



EA Engineering, Science, and Technology, Inc.

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Warwick, Rhode Island 02886
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30 November 2009

Mr. Timothy Fluery
RI Department of Environmental Management
Office of Waste Management
235 Promenade Street
Providence, RI 02908

RE: Supplemental Sampling Analytical Results
Lincoln Lace and Braid Sluiceway Investigation
Ponagansett Avenue; Providence, Rhode Island
EA Project No. 61891.05.0008

Dear Mr. Fluery:

EA Engineering, Science, and Technology, Inc. (EA), on behalf of the City of Providence (the City), is providing this letter report to summarize the collection of surface water, sediment, and iron floc samples to more adequately characterize the sluiceway at the former Lincoln Lace and Braid property located at 55 Ponagansett Street, Providence, RI (the "Site"). Previous site investigation reports have indicated that sediments within the sluiceway were not impacted by contaminants above the Rhode Island Department of Environmental Management (RIDEM) applicable standards. However, previously unknown investigation reports found during a recent file review at RIDEM, conducted by EA on behalf of the City and at RIDEM's direction, document the collection and analysis of six sediment samples collected from within the sluiceway. These historical reports indicate that the sluiceway was impacted with lead, arsenic, and petroleum hydrocarbons at concentrations exceeding applicable regulatory standards. EA proposed in a document titled "Sampling and Analysis Plan and Site-Specific Quality Assurance Project Plan for Supplemental Sediment and Surface Water Sampling" (SAP/QAPP) dated August 2009 to collect additional sediment, surface water, and iron floc samples to more adequately characterize the sluiceway and determine if there is an impact to the surface water of the Woonasquatucket River.

SURFACE WATER CHARACTERIZATION AND RESULTS

The subject site is adjacent to the Woonasquatucket River, immediately southwest of Glenbridge Avenue. According to the *RIDEM Water Quality Regulations, Amended May 2009*, surface water quality in the Woonasquatucket River immediately south of Glenbridge Avenue is designated as Freshwater Class "B1 {a}" (RI Water Body ID RI0002007R-10D). "Class B1 {a} water is designated for primary and secondary contact recreational activities and fish and wildlife habitat. They shall be suitable for compatible industrial processes and cooling, hydropower, aquaculture use, navigation, and irrigation and other agriculture uses. These waters shall have good aesthetic value. Primary contact recreational activities must be impacted due to pathogens from approved wastewater discharges. However, all Class B criteria must be met...The {a} designation indicates a partial use designation due to impacts from combined sewer outfalls (CSOs)."

On 2 October 2009, EA collected the sediment, surface water, and iron floc samples at the Site in accordance with the above-referenced SAP/QAPP. Sampling commenced with the collection of



three surface water grab samples. The surface water was characterized using a YSI 600XL to provide pH, conductivity, dissolved oxygen, and oxidation reduction potential measurements. The results are provided in Table 1. Two surface water samples were collected from the Woonasquatucket River, one 20 ft upstream and one 20 ft downstream from the confluence of the sluiceway and the River. Additionally, one sample was collected from within the sluiceway, 20 ft upstream of the confluence of the sluiceway and the River. Analytical results indicate the presence of iron in all surface water samples collected. Note that there is no RIDEM Water Quality Criterion for iron. Iron was detected at similar concentrations in the two surface water samples collected from the Woonasquatucket River. The sample collected from the sluiceway contained much higher concentrations of iron than the two River samples.

The analytical laboratory did not detect arsenic (total and dissolved) or lead (total) above method detection limits. The laboratory was unable to meet the regulatory criteria with the analysis of these metals reportedly due to “interferences” with other metals; therefore, the detection values exceed the regulatory criteria. Dissolved lead was detected above the applicable regulatory criterion in both the up and downstream samples collected but was not detected in the sluiceway sample above regulatory criterion.

Laboratory analytical results indicate that the sluiceway is not negatively impacting the Woonasquatucket River. Surface water analytical laboratory results are summarized in Table 1 and provided in Appendix A.

Table 1 – Surface Water Sampling Analytical Results

Target Analyte	SW Upstream	SW Downstream	SW Sluiceway	RIDEM Water Quality Criteria ⁵
Temperature (°C) ¹	13.93	13.86	10.78	None
Conductivity (µS/cm) ¹	314	307	533	None
Dissolved Oxygen (mg/L) ¹	8.04	8.72	5.54	5.0
pH ¹	7.66	7.31	6.96	6.5-9.0 ⁶
Oxidation Reduction Potential ¹	64.1	61.9	6.8	None
Dissolved Iron (mg/L) ²	0.282	0.232	4.07	None
Total Iron (mg/L)	0.430	0.394	7.00	None
Dissolved Arsenic (mg/L) ²	<.0025	<.0025	<.0025	0.00018 ⁷
Total Arsenic (mg/L)	<.0025	<.0025	<.0025	None
Dissolved Lead (mg/L) ²	0.0008	0.0010	<0.0004	0.000540 ⁸
Total Lead (mg/L)	<0.010	<0.010	<0.010	None

Notes:

1. Measurements obtained in field using YSI 600XL.
2. Samples laboratory filtered by ESS Laboratory.
3. “<” indicates analyte not detected above laboratory method reporting limit provided.
4. **Bold** value indicates an exceedence of regulatory criteria.
5. Rhode Island Water Quality Regulations Amended May 2009.
6. Criteria provided in Table 1, Page 16.
7. Criteria provided in Table 1, Page B7 (Human Health Criteria for Consumption of Water and Aquatic Organisms).
8. Criteria calculated using an assumed water hardness of 25 mg/l (conservative estimate); Table 2, page B-14 (Chronic). Increases in the assumed water hardness value increases the calculated regulatory criteria value.



SEDIMENT CHARACTERIZATION AND RESULTS

Sediment samples were collected using a hand auger at locations along the sluiceway as depicted on Figure 1. Any visible iron floc (orange material) was removed prior to containerizing the sediment samples. The sediment encountered consisted of medium- to coarse-grain sands at the downstream end. The material encountered upstream was finer-grained. The auger samples collected furthest upstream also contained some glass and plastics. Analytical results indicate that the two sediment samples collected furthest upstream, SED-07 and SED-08, are impacted by lead and arsenic, respectively, at concentrations exceeding the RIDEM Residential Direct Exposure Criteria (RDEC) and Industrial/Commercial Direct Exposure Criteria (ICDEC). Additionally, lead was detected in the SED-08 sample above the RDEC. Iron concentrations of all sediment samples were elevated, with the highest concentration detected in sample SED-08 (105,000 mg/kg). All other samples contain concentrations of arsenic and lead below the RIDEM RDEC and ICDEC. Analytical results are summarized in Table 2 below and are provided as Appendix B.

