE	3-4	SOFT	ST	SHELBY TUBE	SOME	30-45%	NE	NOT ENCOUNTERED
11-30	MEDIUM DENSE	5-8	MEDIUM STIFF	G	GRAB SAMPLE	LITTLE	15-25%	UR	NOT READ
31-50	DENSE	9-15	STIFF	MC	MACRO-CORE	FEW	5-10%	NR	NO RECOVERY
50+	VERY DENSE	16-30	VERY STIFF			TRACE	<5%		
		31+	HARD						

AECOM

DAILY QUALITY CONTROL REPORT

Page ___ of ___

JOB NUMBER 104336 DATE 03/04/09 REPORT NUMBER

PROJECT & LOCATION Cedar Chemical Facility, Helena, AR

WEATHER Sunny TEMPERATURE RANGE — WIND —

EARTH TECH PERSONNEL ON SITE Keith E Owens TIME ON SITE 3-4 hrs

SUMMARY OF SITE ACTIVITIES Provided escort to utility locators and surveyors

LEVEL OF HEALTH & SAFETY PROTECTION D

INSTRUMENTATION USED N/A

CALIBRATION(S) PERFORMED N/A

INSTRUMENT PROBLEMS/REMEDIES N/A

SAMPLES COLLECTED* N/A

SAMPLE COLLECTION METHOD(S) N/A

QUALITY CONTROL SAMPLES* N/A

ADDITIONAL REMARKS Cindy Greenway of ADEQ also on site

SIGNATURE: Keith E Owens

* INDICATE SAMPLE MEDIA: SOIL OR QA/QC.

AECOM

DAILY QUALITY CONTROL REPORT

JOB NUMBER 104336 DATE 03/05/09 REPORT NUMBER

PROJECT & LOCATION Cedar Chemical Facility, Helena, AR

WEATHER Mostly clear TEMPERATURE RANGE 60-72 WIND 5-15

EARTH TECH PERSONNEL ON SITE Keith E Avery TIME ON SITE 5 hrs

SUMMARY OF SITE ACTIVITIES Completed 5 soil borings

LEVEL OF HEALTH & SAFETY PROTECTION D

INSTRUMENTATION USED PID, LEL

CALIBRATION(S) PERFORMED

INSTRUMENT PROBLEMS/REMEDIES N/A

SAMPLES COLLECTED* Soil TSB-1, TSB-2, TSB-3, TSB-4, TSB-5 (all @ 4-8' Bgs)
Soil TSB-1 (1-4), TSB-1 (8-12) Held for analysis
Soil IDW-1

SAMPLE COLLECTION METHOD(S) DPT-GRAB

QUALITY CONTROL SAMPLES* Soil TSB-1A, TSB-MS, TSB-MSD
water TSB-1D

ADDITIONAL REMARKS Cindy Greenway (ADEQ) provided escort
Geomatrix on-site to observe & collect split-samples
(Adam Taylor, Kelly Beck)

SIGNATURE: Keith E Avery

* INDICATE SAMPLE MEDIA: SOIL OR QA/QC.

AECOM

IDW MANAGEMENT FORM

COMPANY Tyco

PROJECT Nonaqueous Site Investigation

SITE NAME Former Cedar Chemicals Facility

LOCATION Helena-West Helena, Arkansas

CONTAINER NUMBER	MEDIA DESCRIPTION	MEDIA ORIGIN	DATE FILLED	DATE SAMPLED	DATE DISPOSED	COMMENTS
1	soil from borings	subsurface soil	3/5/09	3/5/09		soil from borings TSB-1 through TSB-5

APPENDIX C
ANALYTICAL LABORATORY CERTIFCATION

State of Arkansas
Department of Environmental Quality
Laboratory Certification Program

Environmental Testing & Consulting

Memphis, TN

has earned certification by law in accordance with Code Annotated §8-2-201 et seq., the State Environmental Laboratory Certification Program Act for the following parameters:

Alkalinity	pH	Beryllium	Potassium	TPH
Ammonia	Phenol	Boron	Selenium	Acute Toxicity
BOD	Sulfate	Cadmium	Silver	Chronic Toxicity
CBOD	Surfactants	Calcium	Sodium	Herbicides
Chloride	TDS	Chromium	Strontium	Pesticides & PCBs
Chlorine	TKN	Cobalt	Thallium	Semi-volatiles
COD	TOC	Copper	Tin	Volatile Organics
Conductivity	Total Phosphorus	Hex. Chromium	Titanium	
Cyanide	Total Solids	Iron	Vanadium	
Fluoride	TSS	Lead	Zinc	
Hardness	Turbidity	Magnesium	Fecal Coliform	
Nitrate	Aluminum	Manganese	DRO	
Nitrite	Antimony	Mercury	Explosives	
Oil & Grease	Arsenic	Molybdenum	GRO	
Orthophosphate	Barium	Nickel	TOX	

Laboratory ID: **88-0650**

Certificate Number: **09-010-0**

Issued Date: **7 February 2009**

Expired Date: **7 February 2010**

Teresa Marks

ADEQ Director

© 00ES 746

APPENDIX D

DATA VALIDATION REPORT/CERTIFICATES OF ANALYSIS

DATA VALIDATION REPORT

Data assessment is a systematic process for reviewing a body of data against a predefined set of criteria to provide assurance that the data meet project Data Quality Objective (DQO) requirements. The purpose of the data assessment process is to determine if and how the usability of the analytical data is affected by the overall analytical processes and sample collection and handling procedures. If specific DQOs are not met, the data are qualified (i.e., data flags are assigned to sample results) in accordance with guidelines established by the United States Environmental Protection Agency (USEPA). Data assessment allows the data user to adequately determine if the data can be used for its intended purpose. The data acceptance criteria are established according to Standard Operating Procedures (SOPs) and Statements of Work (SOWs) provided to the contracted analytical laboratory. The assessment of data quality and usability involves five components, as described below.

1) **Field Sampling Check** is a process to ensure that all samples were collected and the laboratory analyses were performed as stipulated in the applicable site-specific Work Plan or Field Sampling Plan (FSP). Inspection of sample preservation procedures, sample handling, analysis requested, sample description and ID, cooler receipt forms, holding time evaluation, and Chain of Custody procedures are all evaluated to ensure that the evidentiary nature of the samples and the resulting analytical data have not been compromised.

2) **Data Verification** is a process for determining the completeness, correctness, consistency, and compliance of a data package in accordance with requirements contained in the applicable SOW and/or contract-specific requirements. This is a review of the data package, electronic data deliverable (EDD), and invoice received from the contract laboratory to ensure that the contract required information is present and complete prior to data validation.

3) **Data Review** is a process of reviewing the primary quality control (QC) data provided by the laboratory and the results of any internal quality assurance (QA)/QC samples, such as field blanks, trip blanks, equipment blanks or ambient blanks, field split samples, and duplicate samples, to ascertain any effect the laboratory's procedures or the sample collection process has on the data.

4) **Data Evaluation** is a process to determine if the data meet project-specific DQOs and contract requirements. This evaluation may involve a review of field sampling and sample management procedures, laboratory audits, Performance Evaluation (PE) sample results, and any other data quality indicators that are available.

5) **Data Validation** is a process to determine the accuracy and precision of analytical data generated and to identify any anomalies encountered. The validation process is performed in accordance with USEPA regional or national functional guidelines, project-specific guidelines, and compliance with the requirements of each analytical method. Two major components of data

validation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance for each analytical method to determine if the samples were analyzed within the prescribed acceptance criteria of the method. Evaluation of matrix interferences involves the analysis of surrogate spike recoveries, matrix spike recoveries, and duplicate sample results. Data not meeting project-specific DQOs or the requirements of the analytical method are qualified with data flags according to referenced guidelines.

Data Assessment Procedures

AECOM performed independent QC checks of field and laboratory procedures that were used in collecting and analyzing the data. The QC checks verify that the data collected are of appropriate quality for the intended data use and that the DQOs were met. The steps and guidelines followed during the data validation process were modeled on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA, July 2004), *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA, October 1999), and *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services* (USEPA, July 1999). In addition, method-specific criteria set forth in the compendium of analytical methods found in the *Test Methods for Evaluation Solid Waste (SW-846), Update III* (USEPA, June 1997) are also evaluated during the validation process. This validation process has been adapted to meet the DQO requirements for generation of definitive critical data.

Data Validation Results

The analytical data (5 soil samples – TSB-1, TSB-2, TSB-3, TSB-4, and TSB-5 and 1 waste sample – IDW-4) plus QA/QC data (1 field duplicate sample – TSB-1-a, 1 matrix spike sample – TSB-1-ms/ matrix spike duplicate sample – TSB-1-msd, and 1 rinsate blank sample – TSB-1-d) were collected on March 5, 2009 for the Former Cedar Chemicals Facility. The analytical data were validated according to the procedures outlined above. Where data flags have been applied to this data set, they are separated by a slash "/" and presented in the following format:

Laboratory Flag / Result Flags / Analysis Flags

- Laboratory Flag: This flag precedes the first slash and is added by the laboratory as a result of QC excursions from the analytical method. These flags are laboratory-specific and are described in the associated laboratory report.

- Result Flags: These are presented after the first slash and are added by AECOM based on data validation procedures and guidelines. They tell how and if the data should be used.

- Analysis Flags: These flags are presented after the second slash and are added by AECOM to inform the data user of any specific QA/QC problems that were encountered.

Any data requiring qualification as a result of the validation process were assigned data flags, as discussed below. The validation flags indicate how any QC excursions may have impacted the usability of the data.

Dinoseb by Method 8151A

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

TCLP Volatile Organic Compounds by Method 8260B

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

TCLP Semivolatile Organic Compounds by Method 8270C

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

TCLP Pesticides by Method 8081A

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

TCLP Herbicides by Method 8151A

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

TCLP Metals by Methods 6010B/7470A

Results of the validation process indicate that the data analyzed for this method are acceptable for their intended use and no data flags are required.

Data Summary and Usability

None of the QC excursions encountered during the validation of this data set resulted in any of the data being rejected. Therefore, the data associated with this laboratory batch should be considered compliant and adequate for its intended use.

References

United States Environmental Protection Agency (USEPA), June 1997. *Test Methods for Evaluating Solid Waste (SW-846), 3rd Edition, Update III.*

United States Environmental Protection Agency (USEPA), July 1999. *Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services, Revision 2.1,* EPA Region IV.

United States Environmental Protection Agency (USEPA), October 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.* Publication #EPA540/R-99/008.

United States Environmental Protection Agency (USEPA), July 2004. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* Publication #EPA540/R-04/004.

ETC ENVIRONMENTAL TESTING & CONSULTING, INC.
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"A Laboratory Management Partner"

March 25, 2009

Ms. Doria Cullom
AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Ref:	Analytical Testing	
	Lab Order Number	0903061
	Project Description	Cedar Chemicals
	Site	W. Helena, AR
	Project Number	104336

Environmental Testing and Consulting, Inc. received 8 sample(s) on 3/5/2009 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods, The Solid Waste Manual SW-846, EPA Methods for Chemical Analysis of Water and Wastes and /or 40 CFR part 136. Results are reported wet weight unless otherwise indicated.

The EPA requires that water samples analyzed for pH, dissolved oxygen and total residual chlorine be analyzed in the field. Analyses and results reported which do not indicate "Field" for these parameters were analyzed outside the holding time as specified in Table II of 40 CFR Part 136.3.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, instrumentation maintenance and calibration were performed in accordance with guidelines established by the USEPA and NELAP.

The results are shown on the attached analysis sheet(s).

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Nathan Pera IV
Laboratory Project Manager

Attachment
AECOM_GREENVILLE

Certifications

Alabama	#40750	Louisiana	#04015	Florida	#E87943	California	#05240CA
Arkansas	#88-0650	Mississippi		Pennsylvania	#68-3195	Texas	#T104704180-05-TX
Illinois	#200015	Oklahoma	#9311	USDA	#S-46279		
Kentucky	#90047	Tennessee	#02027	EPA	#TN00012		
Kentucky UST	#41	Virginia	#00106	NELAP	#100456	nelac	

Login

Chain-of-Custody

ETC ENVIRONMENTAL TESTING & CONSULTING, INC.
www.etcmemphis.com 2790 Whitten Road Memphis, Tennessee 38133 (901) 213-2400 Fax (901) 213-2440
"A Laboratory Management Partner"

Analytical Summary / Cross Reference Table

CLIENT
Project
Site

ETC Order Number
Date Received

ETC Sample ID	Field ID	Sample ID	Date/Time Sampled	Matrix	Method	Method Description

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"A Laboratory Management Partner"

Cooler Receipt Form

Client Name **AECOM EARTH TECH**

Order Number: **0903061**

Project ID: **Cedar Chemicals**

Reserved for Barcode

Carrier name: **Client Delivery**

Carrier Bill No.:

Shipping container/cooler uncompromised?	◉ Yes	○ No	○ Not Present
Custody seals intact on shipping container/cooler?	○ Yes	○ No	◉ Not Required
Custody seals intact on sample bottles?	○ Yes	○ No	◉ Not Required
Chain of custody present?	◉ Yes	○ No	
Other documentation present?	○ Yes	◉ No	
Special precautions or instructions included?	○ Yes	◉ No	
Chain of custody agrees with sample labels?	◉ Yes	○ No	
Samples in proper container/bottle?	◉ Yes	○ No	
Sample containers intact?	◉ Yes	○ No	
Containers in separate bags?	○ Yes	◉ No	
Sufficient sample volume for indicated test?	◉ Yes	○ No	
All samples received within holding time?	◉ Yes	○ No	
Lab able to analyze samples within holding time?	◉ Yes	○ No	
Cooler temperature in compliance?	◉ Yes	○ No	
Water - VOA vials have zero headspace?	○ Yes	○ No	◉ No VOA vials submitted
Water - Preservation acceptable upon receipt?	◉ Yes	○ No	
Samples screened for radioactivity?	○ Yes	○ No	◉ Not Checked

Person Contacted: Date Contacted:

Comment:

Resolution:

Non-compliance issues will be recorded on a non-compliance report.

(VDTSR) Date Received: **03/05/09 14:20**

Received by: **Rebekah Ross**

Login Coordinator: RBarger

Environmental Testing & Consulting, Inc. 2790 Whitten Road
Memphis, TN 38133 (901) 213-2400 Fax (901)213-2440
clientservices@etcmemphis.com

CHAIN OF CUSTODY RECORD

ETC Work Order 0903061
ETC Quote No.

Company Name: AECOM Technical Services	Phone # 864.234.8939	RUSH[2]	
	PO #	Ice	
Project/Site (Include State): Cedar Chemicals, Wilkerson, AR	FID #		
	E-Mail		
Type of Event[1] : Single Daily Weekly Monthly Quarterly Semi-Annual Annual			
Project # 104336	Matrix: 1 Wastewater, 2 Aqueous, 3 Soil/Sediment, 4 Sludge, 5 Oil/Solvent, 6 Other		
Project Manager/Contact: L. Alexander			

Analysis Requested (Note special detection limits / methods): Dioxins by 8151

Which Regs Apply? NPDES, Wastewater, RCRA, UST, Risk Based Limits, TRRP 13, LA RECAP, USACE

# of Cont.	Sample ID/ Number	Depth	Sample Date	Sample Time	Matrix	Type Grab/Comp	Dioxins by 8151	Comments
1	TSB-1 (Low)	4-8	03/05/09	1060	3	Grab	X	
1	TSB-1a	4-8		1060			X	
1	TSB-1MS	4-8		1060			X	
1	TSB-1MSD	4-8		1060			X	
1	TSB-2	4-8		0938			X	
1	TSB-3	4-8		0950			X	
1	TSB-4	4-8		0925			X	
1	TSB-5	4-8		0910			X	
1	TSB-1	1-4		1000			X	HOLD
1	TSB-1	8-12		1015			X	HOLD
2	TSB-1D		03/05/09	1100	2	Grab	X	

Sampled By	Method of Shipment	Blank/Cooler Temp	Remarks
Keith Evans	Drop-off	2.4°C	

RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY (sign)	DATE	TIME
Keith Evans	03/05/09	1330	J. Smith	3.5.09	1330
J. Smith	3.5.09				
			RECEIVED BY LAB (print/sign)	3/5/09	1420

1 - Routine Sampling Events Only
2 - Surcharges may apply

Please return ETC Sample Kit Request Form with chain of custody.
Distribution: Original accompanies samples to the laboratory.

Page ____ of ____

SAFEGUARD LITHO USA Form No. 811-2/L05CS000147 1/09

Environmental Testing & Consulting, Inc. 2790 Whitten Road
Memphis, TN 38133 (901) 213-2400 Fax (901)213-2440
clientservices@etcmemphis.com

CHAIN OF CUSTODY RECORD

ETC Work Order: 0903061
ETC Quote No.:

Company Name: AECOM Technical Services
Phone #: 864-238-8439
RUSH[2]:
PO #:
Ice:
Project/Site (Include State): Cedar Chemical, W. Helena, Ark
FID #:
E-Mail:
Type of Event[1]: Single Daily Weekly Monthly Quarterly Semi-Annual Annual
Project #:
Project Manager/Contact:

Matrix: 1 Wastewater, 2 Aqueous, 3 Soil/Sediment, 4 Sludge, 5 Oil/Solvent, 6 Other

Analysis Requested (Note special detection limits / methods): SFII TCLP

Which Regs Apply? NPDES, Wastewater, RCRA, UST, Risk Based Limits, TRRP 13, LA RECAP, USACE

# of Cont.	Sample ID/ Number	Depth	Sample Date	Sample Time	Matrix	Type Grab/Comp	SFII TCLP	Comments
5	IDW-4		03/05/09	1030	3	Grab	X	

Sampled By: Keith Owen
Method of Shipment: Hand-off
Blank/Cooler Temp: 4°C
Remarks:

RELINQUISHED BY (sign)	DATE	TIME	RECEIVED BY (sign)	DATE	TIME
Keith Owen	03/05/09	1330	J Smith	3.5.09	1330
J Smith	3.5.09				
			RECEIVED BY LAB (print/sign)	3/5/09	1430

1 - Routine Sampling Events Only
2 - Surcharges may apply

Please return ETC Sample Kit Request Form with chain of custody.
Distribution: Original accompanies samples to the laboratory.