Table 2 – Sediment Sampling Analytical Results

Target Analyte	SED-01	SED-02	SED-03	SED-04	SED-05	SED-06	SED-07	SED-08	RIDEM RDEC ¹	RIDEM ICDEC ¹
Total Arsenic (mg/kg)	<1.84	<1.69	2.82	3.09	<1.84	3.55	3.97	7.71	7.0	7.0
Total Iron (mg/kg)	24,900	4,880	13,200	10,200	10,400	11,600	30,300	105,000	None	None
Total Lead (mg/kg)	21.3	<6.8	72.1	69.4	24.6	48.8	1,270	398	150	500
TPH (mg/kg)	<49.4	<45.6	<62.5	<53.3	<46.6	<59.6	158	370	500	2,500

Notes:

1. Direct Exposure Criteria as provided in Table 1 of Section 8.02 of the RIDEM *Remediation Regulations*, February 2004.
2. "<" indicates analyte not detected above laboratory method reporting limits.
3. **Bold** value indicates an exceedence of RDEC.
4. Shaded value indicates an exceedence of ICDEC

IRON FLOC CHARACTERIZATION AND RESULTS

Iron floc samples were collected from two discrete locations, as depicted on Figure 1. Floc-01 was collected from the upstream side of the stone check dam located near the confluence of the sluiceway and the Woonasquatucket River. Floc-02 was collected at the approximate location of SED-05, where a significant amount of iron floc was observed. The floc was entrained in the surface water within the sluiceway but was also immiscible. Total arsenic and lead were not detected above laboratory method reporting limits in either floc sample. For comparison purposes only, the total arsenic and lead detection limits were compared with the RIDEM soil RDEC. No soil RDEC was exceeded by the floc detection limits. There is no regulatory criterion for floc. Analytical results are summarized below in Table 3 and provided as Attachment B.

Table 3 – Iron Floc Sampling Analytical Results

Target Analyte	Floc-01	Floc-02
Total Arsenic (mg/kg)	<2.40	<2.15
Total Lead (mg/kg)	<9.7	<8.7

Notes:

1. "<" indicates analyte not detected above laboratory method reporting limits



Results of this supplemental investigation of the sluiceway at the former Lincoln Luce and Braid property indicate sediment is the only matrix significantly impacted by arsenic and lead. This information will be utilized in determining the most appropriate remedial alternative for the sluiceway.

If you have any questions or require additional information, please contact me at (401) 736-3440, Ext. 202.

Sincerely,

EA ENGINEERING, SCIENCE,
AND TECHNOLOGY, INC.

A handwritten signature in blue ink that reads 'Mark K. Speer'. The signature is fluid and cursive, with the first name 'Mark' being the most prominent.

Mark K. Speer, P.E.
Senior Engineer

Attachments

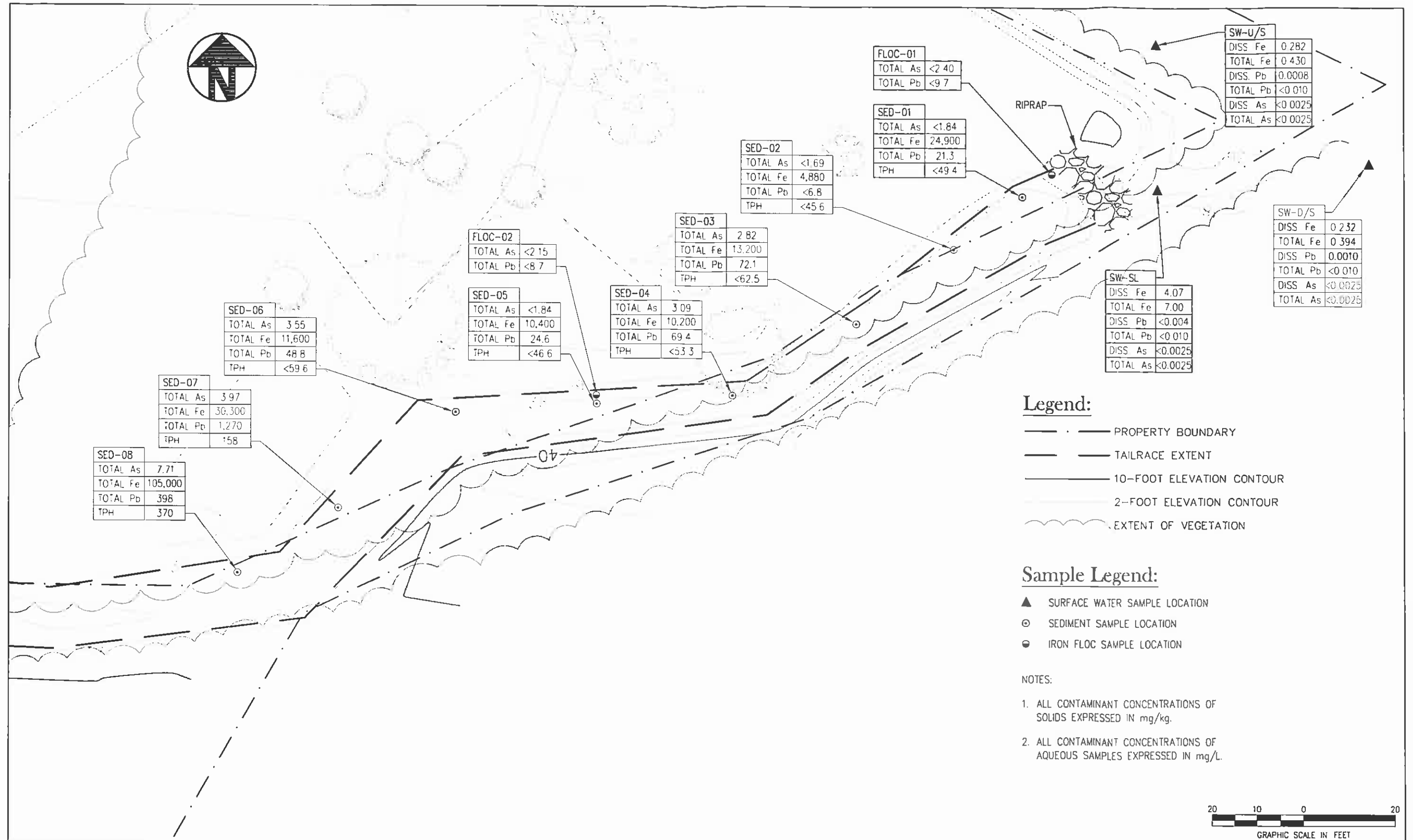
- Attachment A: Surface Water Analytical Reports
- Attachment B: Sediment and Iron Floc Analytical Report

Figures

Figure 1: Site Plan w/ Sampling Locations

cc: Robert McMahon, Providence Parks Department
Alan Peterson, U.S. Environmental Protection Agency
Frank Postma, PG, LEP, LSP, EA Engineering, Science, and Technology, Inc.
Sam Whitin, EA Engineering, Science, and Technology, Inc.