Page ____ of ____

SAFEGUARD. LITHO USA Form No. 811-2/L05CS000147 1/09

Sample Reports

CLIENT:
Project:
Lab Order Number:

CASE NARRATIVE

Date: 03/26/09

J

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"A Laboratory Management Partner"

AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-001A
TSB-1

Report of Analysis
03/05/09
Soil
03/05/09 10:10

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**44,200**	**µg/Kg**	**15,000**	**1,000**	**03/19/09 8:57**	**DPC**	**38386**
Surrogate: DCAA		70 %	Limits: 20-150	1	03/19/09 4:28	DPC	38386

Qualifiers/ Definitions

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Greenville, SC 29615

Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-002A
TSB-1a

Report of Analysis
03/05/09
Soil
03/05/09 10:10

Analytical Method 8151A

Prep Method 8151A Prep Batch(s) 23743 Date/Time Prepped 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**33,800**	**µg/Kg**	**15,000**	**1,000**	**03/23/09 15:52**	**DPC**	**38386**
Surrogate: DCAA		65 %	Limits: 20-150	1	03/19/09 5:35	DPC	38386

Qualifiers/ Definitions

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Greenville, SC 29615

Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-003A
TSB-2

Report of Analysis
03/05/09
Soil
03/05/09 9:38

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**31,300**	**µg/Kg**	**15,000**	**1,000**	**03/19/09 9:51**	**DPC**	**38386**
Surrogate: DCAA		79 %	Limits: 20-150	1	03/19/09 5:58	DPC	38386

Qualifiers/ Definitions

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Greenville, SC 29615

Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-004A
TSB-3

Report of Analysis
03/05/09
Soil
03/05/09 9:50

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**80,400**	**µg/Kg**	**15,000**	**1,000**	**03/23/09 16:15**	**DPC**	**38386**
Surrogate: DCAA		87 %	Limits: 20-150	1	03/19/09 6:20	DPC	38386

Qualifiers/ Definitions

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Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-005A
TSB-4

Report of Analysis
03/05/09
Soil
03/05/09 9:25

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23743 **Date/Time Prepped** 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**70,700**	**µg/Kg**	**15,000**	**1,000**	**03/23/09 16:38**	**DPC**	**38386**
Surrogate: DCAA		79 %	Limits: 20-150	1	03/19/09 6:43	DPC	38386

Qualifiers/ Definitions

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Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-006A
TSB-5

Report of Analysis
03/05/09
Soil
03/05/09 9:10

Analytical Method 8151A

Prep Method 8151A Prep Batch(s) 23743 Date/Time Prepped 03/09/09 15:03

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	**34,500**	**µg/Kg**	**15,000**	**1,000**	**03/19/09 10:59**	**DPC**	**38386**
Surrogate: DCAA		100 %	Limits: 20-150	1	03/19/09 7:05	DPC	38386

Qualifiers/ Definitions

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Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-009A
TSB-1D

Report of Analysis
03/05/09
Aqueous
03/05/09 11:00

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23796 **Date/Time Prepped** 03/12/09 17:05

Compound	Result	Units		MQL	DF	Date/Time Analyzed	By	Analytical Batch
Dinoseb	< 0.00270	mg/L		0.00270	1	03/17/09 2:03	KS	38333
Surrogate: DCAA		81 %	Limits:	20-150	1	03/17/09 2:03	KS	38333

Qualifiers/ Definitions

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Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-010A
IDW-4

Report of Analysis
03/05/09
Soil
03/05/09 10:30

1311 TCLP Characterization

Prep Batch 23741 **Date/Time** 03/09/09 14:00 Leachate

Analytical Method 8081A

Prep Method 608 **Prep Batch(s)** 23770 **Date/Time Prepped** 03/11/09 11:57

Compound	Result	Units		MQL	DF	Date/Time Analyzed	By	Analytical Batch
gamma-BHC	< 0.000160	mg/L		0.000160	10	03/19/09 15:46	DPC	38388
Chlordane	< 0.00100	mg/L		0.00100	10	03/19/09 15:46	DPC	38388
Endrin	< 0.000160	mg/L		0.000160	10	03/19/09 15:46	DPC	38388
Heptachlor	< 0.000160	mg/L		0.000160	10	03/19/09 15:46	DPC	38388
Heptachlor epoxide	< 0.000160	mg/L		0.000160	10	03/19/09 15:46	DPC	38388
Methoxychlor	**0.00704 Q**	**mg/L**		**0.000160**	**10**	**03/19/09 15:46**	**DPC**	**38388**
Toxaphene	< 0.00120	mg/L		0.00120	10	03/19/09 15:46	DPC	38388
Surrogate: Decachlorobiphenyl		95 %	Limits:	36-116	10	03/19/09 15:46	DPC	38388
Surrogate: Tetrachloro-m-xylene		56 %	Limits:	25-123	10	03/19/09 15:46	DPC	38388

Qualifiers/ Definitions

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Greenville, SC 29615

Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-010A
IDW-4

Report of Analysis
03/05/09
Soil
03/05/09 10:30

1311 TCLP Characterization

Prep Batch 23741 **Date/Time** 03/09/09 14:00 Leachate

Analytical Method 8151A

Prep Method 8151A **Prep Batch(s)** 23796 **Date/Time Prepped** 03/12/09 17:05

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
2,4-D	< 0.00200	mg/L	0.00200	1	03/17/09 2:25	KS	38333
2,4,5-TP (Silvex)	< 0.000600	mg/L	0.000600	1	03/17/09 2:25	KS	38333
Surrogate: DCAA		59 %	Limits: 20-150	1	03/17/09 2:25	KS	38333

Qualifiers/ Definitions

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Greenville, SC 29615

Cedar Chemicals **W. Helena, AR**

104336

0903061
0903061-010A
IDW-4

Report of Analysis
03/05/09
Soil
03/05/09 10:30

1311 TCLP Characterization

Prep Batch 23741 **Date/Time** 03/09/09 14:00 Leachate

Analytical Method 8270C

Prep Method 3510C **Prep Batch(s)** 23751 **Date/Time Prepped** 03/10/09 10:29

Compound	Result	Units		MQL	DF	Date/Time Analyzed	By	Analytical Batch
2,4-Dinitrotoluene	< 0.0200	mg/L		0.0200	1	03/16/09 21:42	MJ	38235
Hexachlorobenzene	< 0.0200	mg/L		0.0200	1	03/16/09 21:42	MJ	38235
Hexachlorobutadiene	< 0.0200	mg/L		0.0200	1	03/16/09 21:42	MJ	38235
Hexachloroethane	< 0.0200	mg/L		0.0200	1	03/16/09 21:42	MJ	38235
2-Methylphenol	< 0.0200	mg/L		0.0200	1	03/16/09 21:42	MJ	38235
3&4-Methylphenol	< 0.0200	mg/L		0.0200	1	03/16/09 21:42	MJ	38235
Nitrobenzene	< 0.0200	mg/L		0.0200	1	03/16/09 21:42	MJ	38235
Pentachlorophenol	< 0.0400	mg/L		0.0400	1	03/16/09 21:42	MJ	38235
Pyridine	< 0.0400	mg/L		0.0400	1	03/16/09 21:42	MJ	38235
2,4,5-Trichlorophenol	< 0.0200	mg/L		0.0200	1	03/16/09 21:42	MJ	38235
2,4,6-Trichlorophenol	< 0.0200	mg/L		0.0200	1	03/16/09 21:42	MJ	38235
Surrogate: Nitrobenzene-d5		56 %	Limits:	29-110	1	03/16/09 21:42	MJ	38235
Surrogate: 2-Fluorobiphenyl		58 %	Limits:	38-107	1	03/16/09 21:42	MJ	38235
Surrogate: 4-Terphenyl-d14		78 %	Limits:	33-122	1	03/16/09 21:42	MJ	38235
Surrogate: Phenol-d6		34 %	Limits:	10-115	1	03/16/09 21:42	MJ	38235
Surrogate: 2,4,6-Tribromophenol		59 %	Limits:	40-125	1	03/16/09 21:42	MJ	38235
Surrogate: 2-Fluorophenol		39 %	Limits:	20-110	1	03/16/09 21:42	MJ	38235

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals** Site **W. Helena, AR**

Project No. **104336**

Lab Order Number **0903061**
Lab ID **0903061-010B**
Field ID **IDW-4**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09 10:30**

1311 TCLP Zero Headspace for Volatiles

Prep Batch 23740 **Date/Time** 03/09/09 14:00 Leachate

Analytical Method 8260B

Prep Method 5030B **Prep Batch(s)** 23771 **Date/Time Prepped** 03/11/09 12:02

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Benzene	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
2-Butanone (MEK)	< 0.200	mg/L	0.200	10	03/11/09 18:54	LS	38225
Carbon tetrachloride	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
Chlorobenzene	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
Chloroform	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
1,4-Dichlorobenzene	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
1,2-Dichloroethane	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
1,1-Dichloroethene	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
Tetrachloroethene	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
Trichloroethene	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
Vinyl chloride	< 0.0100	mg/L	0.0100	10	03/11/09 18:54	LS	38225
Surrogate: Dibromofluoromethane		109 %	Limits: 75-125	10	03/11/09 18:54	LS	38225
Surrogate: Toluene-d8		106 %	Limits: 85-120	10	03/11/09 18:54	LS	38225
Surrogate: 4-Bromofluorobenzene		98 %	Limits: 85-118	10	03/11/09 18:54	LS	38225
Surrogate: 1,2-Dichloroethane-d4		112 %	Limits: 72-132	10	03/11/09 18:54	LS	38225

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

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"A Laboratory Management Partner"

AECOM EARTH TECH
10 Patewood Drive
Building VI, Suite 500
Greenville, SC 29615

Project Description **Cedar Chemicals**
Project No. **104336**
Site **W. Helena, AR**

Lab Order Number **0903061**
Lab ID **0903061-010A**
Field ID **IDW-4**

Report of Analysis
Received **03/05/09**
Matrix **Soil**
Sampled **03/05/09**

1311 TCLP Characterization

Prep Batch 23741 **Date/Time** 03/09/09 14:00 Leachate

Analytical Method 6010B

Prep Method 3005A **Prep Batch** 23753 **Date/Time Prepped** 03/10/09 11:53

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Silver	< 0.005	mg/L	0.005	1	03/11/09 21:37	JTR	38221
Arsenic	< 0.025	mg/L	0.025	1	03/11/09 21:37	JTR	38221
Barium	**1.02**	**mg/L**	**0.025**	**1**	**03/11/09 21:37**	**JTR**	**38221**
Cadmium	< 0.005	mg/L	0.005	1	03/11/09 21:37	JTR	38221
Chromium	< 0.010	mg/L	0.010	1	03/11/09 21:37	JTR	38221
Lead	< 0.010	mg/L	0.010	1	03/11/09 21:37	JTR	38221
Selenium	< 0.050	mg/L	0.050	1	03/11/09 21:37	JTR	38221

Analytical Method 7470A

Prep Method 7470A **Prep Batch** 23748 **Date/Time Prepped** 03/10/09 9:27

Compound	Result	Units	MQL	DF	Date/Time Analyzed	By	Analytical Batch
Mercury	< 0.0010	mg/L	0.0010	1	03/10/09 10:13	TJ	38286

Qualifiers/ Definitions

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report
Q	RPD >40% between primary and confirmation columns	SQL	Sample Quantitation Limit (adjusted MDL)

Level II

Quality Control Reports

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Analytical QC Summary Report
Form 4
Method Blank Summary

Soil

Herbicides

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Batch ID **23743**
Instrument ID **PEST3**

23743-LB

This Method Blank applies to the following batch samples:

Lab Sample ID	Lab File ID	Analyzed Date	/ Time	Dilution Factor
23743-LB	P3031809AHRB	03/19/09	3:43	1
23743-LCS	P3031809AHRB	03/19/09	4:05	1
0903061-001A	P3031809AHRB	03/19/09	4:28	1
0903061-001AMS	P3031809AHRB	03/19/09	4:50	1
0903061-001AMSD	P3031809AHRB	03/19/09	5:13	1
0903061-002A	P3031809AHRB	03/19/09	5:35	1
0903061-003A	P3031809AHRB	03/19/09	5:58	1
0903061-004A	P3031809AHRB	03/19/09	6:20	1
0903061-005A	P3031809AHRB	03/19/09	6:43	1
0903061-006A	P3031809AHRB	03/19/09	7:05	1
0903061-001A	P3031809AHRB	03/19/09	8:57	1000
0903061-002A	P3031809AHRB	03/19/09	9:29	1000
0903061-003A	P3031809AHRB	03/19/09	9:51	1000
0903061-004A	P3031809AHRB	03/19/09	10:14	1000
0903061-005A	P3031809AHRB	03/19/09	10:36	1000
0903061-006A	P3031809AHRB	03/19/09	10:59	1000
0903061-002A	P3031909Bhrb	03/20/09	3:47	100
0903061-004A	P3031909Bhrb	03/20/09	4:10	100
0903061-005A	P3031909Bhrb	03/20/09	4:32	100
0903061-002A	P3032309Bhrb	03/23/09	15:52	1000
0903061-004A	P3032309Bhrb	03/23/09	16:15	1000

Qualifiers:

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report

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Analytical QC Summary Report
Form 4
Method Blank Summary

Soil

Herbicides

AECOM EARTH TECH
Order Number **0903061**

Project Description Cedar Chemicals

0903061-005A	P3032309Bhrb	03/23/09	16:38	1000

Qualifiers:	*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
	J	Estimated Value Analyte below reported detection limit	M	Minimum value
	MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
	MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics	**Method Blank**				**23743-LB**		**Soil**
Prep Method	8151A	**Batch**	23743	**Date**	03/09/09 15:03		
Analytical Method	8151A	**Batch**	38386	**Date**	03/19/09 3:43	**Dilution Factor** 1	**By** DPC

Compound	Result	Units	MQL
Dinoseb	< 15.0	µg/Kg	15.0
Surrogate: DCAA			50 % Limits: 20-150

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description Cedar Chemicals

Organics	**Laboratory Control Spike**			**23743-LCS**		**Soil**
Prep Method	8151A	**Batch** 23743	**Date**	03/09/09 15:03		
Analytical Method	8151A	**Batch** 38386	**Date**	03/19/09 4:05	**Dilution Factor** 1	**By** DPC

Compound	LCS Conc.	Units	Spike Added	%Rec	QC Limits
Dinoseb	10.5	µg/Kg	41.7	25	20-150
Surrogate: DCAA			69 %	Limits: 20-150	

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics	**Sample Matrix Spike**				**0903061-001AMS**		**Soil**
Prep Method	8151A	**Batch**	23743	**Date**	03/09/09 15:03		
Analytical Method	8151A	**Batch**	38386	**Date**	03/19/09 4:50	**Dilution Factor** 1	**By** DPC

Compound	**MS Conc.**	**Units**	**Spike Added**	**Sample Conc.**	**% Rec**	**QC Limits**
Surrogate: DCAA			67	%	Limits:	20-150

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics	**Sample Matrix Spike Duplicate**		**0903061-001AMSD**		**Soil**
Prep Method	8151A	**Batch** 23743	**Date** 03/09/09 15:03		
Analytical Method	8151A	**Batch** 38386	**Date** 03/19/09 5:13	**Dilution Factor** 1	**By** DPC

Compound	MSD Conc.	Units	Spike Added	Sample Conc.	%Rec	QC Limits	% RPD	RPD Limit
Surrogate: DCAA			78	%	Limits:	20-150		

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Metals	**Method Blank**				**23748-LB**		**Soil**
Prep	**Method** 7470A	**Batch** 23748	**Date** 03/10/09 9:27				
Analytical	**Method** 7470A	**Batch** 38286	**Date** 03/10/09 11:16	**Dilution Factor** 1		**By** TJ	

Compound	Result	Units	MQL
Mercury	< 0.0010	mg/L	0.0010

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Metals	**TCLP Blank Fluid 1**			**23741-TCLPBLFL1**		**Soil**
Prep Method	7470A	**Batch**	23748	**Date**	03/10/09 9:27	
Analytical Method	7470A	**Batch**	38286	**Date**	03/10/09 11:29	**Dilution Factor** 1 **By** TJ

Compound	Result	Units	MQL
Mercury	< 0.0010	mg/L	0.0010

Qualifiers: DF Dilution Factor; MQL Method Quantitation Limit (adjusted); MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description Cedar Chemicals

Metals	**TCLP Blank Fluid 2**				**23741-TCLPBLFL2**		**Soil**
Prep	**Method** 7470A	**Batch** 23748	**Date** 03/10/09 9:27				
Analytical	**Method** 7470A	**Batch** 38286	**Date** 03/10/09 11:30	**Dilution Factor** 1		**By** TJ	