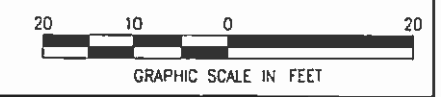
Figure 1
Site Plan with Sampling Locations



DESIGNED BY	RGM	DRAWN BY	DPA	DATE	10-5-2009	PROJECT NO	61891.05	FILE NAME	-
CHECKED BY	MKS	PROJECT MGR	MKS	SCALE	1" = 20'	DRAWING NO	-	FIGURE	1

LINCOLN LACE AND BRAID
REMEDATION PROJECT
PROVIDENCE, RHODE ISLAND

SLUICEWAY SUPPLEMENTAL SAMPLING
FIGURE 1



Attachment A
Surface Water Analytical Reports
9 October 2009



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

PROJECT NARRATIVE

Ron Mack
EA Engineering, Science, and Technology
2530 Post Road
Warwick, RI 02886

RE: Lincoln Lace & Braid Site
ESS Laboratory Work Order Number: 0910039

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this Project Narrative, the entire report has been paginated. The ESS Laboratory Certifications sheet is the final report page. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director



Digitally signed by Melissa Pagliarini
Date: 2009.10.09 17:01:57 -04'00'

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration may be used instead of automated integration because it produces more accurate results. All ICP Metals were analyzed using the established linear dynamic range to determine acceptable analytical results.

ESS Laboratory certifies that the test results meet the requirements of NELAC and A2LA, except where noted within this project narrative.

Sample Receipt

The following sample(s) were received on October 02, 2009 for the analyses specified on the enclosed Chain of Custody Record.

Laboratory ID	Matrix	Client SampleID
0910039-01	Surface Water	SW - U S
0910039-02	Surface Water	SW - D S
0910039-03	Surface Water	SW - S L
0910039-04	Aqueous	Trip Blank



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

PROJECT NARRATIVE

8260B Volatile Organic Compounds

- BJ90610-BS1 **Blank Spike recovery is above upper control limit.**
1,4-Dioxane - Screen
- BJ90610-MS1 **Matrix Spike recovery is below lower control limit.**
Bromomethane, Naphthalene
- BJ90610-MSD1 **Matrix Spike recovery is below lower control limit.**
Bromomethane
- BSJ0035-CCV1 **Continuing Calibration recovery is below lower control limit.**
1,4-Dioxane - Screen

8270C Semi-Volatile Organic Compounds

- BJ90727-BS1 **Blank Spike recovery is below lower control limit.**
Benzoic Acid
- BJ90727-BSD1 **Blank Spike recovery is below lower control limit.**
Benzoic Acid
- BJ90727-BSD1 **Relative percent difference for duplicate is outside of criteria.**
1,4-Dichlorobenzene, 2,4-Dinitrophenol, Aniline, Benzoic Acid, Hexachlorobutadiene, Hexachloroethane,
N-Nitrosodimethylamine

8270C(SIM) Semi-Volatile Organic Compounds

- BJ90825-BSD1 **Relative percent difference for duplicate is outside of criteria.**
Hexachlorobenzene
- BSJ0057-CCV1 **Calibration required quadratic regression.**
Pentachlorophenol
- BSJ0057-CCV2 **Calibration required quadratic regression.**
Pentachlorophenol

No other observations noted.

End of Project Narrative.



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SW - U S
Date Sampled: 10/02/09 09:00
Percent Solids: N/A

ESS Laboratory Work Order: 0910039
ESS Laboratory Sample ID: 0910039-01
Sample Matrix: Surface Water

3005A/6000/7000 Dissolved Metals

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>RI - GA</u>		<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>		<u>I/V</u>	<u>F/V</u>
					<u>Limit</u>							
Arsenic	ND	mg/L	0.0025	7060A	0.01		1	JP	10/08/09	15:46	100	50
Iron	0.282	mg/L	0.050	6010B			1	SVD	10/06/09	19:40	100	50
Lead	ND	mg/L	0.010	6010B	0.015		1	SVD	10/06/09	19:40	100	50



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Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SW - U S
 Date Sampled: 10/02/09 09:00
 Percent Solids: N/A

ESS Laboratory Work Order: 0910039
 ESS Laboratory Sample ID: 0910039-01
 Sample Matrix: Surface Water

3005A/6000/7000 Total Metals

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>RI - GA</u>		<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>		<u>I/V</u>	<u>F/V</u>
					<u>Limit</u>							
Arsenic	ND	mg/L	0.0025	7060A	0.01		1	JP	10/08/09	15:28	100	50
Iron	0.430	mg/L	0.050	6010B			1	SVD	10/06/09	19:27	100	50
Lead	ND	mg/L	0.010	6010B	0.015		1	SVD	10/06/09	19:27	100	50



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SW - D S
Date Sampled: 10/02/09 09:15
Percent Solids: N/A

ESS Laboratory Work Order: 0910039
ESS Laboratory Sample ID: 0910039-02
Sample Matrix: Surface Water

3005A/6000/7000 Dissolved Metals

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	RI - GA		<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
					<u>Limit</u>						
Arsenic	ND	mg/L	0.0025	7060A	0.01		1	JP	10/08/09 15:52	100	50
Iron	0.232	mg/L	0.050	6010B			1	SVD	10/06/09 19:52	100	50
Lead	ND	mg/L	0.010	6010B	0.015		1	SVD	10/06/09 19:52	100	50



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SW - D S
Date Sampled: 10/02/09 09:15
Percent Solids: N/A

ESS Laboratory Work Order: 0910039
ESS Laboratory Sample ID: 0910039-02
Sample Matrix: Surface Water

3005A/6000/7000 Total Metals

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>RI - GA</u>		<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>		<u>I/V</u>	<u>F/V</u>
					<u>Limit</u>							
Arsenic	ND	mg/L	0.0025	7060A	0.01		1	JP	10/08/09	15:34	100	50
Iron	0.394	mg/L	0.050	6010B			1	SVD	10/06/09	19:31	100	50
Lead	ND	mg/L	0.010	6010B	0.015		1	SVD	10/06/09	19:31	100	50



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SW - S L
Date Sampled: 10/02/09 09:35
Percent Solids: N/A

ESS Laboratory Work Order: 0910039
ESS Laboratory Sample ID: 0910039-03
Sample Matrix: Surface Water

3005A/6000/7000 Dissolved Metals

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	RI - GA		<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
					<u>Limit</u>						
Arsenic	ND	mg/L	0.0025	7060A	0.01		1	JP	10/08/09 15:58	100	50
Iron	4.07	mg/L	0.050	6010B			1	SVD	10/06/09 19:57	100	50
Lead	ND	mg/L	0.010	6010B	0.015		1	SVD	10/06/09 19:57	100	50



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SW - S L
 Date Sampled: 10/02/09 09:35
 Percent Solids: N/A

ESS Laboratory Work Order: 0910039
 ESS Laboratory Sample ID: 0910039-03
 Sample Matrix: Surface Water