Compound	Result	Units	MQL
Mercury	< 0.0010	mg/L	0.0010

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description Cedar Chemicals

Metals	**Laboratory Control Spike**		**23748-LCS**		**Soil**
Prep Method	7470A	**Batch** 23748	**Date**	03/10/09 9:27	
Analytical Method	7470A	**Batch** 38286	**Date**	03/10/09 11:19	**Dilution Factor** 1 **By** TJ

Compound	LCS Conc.	Units	Spike Added	%Rec	QC Limits
Mercury	0.0058	mg/L	0.0050	116	80-120

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description Cedar Chemicals

Metals	**Sample Matrix Spike**			**0903106-001AMS**		**Soil**
Prep	**Method** 7470A	**Batch** 23748	**Date** 03/10/09 9:27			
Analytical	**Method** 7470A	**Batch** 38286	**Date** 03/10/09 11:27	**Dilution Factor** 1		**By** TJ

Compound	MS Conc.	Units	Spike Added	Sample Conc.	% Rec	QC Limits
Mercury	0.0059	mg/L	0.0050	< 0.0010	118	80-120

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Metals	**Sample Matrix Spike Duplicate**		**0903106-001AMSD**		**Soil**
Prep Method	7470A	**Batch** 23748	**Date** 03/10/09 9:27		
Analytical Method	7470A	**Batch** 38286	**Date** 03/10/09 11:28	**Dilution Factor** 1	**By** TJ

Compound	MSD Conc.	Units	Spike Added	Sample Conc.	% Rec	QC Limits	% RPD	RPD Limit
Mercury	0.0060	mg/L	0.0050	< 0.0010	120	80-120	2	20

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report
Form 4
Method Blank Summary

Aqueous

GCMS Semi-Volatiles

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Batch ID **23751**
Instrument ID **BNA2**

23751-LB

This Method Blank applies to the following batch samples:

Lab Sample ID	Lab File ID	Analyzed Date	/ Time	Dilution Factor
23751-LB	1101012.D	03/16/09	20:12	1
23751-LCS	1201013.D	03/16/09	20:42	1
23751-LCSD	1301014.D	03/16/09	21:12	1
0903061-010A	1401015.D	03/16/09	21:42	1
0903106-001A	1701018.D	03/16/09	23:13	1
0903106-001AMS	1801019.D	03/16/09	23:43	1
0903106-001AMSD	1901020.D	03/17/09	0:14	1

Qualifiers:

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

SemiVolatiles Method Blank **23751-LB** **Aqueous**

Prep Method	3510C	**Batch**	23751	**Date**	03/10/09 10:29		
Analytical Method	8270C	**Batch**	38235	**Date**	03/16/09 20:12	**Dilution Factor** 1	**By** MJ

Compound	Result	Units	MQL
2,4-Dinitrotoluene	< 0.00500	mg/L	0.00500
Hexachlorobenzene	< 0.00500	mg/L	0.00500
Hexachlorobutadiene	< 0.00500	mg/L	0.00500
Hexachloroethane	< 0.00500	mg/L	0.00500
2-Methylphenol	< 0.00500	mg/L	0.00500
3&4-Methylphenol	< 0.00500	mg/L	0.00500
Nitrobenzene	< 0.00500	mg/L	0.00500
Pentachlorophenol	< 0.0100	mg/L	0.0100
Pyridine	< 0.0100	mg/L	0.0100
2,4,5-Trichlorophenol	< 0.00500	mg/L	0.00500
2,4,6-Trichlorophenol	< 0.00500	mg/L	0.00500

Surrogate:	Nitrobenzene-d5	53	%	Limits:	29-110
Surrogate:	2-Fluorobiphenyl	56	%	Limits:	38-107
Surrogate:	4-Terphenyl-d14	79	%	Limits:	33-122
Surrogate:	Phenol-d6	27	%	Limits:	10-115
Surrogate:	2,4,6-Tribromophenol	62	%	Limits:	40-125
Surrogate:	2-Fluorophenol	33	%	Limits:	20-110

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

SemiVolatiles **Laboratory Control Spike** **23751-LCS** **Aqueous**

Prep Method 3510C **Batch** 23751 **Date** 03/10/09 10:29

Analytical Method 8270C **Batch** 38235 **Date** 03/16/09 20:42 **Dilution Factor** 1 **By** MJ

Compound	LCS Conc.	Units	Spike Added	% Rec	QC Limits
2,4-Dinitrotoluene	0.0383	mg/L	0.0500	77	24-147
Hexachlorobenzene	0.0316	mg/L	0.0500	63	18-136
Hexachlorobutadiene	0.0215	mg/L	0.0500	43	22-109
Hexachloroethane	0.0187	mg/L	0.0500	37	16-107
2-Methylphenol	0.0247	mg/L	0.0500	49	22-97
3&4-Methylphenol	0.0251	mg/L	0.0500	50	21-96
Nitrobenzene	0.0264	mg/L	0.0500	53	27-117
Pentachlorophenol	0.0362	mg/L	0.0500	72	17-142
Pyridine	0.0261	mg/L	0.0500	52	10-71
2,4,5-Trichlorophenol	0.0302	mg/L	0.0500	60	26-118
2,4,6-Trichlorophenol	0.0299	mg/L	0.0500	60	26-115

Surrogate:	Nitrobenzene-d5	49	%	Limits:	29-110
Surrogate:	2-Fluorobiphenyl	51	%	Limits:	38-107
Surrogate:	4-Terphenyl-d14	81	%	Limits:	33-122
Surrogate:	Phenol-d6	21	%	Limits:	10-115
Surrogate:	2,4,6-Tribromophenol	58	%	Limits:	40-125
Surrogate:	2-Fluorophenol	27	%	Limits:	20-110

Qualifiers: DF Dilution Factor; MDL Method Dection Limit (unadjusted); MQL Method Quantitation Limit (adjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

SemiVolatiles Laboratory Control Spike Duplicate 23751-LCSD Aqueous

Prep Method 3510C **Batch** 23751 **Date** 03/10/09 10:29

Analytical Method 8270C **Batch** 38235 **Date** 03/16/09 21:12 **Dilution Factor** 1 **By** MJ

Compound	LCSD Conc.	Units	Spike Added	% Rec	QC Limits	% RPD	RPD Limit
2,4-Dinitrotoluene	0.0349	mg/L	0.0500	70	24-147	9	20
Hexachlorobenzene	0.0292	mg/L	0.0500	58	18-136	8	20
Hexachlorobutadiene	0.0226	mg/L	0.0500	45	22-109	5	20
Hexachloroethane	0.0205	mg/L	0.0500	41	16-107	9	20
2-Methylphenol	0.0248	mg/L	0.0500	50	22-97	0	20
3&4-Methylphenol	0.0253	mg/L	0.0500	51	21-96	0	20
Nitrobenzene	0.0272	mg/L	0.0500	54	27-117	3	20
Pentachlorophenol	0.0349	mg/L	0.0500	70	17-142	4	20
Pyridine	0.0237	mg/L	0.0500	48	10-71	10	20
2,4,5-Trichlorophenol	0.0298	mg/L	0.0500	60	26-118	1	20
2,4,6-Trichlorophenol	0.0279	mg/L	0.0500	56	26-115	7	20

Surrogate:	Nitrobenzene-d5	48	%	Limits:	29-110
Surrogate:	2-Fluorobiphenyl	47	%	Limits:	38-107
Surrogate:	4-Terphenyl-d14	74	%	Limits:	33-122
Surrogate:	Phenol-d6	22	%	Limits:	10-115
Surrogate:	2,4,6-Tribromophenol	56	%	Limits:	40-125
Surrogate:	2-Fluorophenol	28	%	Limits:	20-110

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

SemiVolatiles **Sample Matrix Spike** **0903106-001AMS** **Aqueous**

Prep Method 3510C **Batch** 23751 **Date** 03/10/09 10:29

Analytical Method 8270C **Batch** 38235 **Date** 03/16/09 23:43 **Dilution Factor** 1 **By** MJ

Compound	MS Conc.	Units	Spike Added	Sample Conc.	%Rec	QC Limits
2,4-Dinitrotoluene	0.146	mg/L	0.200	< 0.0200	73	24-147
Hexachlorobenzene	0.125	mg/L	0.200	< 0.0200	62	18-136
Hexachlorobutadiene	0.0995	mg/L	0.200	< 0.0200	50	22-109
Hexachloroethane	0.0984	mg/L	0.200	< 0.0200	49	16-107
2-Methylphenol	0.143	mg/L	0.200	< 0.0200	72	22-97
3&4-Methylphenol	0.248	mg/L	0.400	< 0.0200	62	21-96
Nitrobenzene	0.124	mg/L	0.200	< 0.0200	62	27-117
Pentachlorophenol	0.164	mg/L	0.200	< 0.0400	82	17-142
Pyridine	0.0837	mg/L	0.200	< 0.0400	42	10-71
2,4,5-Trichlorophenol	0.151	mg/L	0.200	< 0.0200	76	26-118
2,4,6-Trichlorophenol	0.142	mg/L	0.200	< 0.0200	71	26-115

Surrogate:	Nitrobenzene-d5	60	%	Limits:	29-110
Surrogate:	2-Fluorobiphenyl	63	%	Limits:	38-107
Surrogate:	4-Terphenyl-d14	81	%	Limits:	33-122
Surrogate:	Phenol-d6	36	%	Limits:	10-115
Surrogate:	2,4,6-Tribromophenol	62	%	Limits:	40-125
Surrogate:	2-Fluorophenol	45	%	Limits:	20-115

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

SemiVolatiles **Sample Matrix Spike Duplicate** **0903106-001AMSD** **Aqueous**

Prep Method 3510C **Batch** 23751 **Date** 03/10/09 10:29

Analytical Method 8270C **Batch** 38235 **Date** 03/17/09 0:14 **Dilution Factor** 1 **By** MJ

Compound	MSD Conc.	Units	Spike Added	Sample Conc.	%Rec	QC Limits	% RPD	RPD Limit
2,4-Dinitrotoluene	0.142	mg/L	0.200	< 0.0200	71	24-147	3	20
Hexachlorobenzene	0.124	mg/L	0.200	< 0.0200	62	18-136	0	20
Hexachlorobutadiene	0.0956	mg/L	0.200	< 0.0200	48	22-109	4	20
Hexachloroethane	0.0955	mg/L	0.200	< 0.0200	48	16-107	3	20
2-Methylphenol	0.142	mg/L	0.200	< 0.0200	71	22-97	0	20
3&4-Methylphenol	0.249	mg/L	0.400	< 0.0200	62	21-96	0	20
Nitrobenzene	0.122	mg/L	0.200	< 0.0200	61	27-117	2	20
Pentachlorophenol	0.162	mg/L	0.200	< 0.0400	81	17-142	0	20
Pyridine	0.0885	mg/L	0.200	< 0.0400	44	10-71	6	20
2,4,5-Trichlorophenol	0.158	mg/L	0.200	< 0.0200	79	26-118	4	20
2,4,6-Trichlorophenol	0.142	mg/L	0.200	< 0.0200	71	26-115	0	20

Surrogate:	Nitrobenzene-d5	59	%	Limits:	29-110
Surrogate:	2-Fluorobiphenyl	62	%	Limits:	38-107
Surrogate:	4-Terphenyl-d14	81	%	Limits:	33-122
Surrogate:	Phenol-d6	36	%	Limits:	10-115
Surrogate:	2,4,6-Tribromophenol	61	%	Limits:	40-125
Surrogate:	2-Fluorophenol	43	%	Limits:	20-110

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Metals	**Method Blank**				**23753-LB**		**Soil**
Prep Method	3005A	**Batch**	23753	**Date**	03/10/09 11:53		
Analytical Method	6010B	**Batch**	38221	**Date**	03/11/09 20:58	**Dilution Factor** 1	**By** JTR

Compound	Result	Units	MQL
Silver	< 0.005	mg/L	0.005
Arsenic	< 0.025	mg/L	0.025
Barium	< 0.025	mg/L	0.025
Cadmium	< 0.005	mg/L	0.005
Chromium	< 0.010	mg/L	0.010
Lead	< 0.010	mg/L	0.010
Selenium	< 0.050	mg/L	0.050

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Metals	**TCLP Blank Fluid 1**				**23741-TCLPBLFL1**		**Soil**
Prep Method	3005A	**Batch**	23753	**Date**	03/10/09 11:53		
Analytical Method	6010B	**Batch**	38221	**Date**	03/11/09 22:15	**Dilution Factor** 1	**By** JTR

Compound	Result	Units	MQL
Silver	< 0.005	mg/L	0.005
Arsenic	< 0.025	mg/L	0.025
Barium	< 0.025	mg/L	0.025
Cadmium	< 0.005	mg/L	0.005
Chromium	< 0.010	mg/L	0.010
Lead	< 0.010	mg/L	0.010
Selenium	< 0.050	mg/L	0.050

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Metals	**TCLP Blank Fluid 2**				**23741-TCLPBLFL2**		**Soil**
Prep Method	3005A	**Batch**	23753	**Date**	03/10/09 11:53		
Analytical Method	6010B	**Batch**	38221	**Date**	03/11/09 22:22	**Dilution Factor** 1	**By** JTR

Compound	Result	Units	MQL
Silver	< 0.005	mg/L	0.005
Arsenic	< 0.025	mg/L	0.025
Barium	< 0.025	mg/L	0.025
Cadmium	< 0.005	mg/L	0.005
Chromium	< 0.010	mg/L	0.010
Lead	< 0.010	mg/L	0.010
Selenium	< 0.050	mg/L	0.050

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Metals	**Laboratory Control Spike**		**23753-LCS**		**Soil**
Prep Method	3005A	**Batch** 23753	**Date**	03/10/09 11:53	
Analytical Method	6010B	**Batch** 38221	**Date**	03/11/09 21:04	**Dilution Factor** 1 **By** JTR

Compound	LCS Conc.	Units	Spike Added	%Rec	QC Limits
Silver	0.100	mg/L	0.100	100	80-120
Arsenic	0.103	mg/L	0.100	103	80-120
Barium	1.02	mg/L	1.00	102	80-120
Cadmium	0.102	mg/L	0.100	102	80-120
Chromium	1.02	mg/L	1.00	102	80-120
Lead	0.102	mg/L	0.100	102	80-120
Selenium	0.098	mg/L	0.100	98	80-120

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Metals **Sample Matrix Spike** **0903064-001AMS** **Soil**

Prep Method 3005A **Batch** 23753 **Date** 03/10/09 11:53

Analytical Method 6010B **Batch** 38221 **Date** 03/11/09 22:02 **Dilution Factor** 1 **By** JTR

Compound	MS Conc.	Units	Spike Added	Sample Conc.	%Rec	QC Limits
Silver	0.529	mg/L	0.500	< 0.005	106	70-125
Arsenic	0.622	mg/L	0.500	0.093	106	70-125
Barium	5.07	mg/L	5.00	< 0.025	101	70-125
Cadmium	0.486	mg/L	0.500	< 0.005	97	70-125
Chromium	4.98	mg/L	5.00	0.043	99	70-125
Lead	0.498	mg/L	0.500	< 0.010	100	70-125
Selenium	0.522	mg/L	0.500	< 0.050	104	70-125

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Metals	**Sample Matrix Spike Duplicate**		**0903064-001AMSD**		**Soil**
Prep Method	3005A	**Batch** 23753	**Date** 03/10/09 11:53		
Analytical Method	6010B	**Batch** 38221	**Date** 03/11/09 22:09	**Dilution Factor** 1	**By** JTR

Compound	MSD Conc.	Units	Spike Added	Sample Conc.	%Rec	QC Limits	%RPD	RPD Limit
Silver	0.534	mg/L	0.500	< 0.005	107	70-125	0	20
Arsenic	0.627	mg/L	0.500	0.093	107	70-125	0	20
Barium	5.12	mg/L	5.00	< 0.025	102	70-125	0	20
Cadmium	0.491	mg/L	0.500	< 0.005	98	70-125	1	20
Chromium	5.04	mg/L	5.00	0.043	100	70-125	1	20
Lead	0.505	mg/L	0.500	< 0.010	101	70-125	1	20
Selenium	0.527	mg/L	0.500	< 0.050	105	70-125	0	20

Qualifiers: DF Dilution Factor; MQL Method Quantitation Limit (adjusted); MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report
Form 4
Method Blank Summary

Aqueous

Pesticides

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Batch ID **23770**
Instrument ID **PEST2**

23770-LB

This Method Blank applies to the following batch samples:

Lab Sample ID	Lab File ID	Analyzed Date	/ Time	Dilution Factor
0903061-010A	P2031909APST	03/19/09	15:46	10
23770-LB	P2032309APST	03/23/09	14:32	10
23770-LCS	P2032309APST	03/23/09	14:59	10
23770-LCSD	P2032309APST	03/23/09	15:26	10
23741-TCLPBLFL1	P2032309APST	03/23/09	17:24	10

Qualifiers:

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics	**Method Blank**				**23770-LB**		**Aqueous**
Prep Method	3510C	**Batch**	23770	**Date**	03/11/09 11:57		
Analytical Method	8081A	**Batch**	38388	**Date**	03/23/09 14:32	**Dilution Factor** 10	**By** DPC

Compound	Result	Units	MQL
gamma-BHC	< 0.0000400	mg/L	0.0000400
Chlordane	< 0.000250	mg/L	0.000250
Endrin	< 0.0000400	mg/L	0.0000400
Heptachlor	< 0.0000400	mg/L	0.0000400
Heptachlor epoxide	< 0.0000400	mg/L	0.0000400
Hexachlorobenzene	< 0.000400	mg/L	0.000400
Methoxychlor	< 0.0000400	mg/L	0.0000400
Toxaphene	< 0.000300	mg/L	0.000300