3005A/6000/7000 Total Metals

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>RI - GA</u>		<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
					<u>Limit</u>						
Arsenic	ND	mg/L	0.0025	7060A	0.01		1	JP	10/08/09 15:40	100	50
Iron	7.00	mg/L	0.050	6010B			1	SVD	10/06/09 19:35	100	50
Lead	ND	mg/L	0.010	6010B	0.015		1	SVD	10/06/09 19:35	100	50



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SW - S L
 Date Sampled: 10/02/09 09:35
 Percent Solids: N/A
 Initial Volume: 10
 Final Volume: 10
 Extraction Method: 5030B

ESS Laboratory Work Order: 0910039
 ESS Laboratory Sample ID: 0910039-03
 Sample Matrix: Surface Water
 Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>RI - GA</u>		<u>Analyzed</u>
				<u>Limit</u>	<u>DF</u>	
1,1,1,2-Tetrachloroethane	ND	mg/L	0.0010		1	10/06/09 13:10
1,1,1-Trichloroethane	ND	mg/L	0.0010	0.2	1	10/06/09 13:10
1,1,2,2-Tetrachloroethane	ND	mg/L	0.0005		1	10/06/09 13:10
1,1,2-Trichloroethane	ND	mg/L	0.0010	0.005	1	10/06/09 13:10
1,1-Dichloroethane	ND	mg/L	0.0010		1	10/06/09 13:10
1,1-Dichloroethene	ND	mg/L	0.0010	0.007	1	10/06/09 13:10
1,1-Dichloropropene	ND	mg/L	0.0020		1	10/06/09 13:10
1,2,3-Trichlorobenzene	ND	mg/L	0.0010		1	10/06/09 13:10
1,2,3-Trichloropropane	ND	mg/L	0.0010		1	10/06/09 13:10
1,2,4-Trichlorobenzene	ND	mg/L	0.0010	0.07	1	10/06/09 13:10
1,2,4-Trimethylbenzene	ND	mg/L	0.0010		1	10/06/09 13:10
1,2-Dibromo-3-Chloropropane	ND	mg/L	0.0050	0.0002	1	10/06/09 13:10
1,2-Dibromoethane	ND	mg/L	0.0010	0.00005	1	10/06/09 13:10
1,2-Dichlorobenzene	ND	mg/L	0.0010	0.6	1	10/06/09 13:10
1,2-Dichloroethane	ND	mg/L	0.0010	0.005	1	10/06/09 13:10
1,2-Dichloropropane	ND	mg/L	0.0010	0.005	1	10/06/09 13:10
1,3,5-Trimethylbenzene	ND	mg/L	0.0010		1	10/06/09 13:10
1,3-Dichlorobenzene	ND	mg/L	0.0010	0.6	1	10/06/09 13:10
1,3-Dichloropropane	ND	mg/L	0.0010		1	10/06/09 13:10
1,4-Dichlorobenzene	ND	mg/L	0.0010	0.075	1	10/06/09 13:10
1,4-Dioxane - Screen	ND	mg/L	0.500		1	10/06/09 13:10
1-Chlorohexane	ND	mg/L	0.0010		1	10/06/09 13:10
2,2-Dichloropropane	ND	mg/L	0.0010		1	10/06/09 13:10
2-Butanone	ND	mg/L	0.0250		1	10/06/09 13:10
2-Chlorotoluene	ND	mg/L	0.0010		1	10/06/09 13:10
2-Hexanone	ND	mg/L	0.0100		1	10/06/09 13:10
4-Chlorotoluene	ND	mg/L	0.0010		1	10/06/09 13:10
4-Isopropyltoluene	ND	mg/L	0.0010		1	10/06/09 13:10
4-Methyl-2-Pentanone	ND	mg/L	0.0250		1	10/06/09 13:10
Acetone	ND	mg/L	0.0250		1	10/06/09 13:10
Benzene	ND	mg/L	0.0010	0.005	1	10/06/09 13:10
Bromobenzene	ND	mg/L	0.0020		1	10/06/09 13:10
Bromochloromethane	ND	mg/L	0.0010		1	10/06/09 13:10
Bromodichloromethane	ND	mg/L	0.0006		1	10/06/09 13:10
Bromoform	ND	mg/L	0.0010		1	10/06/09 13:10



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SW - S L
 Date Sampled: 10/02/09 09:35
 Percent Solids: N/A
 Initial Volume: 10
 Final Volume: 10
 Extraction Method: 5030B

ESS Laboratory Work Order: 0910039
 ESS Laboratory Sample ID: 0910039-03
 Sample Matrix: Surface Water
 Analyst: MD

8260B Volatile Organic Compounds

Bromomethane	ND	mg/L	0.0020		1	10/06/09 13:10
Carbon Disulfide	ND	mg/L	0.0010		1	10/06/09 13:10
Carbon Tetrachloride	ND	mg/L	0.0010	0.005	1	10/06/09 13:10
Chlorobenzene	ND	mg/L	0.0010	0.1	1	10/06/09 13:10
Chloroethane	ND	mg/L	0.0020		1	10/06/09 13:10
Chloroform	ND	mg/L	0.0010		1	10/06/09 13:10
Chloromethane	ND	mg/L	0.0020		1	10/06/09 13:10
cis-1,2-Dichloroethene	ND	mg/L	0.0010	0.07	1	10/06/09 13:10
cis-1,3-Dichloropropene	ND	mg/L	0.0004		1	10/06/09 13:10
Dibromochloromethane	ND	mg/L	0.0010		1	10/06/09 13:10
Dibromomethane	ND	mg/L	0.0010		1	10/06/09 13:10
Dichlorodifluoromethane	ND	mg/L	0.0020		1	10/06/09 13:10
Diethyl Ether	ND	mg/L	0.0010		1	10/06/09 13:10
Di-isopropyl ether	ND	mg/L	0.0010		1	10/06/09 13:10
Ethyl tertiary-butyl ether	ND	mg/L	0.0010		1	10/06/09 13:10
Ethylbenzene	ND	mg/L	0.0010	0.7	1	10/06/09 13:10
Hexachlorobutadiene	ND	mg/L	0.0006		1	10/06/09 13:10
Hexachloroethane	ND	mg/L	0.0010		1	10/06/09 13:10
Isopropylbenzene	ND	mg/L	0.0010		1	10/06/09 13:10
Methyl tert-Butyl Ether	ND	mg/L	0.0010	0.04	1	10/06/09 13:10
Methylene Chloride	ND	mg/L	0.0040	0.005	1	10/06/09 13:10
Naphthalene	ND	mg/L	0.0010	0.02	1	10/06/09 13:10
n-Butylbenzene	ND	mg/L	0.0010		1	10/06/09 13:10
n-Propylbenzene	ND	mg/L	0.0010		1	10/06/09 13:10
sec-Butylbenzene	ND	mg/L	0.0010		1	10/06/09 13:10
Styrene	ND	mg/L	0.0010	0.1	1	10/06/09 13:10
tert-Butylbenzene	ND	mg/L	0.0010		1	10/06/09 13:10
Tertiary-amy methyl ether	ND	mg/L	0.0010		1	10/06/09 13:10
Tetrachloroethene	ND	mg/L	0.0010	0.005	1	10/06/09 13:10
Tetrahydrofuran	ND	mg/L	0.0050		1	10/06/09 13:10
Toluene	ND	mg/L	0.0010	1	1	10/06/09 13:10
trans-1,2-Dichloroethene	ND	mg/L	0.0010	0.1	1	10/06/09 13:10
trans-1,3-Dichloropropene	ND	mg/L	0.0004		1	10/06/09 13:10
Trichloroethene	ND	mg/L	0.0010	0.005	1	10/06/09 13:10
Trichlorofluoromethane	ND	mg/L	0.0010		1	10/06/09 13:10
Vinyl Acetate	ND	mg/L	0.0050		1	10/06/09 13:10



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SW - S L
 Date Sampled: 10/02/09 09:35
 Percent Solids: N/A
 Initial Volume: 10
 Final Volume: 10
 Extraction Method: 5030B

ESS Laboratory Work Order: 0910039
 ESS Laboratory Sample ID: 0910039-03
 Sample Matrix: Surface Water
 Analyst: MD

8260B Volatile Organic Compounds

Vinyl Chloride	ND	mg/L	0.0010	0.002	1	10/06/09 13:10
Xylene O	ND	mg/L	0.0010	10	1	10/06/09 13:10
Xylene P,M	ND	mg/L	0.0020	10	1	10/06/09 13:10
Xylenes (Total)	ND	mg/L	0.0030	10	1	10/06/09 13:10
Trihalomethanes (Total)	ND	mg/L	0.0036	0.1		10/06/09 13:10

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	112 %		70-130
Surrogate: 4-Bromofluorobenzene	109 %		70-130
Surrogate: Dibromofluoromethane	110 %		70-130
Surrogate: Toluene-d8	113 %		70-130



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SW - S L
 Date Sampled: 10/02/09 09:35
 Percent Solids: N/A
 Initial Volume: 1000
 Final Volume: 1
 Extraction Method: 3520C

ESS Laboratory Work Order: 0910039
 ESS Laboratory Sample ID: 0910039-03
 Sample Matrix: Surface Water
 Analyst: IBM
 Prepared: 10/7/09 20:00

8270C Semi-Volatile Organic Compounds

Analyte	Results	Units	MRL	RI - GA		Analyzed
				Limit	DF	
1,1-Biphenyl	ND	mg/L	0.010		1	10/08/09 18:05
1,2,4-Trichlorobenzene	ND	mg/L	0.010	0.07	1	10/08/09 18:05
1,2-Dichlorobenzene	ND	mg/L	0.010	0.6	1	10/08/09 18:05
1,3-Dichlorobenzene	ND	mg/L	0.010	0.6	1	10/08/09 18:05
1,4-Dichlorobenzene	ND	mg/L	0.010	0.075	1	10/08/09 18:05
2,3,4,6-Tetrachlorophenol	ND	mg/L	0.050		1	10/08/09 18:05
2,4,5-Trichlorophenol	ND	mg/L	0.010		1	10/08/09 18:05
2,4,6-Trichlorophenol	ND	mg/L	0.010		1	10/08/09 18:05
2,4-Dichlorophenol	ND	mg/L	0.010		1	10/08/09 18:05
2,4-Dimethylphenol	ND	mg/L	0.050		1	10/08/09 18:05
2,4-Dinitrophenol	ND	mg/L	0.050		1	10/08/09 18:05
2,4-Dinitrotoluene	ND	mg/L	0.010		1	10/08/09 18:05
2,6-Dinitrotoluene	ND	mg/L	0.010		1	10/08/09 18:05
2-Chloronaphthalene	ND	mg/L	0.010		1	10/08/09 18:05
2-Chlorophenol	ND	mg/L	0.010		1	10/08/09 18:05
2-Methylphenol	ND	mg/L	0.010		1	10/08/09 18:05
2-Nitroaniline	ND	mg/L	0.010		1	10/08/09 18:05
2-Nitrophenol	ND	mg/L	0.010		1	10/08/09 18:05
3,3'-Dichlorobenzidine	ND	mg/L	0.020		1	10/08/09 18:05
3-4-Methylphenol	ND	mg/L	0.020		1	10/08/09 18:05
3-Nitroaniline	ND	mg/L	0.010		1	10/08/09 18:05
4,6-Dinitro-2-Methylphenol	ND	mg/L	0.050		1	10/08/09 18:05
4-Bromophenyl-phenylether	ND	mg/L	0.010		1	10/08/09 18:05
4-Chloro-3-Methylphenol	ND	mg/L	0.010		1	10/08/09 18:05
4-Chloroaniline	ND	mg/L	0.020		1	10/08/09 18:05
4-Chloro-phenyl-phenyl ether	ND	mg/L	0.010		1	10/08/09 18:05
4-Nitroaniline	ND	mg/L	0.010		1	10/08/09 18:05
4-Nitrophenol	ND	mg/L	0.050		1	10/08/09 18:05
Acetophenone	ND	mg/L	0.010		1	10/08/09 18:05
Aniline	ND	mg/L	0.010		1	10/08/09 18:05
Azobenzene	ND	mg/L	0.020		1	10/08/09 18:05
Benzoic Acid	ND	mg/L	0.100		1	10/08/09 18:05
Benzyl Alcohol	ND	mg/L	0.010		1	10/08/09 18:05
bis(2-Chloroethoxy)methane	ND	mg/L	0.010		1	10/08/09 18:05
bis(2-Chloroethyl)ether	ND	mg/L	0.010		1	10/08/09 18:05



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SW - S L
 Date Sampled: 10/02/09 09:35
 Percent Solids: N/A
 Initial Volume: 1000
 Final Volume: 1
 Extraction Method: 3520C

ESS Laboratory Work Order: 0910039
 ESS Laboratory Sample ID: 0910039-03
 Sample Matrix: Surface Water
 Analyst: IBM
 Prepared: 10/7/09 20:00