Surrogate:	Decachlorobiphenyl	98	%	Limits:	36-116
Surrogate:	Tetrachloro-m-xylene	63	%	Limits:	25-123

Qualifiers: DF Dilution Factor; MQL Method Quantitation Limit (adjusted); MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics	**TCLP Blank Fluid 1**				**23741-TCLPBLFL1**		**Aqueous**
Prep Method	3510C	**Batch**	23770	**Date**	03/11/09 11:57		
Analytical Method	8081A	**Batch**	38388	**Date**	03/23/09 17:24	**Dilution Factor** 10	**By** DPC

Compound	Result	Units	MQL
gamma-BHC	< 0.000160	mg/L	0.000160
Chlordane	< 0.00100	mg/L	0.00100
Endrin	< 0.000160	mg/L	0.000160
Heptachlor	< 0.000160	mg/L	0.000160
Heptachlor epoxide	< 0.000160	mg/L	0.000160
Hexachlorobenzene	< 0.00160	mg/L	0.00160
Methoxychlor	< 0.000160	mg/L	0.000160
Toxaphene	< 0.00120	mg/L	0.00120

Surrogate:	Decachlorobiphenyl	115	%	Limits:	36-116
Surrogate:	Tetrachloro-m-xylene	76	%	Limits:	25-123

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics — Laboratory Control Spike — 23770-LCS — Aqueous

Prep Method 3510C **Batch** 23770 **Date** 03/11/09 11:57

Analytical Method 8081A **Batch** 38388 **Date** 03/23/09 14:59 **Dilution Factor** 10 **By** DPC

Compound	LCS Conc.	Units	Spike Added	%Rec	QC Limits
gamma-BHC	0.000716	mg/L	0.00100	72	41-102
Endrin	0.000829	mg/L	0.00100	83	45-117
Heptachlor	0.000725	mg/L	0.00100	72	40-110
Heptachlor epoxide	0.000793	mg/L	0.00100	79	42-115
Methoxychlor	0.000983	mg/L	0.00100	98	39-140

Surrogate:	Decachlorobiphenyl	102	%	Limits:	36-116
Surrogate:	Tetrachloro-m-xylene	52	%	Limits:	25-123

Qualifiers: DF Dilution Factor; MDL Method Dection Limit (unadjusted); MQL Method Quantitation Limit (adjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics **Laboratory Control Spike Duplicate** **23770-LCSD** **Aqueous**

Prep Method 3510C **Batch** 23770 **Date** 03/11/09 11:57

Analytical Method 8081A **Batch** 38388 **Date** 03/23/09 15:26 **Dilution Factor** 10 **By** DPC

Compound	LCSD Conc.	Units	Spike Added	% Rec	QC Limits	% RPD	RPD Limit
gamma-BHC	0.000726	mg/L	0.00100	73	41-102	1	20
Endrin	0.000797	mg/L	0.00100	80	45-117	4	20
Heptachlor	0.000740	mg/L	0.00100	74	40-110	2	20
Heptachlor epoxide	0.000758	mg/L	0.00100	76	42-115	5	20
Methoxychlor	0.00106	mg/L	0.00100	106	39-140	8	20

Surrogate:	Decachlorobiphenyl	105	%	Limits:	36-116
Surrogate:	Tetrachloro-m-xylene	57	%	Limits:	25-123

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

26-Mar-09

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Analytical QC Summary Report
Form 4
Method Blank Summary

Aqueous

GCMS Volatiles

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Batch ID **23771**
Instrument ID **VOC4**

23771-LB

This Method Blank applies to the following batch samples:

Lab Sample ID	Lab File ID	Analyzed Date	/ Time	Dilution Factor
23771-LCS	1002lcs.d	03/11/09	13:30	1
23771-LB	1005.d	03/11/09	15:27	1
23740-TCLPBLFL1	1010.d	03/11/09	18:20	10
0903061-010B	1011.d	03/11/09	18:54	10
0903106-001B	1015.d	03/11/09	21:12	10
0903106-001BMS	1018.d	03/11/09	22:56	10
0903106-001BMSD	1019.d	03/11/09	23:30	10

Qualifiers:

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Volatiles	**Method Blank**			**23771-LB**	**Aqueous**
Prep Method	5030B	**Batch** 23771	**Date**	03/11/09 12:02	
Analytical Method	8260B	**Batch** 38225	**Date**	03/11/09 15:27	**Dilution Factor** 1 **By** LS

Compound	Result	Units	MQL
Benzene	< 0.00100	mg/L	0.00100
2-Butanone (MEK)	< 0.0200	mg/L	0.0200
Carbon tetrachloride	< 0.00100	mg/L	0.00100
Chlorobenzene	< 0.00100	mg/L	0.00100
Chloroform	< 0.00100	mg/L	0.00100
1,4-Dichlorobenzene	< 0.00100	mg/L	0.00100
1,2-Dichloroethane	< 0.00100	mg/L	0.00100
1,1-Dichloroethene	< 0.00100	mg/L	0.00100
Tetrachloroethene	< 0.00100	mg/L	0.00100
Trichloroethene	< 0.00100	mg/L	0.00100
Vinyl chloride	< 0.00100	mg/L	0.00100

Surrogate:	Dibromofluoromethane	109	%	Limits:	75-125
Surrogate:	Toluene-d8	101	%	Limits:	85-120
Surrogate:	4-Bromofluorobenzene	101	%	Limits:	85-118
Surrogate:	1,2-Dichloroethane-d4	112	%	Limits:	72-132

Qualifiers: DF Dilution Factor; MQL Method Quantitation Limit (adjusted); MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Volatiles	**TCLP Blank Fluid 1**				**23740-TCLPBLFL1**		**Aqueous**
Prep Method	5030B	**Batch**	23771	**Date**	03/11/09 12:02		
Analytical Method	8260B	**Batch**	38225	**Date**	03/11/09 18:20	**Dilution Factor** 10	**By** LS

Compound	Result	Units	MQL
Benzene	< 0.0100	mg/L	0.0100
2-Butanone (MEK)	< 0.200	mg/L	0.200
Carbon tetrachloride	< 0.0100	mg/L	0.0100
Chlorobenzene	< 0.0100	mg/L	0.0100
Chloroform	< 0.0100	mg/L	0.0100
1,4-Dichlorobenzene	< 0.0100	mg/L	0.0100
1,2-Dichloroethane	< 0.0100	mg/L	0.0100
1,1-Dichloroethene	< 0.0100	mg/L	0.0100
Tetrachloroethene	< 0.0100	mg/L	0.0100
Trichloroethene	< 0.0100	mg/L	0.0100
Vinyl chloride	< 0.0100	mg/L	0.0100

Surrogate:	Dibromofluoromethane	103	%	Limits:	75-125
Surrogate:	Toluene-d8	105	%	Limits:	85-120
Surrogate:	4-Bromofluorobenzene	102	%	Limits:	85-118
Surrogate:	1,2-Dichloroethane-d4	104	%	Limits:	72-132

Qualifiers: DF Dilution Factor; MQL Method Quantitation Limit (adjusted); MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Volatiles **Laboratory Control Spike** **23771-LCS** **Aqueous**

Prep Method 5030B **Batch** 23771 **Date** 03/11/09 12:02

Analytical Method 8260B **Batch** 38225 **Date** 03/11/09 13:30 **Dilution Factor** 1 **By** LS

Compound	LCS Conc.	Units	Spike Added	%Rec	QC Limits
Benzene	0.0976	mg/L	0.100	98	80-120
2-Butanone (MEK)	0.0776	mg/L	0.100	78	40-140
Carbon tetrachloride	0.100	mg/L	0.100	100	65-140
Chlorobenzene	0.0965	mg/L	0.100	96	80-120
Chloroform	0.0982	mg/L	0.100	98	80-120
1,4-Dichlorobenzene	0.0896	mg/L	0.100	90	75-125
1,2-Dichloroethane	0.0897	mg/L	0.100	90	70-130
1,1-Dichloroethene	0.100	mg/L	0.100	100	80-120
Tetrachloroethene	0.0934	mg/L	0.100	93	45-150
Trichloroethene	0.0914	mg/L	0.100	91	70-125
Vinyl chloride	0.0843	mg/L	0.100	84	80-120

Surrogate:	Dibromofluoromethane	100	%	Limits:	75-125
Surrogate:	Toluene-d8	97	%	Limits:	85-120
Surrogate:	4-Bromofluorobenzene	101	%	Limits:	85-118
Surrogate:	1,2-Dichloroethane-d4	91	%	Limits:	72-132

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Volatiles **Sample Matrix Spike** **0903106-001BMS** **Aqueous**