8270C Semi-Volatile Organic Compounds

bis(2-chloroisopropyl)Ether	ND	mg/L	0.010		1	10/08/09 18:05
bis(2-Ethylhexyl)phthalate	ND	mg/L	0.006	0.006	1	10/08/09 18:05
Butylbenzylphthalate	ND	mg/L	0.010		1	10/08/09 18:05
Carbazole	ND	mg/L	0.010		1	10/08/09 18:05
Dibenzofuran	ND	mg/L	0.010		1	10/08/09 18:05
Diethylphthalate	ND	mg/L	0.010		1	10/08/09 18:05
Dimethylphthalate	ND	mg/L	0.010		1	10/08/09 18:05
Di-n-butylphthalate	ND	mg/L	0.010		1	10/08/09 18:05
Di-n-octylphthalate	ND	mg/L	0.010		1	10/08/09 18:05
Hexachlorobutadiene	ND	mg/L	0.010		1	10/08/09 18:05
Hexachlorocyclopentadiene	ND	mg/L	0.025		1	10/08/09 18:05
Hexachloroethane	ND	mg/L	0.005		1	10/08/09 18:05
Isophorone	ND	mg/L	0.010		1	10/08/09 18:05
Nitrobenzene	ND	mg/L	0.010		1	10/08/09 18:05
N-Nitrosodimethylamine	ND	mg/L	0.010		1	10/08/09 18:05
N-Nitroso-Di-n-Propylamine	ND	mg/L	0.010		1	10/08/09 18:05
N-nitrosodiphenylamine	ND	mg/L	0.010		1	10/08/09 18:05
Phenol	ND	mg/L	0.010		1	10/08/09 18:05
Pyridine	ND	mg/L	0.100		1	10/08/09 18:05

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	79 %		30-130
Surrogate: 2,4,6-Tribromophenol	89 %		15-110
Surrogate: 2-Chlorophenol-d4	66 %		15-110
Surrogate: 2-Fluorobiphenyl	85 %		30-130
Surrogate: 2-Fluorophenol	51 %		15-110
Surrogate: Nitrobenzene-d5	79 %		30-130
Surrogate: Phenol-d6	63 %		15-110
Surrogate: p-Terphenyl-d14	86 %		30-130



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SW - S L
 Date Sampled: 10/02/09 09:35
 Percent Solids: N/A
 Initial Volume: 1000
 Final Volume: 0.25
 Extraction Method: 3510C

ESS Laboratory Work Order: 0910039
 ESS Laboratory Sample ID: 0910039-03
 Sample Matrix: Surface Water
 Analyst: IBM
 Prepared: 10/8/09 15:00

8270C(SIM) Semi-Volatile Organic Compounds

Analyte	Results	Units	MRL	RI - GA		Analyzed
				Limit	DF	
2-Methylnaphthalene	ND	mg/L	0.00020		1	10/09/09 1:18
Acenaphthene	ND	mg/L	0.00020		1	10/09/09 1:18
Acenaphthylene	ND	mg/L	0.00020		1	10/09/09 1:18
Anthracene	ND	mg/L	0.00020		1	10/09/09 1:18
Benzo(a)anthracene	ND	mg/L	0.00005		1	10/09/09 1:18
Benzo(a)pyrene	ND	mg/L	0.00005	0.0002	1	10/09/09 1:18
Benzo(b)fluoranthene	ND	mg/L	0.00005		1	10/09/09 1:18
Benzo(g,h,i)perylene	ND	mg/L	0.00020		1	10/09/09 1:18
Benzo(k)fluoranthene	ND	mg/L	0.00005		1	10/09/09 1:18
Chrysene	ND	mg/L	0.00005		1	10/09/09 1:18
Dibenzo(a,h)Anthracene	ND	mg/L	0.00005		1	10/09/09 1:18
Fluoranthene	ND	mg/L	0.00020		1	10/09/09 1:18
Fluorene	ND	mg/L	0.00020		1	10/09/09 1:18
Hexachlorobenzene	ND	mg/L	0.00020	0.001	1	10/09/09 1:18
Indeno(1,2,3-cd)Pyrene	ND	mg/L	0.00005		1	10/09/09 1:18
Naphthalene	ND	mg/L	0.00020	0.02	1	10/09/09 1:18
Pentachlorophenol	ND	mg/L	0.00100	0.001	1	10/09/09 1:18
Phenanthrene	ND	mg/L	0.00020		1	10/09/09 1:18
Pyrene	ND	mg/L	0.00020		1	10/09/09 1:18

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	56 %		30-130
Surrogate: 2,4,6-Tribromophenol	77 %		15-110
Surrogate: 2-Fluorobiphenyl	56 %		30-130
Surrogate: Nitrobenzene-d5	58 %		30-130
Surrogate: p-Terphenyl-d14	89 %		30-130



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: Trip Blank
Date Sampled: 10/02/09 00:00
Percent Solids: N/A
Initial Volume: 10
Final Volume: 10
Extraction Method: 5030B

ESS Laboratory Work Order: 0910039
ESS Laboratory Sample ID: 0910039-04
Sample Matrix: Aqueous
Analyst: MD

8260B Volatile Organic Compounds

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	RI - GA		<u>Analyzed</u>
				<u>Limit</u>	<u>DF</u>	
1,1,1,2-Tetrachloroethane	ND	mg/L	0.0010		1	10/06/09 12:38
1,1,1-Trichloroethane	ND	mg/L	0.0010		1	10/06/09 12:38
1,1,1,2,2-Tetrachloroethane	ND	mg/L	0.0005		1	10/06/09 12:38
1,1,2-Trichloroethane	ND	mg/L	0.0010		1	10/06/09 12:38
1,1-Dichloroethane	ND	mg/L	0.0010		1	10/06/09 12:38
1,1-Dichloroethene	ND	mg/L	0.0010		1	10/06/09 12:38
1,1-Dichloropropene	ND	mg/L	0.0020		1	10/06/09 12:38
1,2,3-Trichlorobenzene	ND	mg/L	0.0010		1	10/06/09 12:38
1,2,3-Trichloropropane	ND	mg/L	0.0010		1	10/06/09 12:38
1,2,4-Trichlorobenzene	ND	mg/L	0.0010		1	10/06/09 12:38
1,2,4-Trimethylbenzene	ND	mg/L	0.0010		1	10/06/09 12:38
1,2-Dibromo-3-Chloropropane	ND	mg/L	0.0050		1	10/06/09 12:38
1,2-Dibromoethane	ND	mg/L	0.0010		1	10/06/09 12:38
1,2-Dichlorobenzene	ND	mg/L	0.0010		1	10/06/09 12:38
1,2-Dichloroethane	ND	mg/L	0.0010		1	10/06/09 12:38
1,2-Dichloropropane	ND	mg/L	0.0010		1	10/06/09 12:38
1,3,5-Trimethylbenzene	ND	mg/L	0.0010		1	10/06/09 12:38
1,3-Dichlorobenzene	ND	mg/L	0.0010		1	10/06/09 12:38
1,3-Dichloropropane	ND	mg/L	0.0010		1	10/06/09 12:38
1,4-Dichlorobenzene	ND	mg/L	0.0010		1	10/06/09 12:38
1,4-Dioxane - Screen	ND	mg/L	0.500		1	10/06/09 12:38
1-Chlorohexane	ND	mg/L	0.0010		1	10/06/09 12:38
2,2-Dichloropropane	ND	mg/L	0.0010		1	10/06/09 12:38
2-Butanone	ND	mg/L	0.0250		1	10/06/09 12:38
2-Chlorotoluene	ND	mg/L	0.0010		1	10/06/09 12:38
2-Hexanone	ND	mg/L	0.0100		1	10/06/09 12:38
4-Chlorotoluene	ND	mg/L	0.0010		1	10/06/09 12:38
4-Isopropyltoluene	ND	mg/L	0.0010		1	10/06/09 12:38
4-Methyl-2-Pentanone	ND	mg/L	0.0250		1	10/06/09 12:38
Acetone	ND	mg/L	0.0250		1	10/06/09 12:38
Benzene	ND	mg/L	0.0010		1	10/06/09 12:38
Bromobenzene	ND	mg/L	0.0020		1	10/06/09 12:38
Bromochloromethane	ND	mg/L	0.0010		1	10/06/09 12:38
Bromodichloromethane	ND	mg/L	0.0006		1	10/06/09 12:38
Bromoform	ND	mg/L	0.0010		1	10/06/09 12:38



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: Trip Blank
Date Sampled: 10/02/09 00:00
Percent Solids: N/A
Initial Volume: 10
Final Volume: 10
Extraction Method: 5030B

ESS Laboratory Work Order: 0910039
ESS Laboratory Sample ID: 0910039-04
Sample Matrix: Aqueous
Analyst: MD

8260B Volatile Organic Compounds

Bromomethane	ND	mg/L	0.0020	1	10/06/09 12:38
Carbon Disulfide	ND	mg/L	0.0010	1	10/06/09 12:38
Carbon Tetrachloride	ND	mg/L	0.0010	1	10/06/09 12:38
Chlorobenzene	ND	mg/L	0.0010	1	10/06/09 12:38
Chloroethane	ND	mg/L	0.0020	1	10/06/09 12:38
Chloroform	ND	mg/L	0.0010	1	10/06/09 12:38
Chloromethane	ND	mg/L	0.0020	1	10/06/09 12:38
cis-1,2-Dichloroethene	ND	mg/L	0.0010	1	10/06/09 12:38
cis-1,3-Dichloropropene	ND	mg/L	0.0004	1	10/06/09 12:38
Dibromochloromethane	ND	mg/L	0.0010	1	10/06/09 12:38
Dibromomethane	ND	mg/L	0.0010	1	10/06/09 12:38
Dichlorodifluoromethane	ND	mg/L	0.0020	1	10/06/09 12:38
Diethyl Ether	ND	mg/L	0.0010	1	10/06/09 12:38
Di-isopropyl ether	ND	mg/L	0.0010	1	10/06/09 12:38
Ethyl tertiary-butyl ether	ND	mg/L	0.0010	1	10/06/09 12:38
Ethylbenzene	ND	mg/L	0.0010	1	10/06/09 12:38
Hexachlorobutadiene	ND	mg/L	0.0006	1	10/06/09 12:38
Hexachloroethane	ND	mg/L	0.0010	1	10/06/09 12:38
Isopropylbenzene	ND	mg/L	0.0010	1	10/06/09 12:38
Methyl tert-Butyl Ether	ND	mg/L	0.0010	1	10/06/09 12:38
Methylene Chloride	ND	mg/L	0.0040	1	10/06/09 12:38
Naphthalene	ND	mg/L	0.0010	1	10/06/09 12:38
n-Butylbenzene	ND	mg/L	0.0010	1	10/06/09 12:38
n-Propylbenzene	ND	mg/L	0.0010	1	10/06/09 12:38
sec-Butylbenzene	ND	mg/L	0.0010	1	10/06/09 12:38
Styrene	ND	mg/L	0.0010	1	10/06/09 12:38
tert-Butylbenzene	ND	mg/L	0.0010	1	10/06/09 12:38
Tertiary-amyl methyl ether	ND	mg/L	0.0010	1	10/06/09 12:38
Tetrachloroethene	ND	mg/L	0.0010	1	10/06/09 12:38
Tetrahydrofuran	ND	mg/L	0.0050	1	10/06/09 12:38
Toluene	ND	mg/L	0.0010	1	10/06/09 12:38
trans-1,2-Dichloroethene	ND	mg/L	0.0010	1	10/06/09 12:38
trans-1,3-Dichloropropene	ND	mg/L	0.0005	1	10/06/09 12:38
Trichloroethene	ND	mg/L	0.0010	1	10/06/09 12:38
Trichlorofluoromethane	ND	mg/L	0.0010	1	10/06/09 12:38
Vinyl Acetate	ND	mg/L	0.0050	1	10/06/09 12:38



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: Trip Blank
Date Sampled: 10/02/09 00:00
Percent Solids: N/A
Initial Volume: 10
Final Volume: 10
Extraction Method: 5030B

ESS Laboratory Work Order: 0910039
ESS Laboratory Sample ID: 0910039-04
Sample Matrix: Aqueous
Analyst: MD

8260B Volatile Organic Compounds

Vinyl Chloride	ND	mg/L	0.0010	1	10/06/09 12:38
Xylene O	ND	mg/L	0.0010	1	10/06/09 12:38
Xylene P,M	ND	mg/L	0.0020	1	10/06/09 12:38

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	114 %		70-130
Surrogate: 4-Bromofluorobenzene	110 %		70-130
Surrogate: Dibromofluoromethane	110 %		70-130
Surrogate: Toluene-d8	114 %		70-130



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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3005A/6000/7000 Dissolved Metals

Batch BJ90604 - 3005A

Blank										
Arsenic	ND	0.0025	mg/L							
Iron	ND	0.050	mg/L							
Lead	ND	0.010	mg/L							
LCS										
Iron	1.28	0.050	mg/L	1.250		102	80-120			
Lead	0.255	0.010	mg/L	0.2500		102	80-120			
LCS										
Arsenic	0.0108	0.0025	mg/L	0.01000		108	80-120			
LCS Dup										
Iron	1.29	0.050	mg/L	1.250		103	80-120	0.5	20	
Lead	0.258	0.010	mg/L	0.2500		103	80-120	1	20	
LCS Dup										
Arsenic	0.0104	0.0025	mg/L	0.01000		104	80-120	4	20	

3005A/6000/7000 Total Metals

Batch BJ90604 - 3005A

Blank										
Arsenic	ND	0.0025	mg/L							
Iron	ND	0.050	mg/L							
Lead	ND	0.010	mg/L							
LCS										
Iron	1.28	0.050	mg/L	1.250		102	80-120			
Lead	0.255	0.010	mg/L	0.2500		102	80-120			
LCS										
Arsenic	0.0108	0.0025	mg/L	0.01000		108	80-120			
LCS Dup										
Iron	1.29	0.050	mg/L	1.250		103	80-120	0.5	20	
Lead	0.258	0.010	mg/L	0.2500		103	80-120	1	20	
LCS Dup										
Arsenic	0.0104	0.0025	mg/L	0.01000		104	80-120	4	20	