Prep Method 5030B **Batch** 23771 **Date** 03/11/09 12:02

Analytical Method 8260B **Batch** 38225 **Date** 03/11/09 22:56 **Dilution Factor** 10 **By** LS

Compound	MS Conc.	Units	Spike Added	Sample Conc.	%Rec	QC Limits
Benzene	0.995	mg/L	1.00	< 0.0100	100	80-120
2-Butanone (MEK)	0.673	mg/L	1.00	< 0.200	67	40-140
Carbon tetrachloride	1.03	mg/L	1.00	< 0.0100	103	65-140
Chlorobenzene	0.953	mg/L	1.00	< 0.0100	95	80-120
Chloroform	1.01	mg/L	1.00	0.0466	96	80-120
1,4-Dichlorobenzene	0.907	mg/L	1.00	< 0.0100	91	75-125
1,2-Dichloroethane	0.908	mg/L	1.00	< 0.0100	91	70-130
1,1-Dichloroethene	0.997	mg/L	1.00	< 0.0100	100	80-120
Tetrachloroethene	0.980	mg/L	1.00	< 0.0100	98	45-150
Trichloroethene	0.952	mg/L	1.00	< 0.0100	95	70-125
Vinyl chloride	0.952	mg/L	1.00	< 0.0100	95	80-120

Surrogate:	Dibromofluoromethane	95	%	Limits:	75-125
Surrogate:	Toluene-d8	107	%	Limits:	85-120
Surrogate:	4-Bromofluorobenzene	95	%	Limits:	85-118
Surrogate:	1,2-Dichloroethane-d4	93	%	Limits:	72-132

Qualifiers: DF Dilution Factor; MDL Method Dection Limit (unadjusted); MQL Method Quantitation Limit (adjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Volatiles **Sample Matrix Spike Duplicate** **0903106-001BMSD** **Aqueous**

Prep Method 5030B **Batch** 23771 **Date** 03/11/09 12:02

Analytical Method 8260B **Batch** 38225 **Date** 03/11/09 23:30 **Dilution Factor** 10 **By** LS

Compound	MSD Conc.	Units	Spike Added	Sample Conc.	% Rec	QC Limits	% RPD	RPD Limit
Benzene	1.02	mg/L	1.00	< 0.0100	102	80-120	2	30
2-Butanone (MEK)	0.736	mg/L	1.00	< 0.200	74	40-140	9	30
Carbon tetrachloride	1.06	mg/L	1.00	< 0.0100	106	65-140	4	30
Chlorobenzene	0.984	mg/L	1.00	< 0.0100	98	80-120	3	30
Chloroform	1.11	mg/L	1.00	0.0466	106	80-120	10	30
1,4-Dichlorobenzene	1.02	mg/L	1.00	< 0.0100	102	75-125	12	30
1,2-Dichloroethane	0.960	mg/L	1.00	< 0.0100	96	70-130	6	30
1,1-Dichloroethene	1.02	mg/L	1.00	< 0.0100	102	80-120	2	30
Tetrachloroethene	0.982	mg/L	1.00	< 0.0100	98	45-150	0	30
Trichloroethene	0.947	mg/L	1.00	< 0.0100	95	70-125	0	30
Vinyl chloride	0.987	mg/L	1.00	< 0.0100	99	80-120	4	30

Surrogate:	Dibromofluoromethane	95	%	Limits:	75-125
Surrogate:	Toluene-d8	98	%	Limits:	85-120
Surrogate:	4-Bromofluorobenzene	92	%	Limits:	85-118
Surrogate:	1,2-Dichloroethane-d4	95	%	Limits:	72-132

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report
Form 4
Method Blank Summary

Aqueous

Herbicides

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Batch ID 23796
Instrument ID PEST3

23796-LB

This Method Blank applies to the following batch samples:

Lab Sample ID	Lab File ID	Analyzed Date	/ Time	Dilution Factor
23796-LB	P3031609BHRB	03/16/09	23:25	1
23796-LCS	P3031609BHRB	03/16/09	23:48	1
23796-LCSD	P3031609BHRB	03/17/09	0:10	1
0903128-001B	P3031609BHRB	03/17/09	0:33	1
0903128-001BMS	P3031609BHRB	03/17/09	0:55	1
0903128-001BMSD	P3031609BHRB	03/17/09	1:18	1
0903061-009A	P3031609BHRB	03/17/09	2:03	1
0903061-010A	P3031609BHRB	03/17/09	2:25	1
23741-TCLPBLFL1	P3031609BHRB	03/17/09	3:11	1

Qualifiers:

*	Surrogate Recovery outside accepted limits	* I	Recoveries affected by interferences or high background
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
E	Value exceeds method calibration range	H	Prepped / Analyzed out of holding time.
J	Estimated Value Analyte below reported detection limit	M	Minimum value
MDL	Method Dection Limit (unadjusted)	MQL	Method Quantitation Limit (adjusted)
MRL	Method Reporting Limit	N	Refer to attached Non-Compliance Report

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics	**Method Blank**				**23796-LB**		**Aqueous**
Prep Method	8151A	**Batch**	23796	**Date**	03/12/09 17:05		
Analytical Method	8151A	**Batch**	38333	**Date**	03/16/09 23:25	**Dilution Factor** 1	**By** KS

Compound	Result	Units	MQL
2,4-D	< 0.000100	mg/L	0.000100
2,4,5-TP (Silvex)	< 0.0000300	mg/L	0.0000300
Dinoseb	< 0.00270	mg/L	0.00270
Surrogate: DCAA		79	% Limits: 20-150

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics	**TCLP Blank Fluid 1**				**23741-TCLPBLFL1**		**Aqueous**
Prep Method	8151A	**Batch**	23796	**Date**	03/12/09 17:05		
Analytical Method	8151A	**Batch**	38333	**Date**	03/17/09 3:11	**Dilution Factor** 1	**By** KS

Compound	Result	Units	MQL
2,4-D	< 0.00200	mg/L	0.00200
2,4,5-TP (Silvex)	< 0.000600	mg/L	0.000600
Dinoseb	< 0.0540	mg/L	0.0540
Surrogate: DCAA	64	%	Limits: 20-150

Qualifiers: DF Dilution Factor; MDL Method Dection Limit (unadjusted); MQL Method Quantitation Limit (adjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics	**Laboratory Control Spike**			**23796-LCS**		**Aqueous**
Prep Method	8151A	**Batch** 23796	**Date**	03/12/09 17:05		
Analytical Method	8151A	**Batch** 38333	**Date**	03/16/09 23:48	**Dilution Factor** 1	**By** KS

Compound	LCS Conc.	Units	Spike Added	% Rec	QC Limits
2,4-D	0.00183	mg/L	0.00250	73	20-150
2,4,5-TP (Silvex)	0.000200	mg/L	0.000250	80	20-150
Dinoseb	0.00159	mg/L	0.00125	127	20-150
Surrogate: DCAA			122	%	Limits: 20-150

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics	**Sample Matrix Spike**		**0903128-001BMS**		**Aqueous**
Prep Method	8151A	**Batch** 23796	**Date**	03/12/09 17:05	
Analytical Method	8151A	**Batch** 38333	**Date**	03/17/09 0:55	**Dilution Factor** 1 **By** KS

Compound	MS Conc.	Units	Spike Added	Sample Conc.	%Rec	QC Limits
2,4-D	0.0347	mg/L	0.0500	0.00739	55	20-150
2,4,5-TP (Silvex)	0.00394	mg/L	0.00500	< 0.000600	79	20-150
Dinoseb	0.0265	mg/L	0.0250	0.00142	100	20-150
Surrogate: DCAA			114	%	Limits:	20-150

Qualifiers: DF Dilution Factor
MQL Method Quantitation Limit (adjusted)
MDL Method Dection Limit (unadjusted)

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Analytical QC Summary Report

AECOM EARTH TECH
Order Number **0903061**

Project Description: Cedar Chemicals

Organics — Sample Matrix Spike Duplicate — 0903128-001BMSD — Aqueous

Prep Method 8151A **Batch** 23796 **Date** 03/12/09 17:05

Analytical Method 8151A **Batch** 38333 **Date** 03/17/09 1:18 **Dilution Factor** 1 **By** KS

Compound	MSD Conc.	Units	Spike Added	Sample Conc.	% Rec	QC Limits	% RPD	RPD Limit
2,4-D	0.0329	mg/L	0.0500	0.00739	51	20-150	5	30
2,4,5-TP (Silvex)	0.00346	mg/L	0.00500	< 0.000600	69	20-150	13	30
Dinoseb	0.0243	mg/L	0.0250	0.00142	92	20-150	8	30

Surrogate: DCAA 89 % Limits: 20-150

Qualifiers: DF Dilution Factor; MDL Method Dection Limit (unadjusted); MQL Method Quantitation Limit (adjusted)

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