8260B Volatile Organic Compounds

Batch BJ90610 - 5030B

Blank										
1,1,1,2-Tetrachloroethane	ND	0.0010	mg/L							
1,1,1-Trichloroethane	ND	0.0010	mg/L							
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L							
1,1,2-Trichloroethane	ND	0.0010	mg/L							
1,1-Dichloroethane	ND	0.0010	mg/L							
1,1-Dichloroethene	ND	0.0010	mg/L							
1,1-Dichloropropene	ND	0.0020	mg/L							
1,2,3-Trichlorobenzene	ND	0.0010	mg/L							



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology

Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

Batch B390610 - 5030B

1,2,3-Trichloropropane	ND	0.0010	mg/L							
1,2,4-Trichlorobenzene	ND	0.0010	mg/L							
1,2,4-Trimethylbenzene	ND	0.0010	mg/L							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/L							
1,2-Dibromoethane	ND	0.0010	mg/L							
1,2-Dichlorobenzene	ND	0.0010	mg/L							
1,2-Dichloroethane	ND	0.0010	mg/L							
1,2-Dichloropropane	ND	0.0010	mg/L							
1,3,5-Trimethylbenzene	ND	0.0010	mg/L							
1,3-Dichlorobenzene	ND	0.0010	mg/L							
1,3-Dichloropropane	ND	0.0010	mg/L							
1,4-Dichlorobenzene	ND	0.0010	mg/L							
1,4-Dioxane - Screen	ND	0.500	mg/L							
1-Chlorohexane	ND	0.0010	mg/L							
2,2-Dichloropropane	ND	0.0010	mg/L							
2-Butanone	ND	0.0250	mg/L							
2-Chlorotoluene	ND	0.0010	mg/L							
2-Hexanone	ND	0.0100	mg/L							
4-Chlorotoluene	ND	0.0010	mg/L							
4-Isopropyltoluene	ND	0.0010	mg/L							
4-Methyl-2-Pentanone	ND	0.0250	mg/L							
Acetone	ND	0.0250	mg/L							
Benzene	ND	0.0010	mg/L							
Bromobenzene	ND	0.0020	mg/L							
Bromochloromethane	ND	0.0010	mg/L							
Bromodichloromethane	ND	0.0006	mg/L							
Bromoform	ND	0.0010	mg/L							
Bromomethane	ND	0.0020	mg/L							
Carbon Disulfide	ND	0.0010	mg/L							
Carbon Tetrachloride	ND	0.0010	mg/L							
Chlorobenzene	ND	0.0010	mg/L							
Chloroethane	ND	0.0020	mg/L							
Chloroform	ND	0.0010	mg/L							
Chloromethane	ND	0.0020	mg/L							
cis-1,2-Dichloroethene	ND	0.0010	mg/L							
cis-1,3-Dichloropropene	ND	0.0004	mg/L							
Dibromochloromethane	ND	0.0010	mg/L							
Dibromomethane	ND	0.0010	mg/L							
Dichlorodifluoromethane	ND	0.0020	mg/L							
Diethyl Ether	ND	0.0010	mg/L							
Di-isopropyl ether	ND	0.0010	mg/L							
Ethyl tertiary-butyl ether	ND	0.0010	mg/L							
Ethylbenzene	ND	0.0010	mg/L							
Hexachlorobutadiene	ND	0.0006	mg/L							
Hexachloroethane	ND	0.0010	mg/L							
Isopropylbenzene	ND	0.0010	mg/L							



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lacc & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch BJ90610 - 50308										
Methyl tert-Butyl Ether	ND	0.0010	mg/L							
Methylene Chloride	ND	0.0040	mg/L							
Naphthalene	ND	0.0010	mg/L							
n-Butylbenzene	ND	0.0010	mg/L							
n-Propylbenzene	ND	0.0010	mg/L							
sec-Butylbenzene	ND	0.0010	mg/L							
Styrene	ND	0.0010	mg/L							
tert-Butylbenzene	ND	0.0010	mg/L							
Tertiary-amyl methyl ether	ND	0.0010	mg/L							
Tetrachloroethene	ND	0.0010	mg/L							
Tetrahydrofuran	ND	0.0050	mg/L							
Toluene	ND	0.0010	mg/L							
trans-1,2-Dichloroethene	ND	0.0010	mg/L							
trans-1,3-Dichloropropene	ND	0.0004	mg/L							
Trichloroethene	ND	0.0010	mg/L							
Trichlorofluoromethane	ND	0.0010	mg/L							
Vinyl Acetate	ND	0.0050	mg/L							
Vinyl Chloride	ND	0.0010	mg/L							
Xylene O	ND	0.0010	mg/L							
Xylene P,M	ND	0.0020	mg/L							
Surrogate: 1,2-Dichloroethane-d4	0.0294		mg/L	0.02500		118	70-130			
Surrogate: 4-Bromofluorobenzene	0.0267		mg/L	0.02500		107	70-130			
Surrogate: Dibromofluoromethane	0.0277		mg/L	0.02500		111	70-130			
Surrogate: Toluene-d8	0.0282		mg/L	0.02500		113	70-130			
LCS										
1,1,1,2-Tetrachloroethane	9.09		ug/L	10.00		91	70-130			
1,1,1-Trichloroethane	10.0		ug/L	10.00		100	70-130			
1,1,2,2-Tetrachloroethane	10.1		ug/L	10.00		101	70-130			
1,1,2-Trichloroethane	9.95		ug/L	10.00		100	70-130			
1,1-Dichloroethane	10.5		ug/L	10.00		105	70-130			
1,1-Dichloroethene	9.96		ug/L	10.00		100	70-130			
1,1-Dichloropropene	9.48		ug/L	10.00		95	70-130			
1,2,3-Trichlorobenzene	11.2		ug/L	10.00		112	70-130			
1,2,3-Trichloropropane	10.2		ug/L	10.00		102	70-130			
1,2,4-Trichlorobenzene	9.94		ug/L	10.00		99	70-130			
1,2,4-Trimethylbenzene	9.50		ug/L	10.00		95	70-130			
1,2-Dibromo-3-Chloropropane	10.1		ug/L	10.00		101	70-130			
1,2-Dibromoethane	8.57		ug/L	10.00		86	70-130			
1,2-Dichlorobenzene	9.83		ug/L	10.00		98	70-130			
1,2-Dichloroethane	9.81		ug/L	10.00		98	70-130			
1,2-Dichloropropane	10.2		ug/L	10.00		102	70-130			
1,3,5-Trimethylbenzene	9.31		ug/L	10.00		93	70-130			
1,3-Dichlorobenzene	10.0		ug/L	10.00		100	70-130			
1,3-Dichloropropane	9.25		ug/L	10.00		92	70-130			
1,4-Dichlorobenzene	9.82		ug/L	10.00		98	70-130			
1,4-Dioxane - Screen	754		ug/L	200.0		377	0-332			B+



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch B290610 - 50308										
1-Chlorohexane	7.61		ug/L	10.00		76	70-130			
2,2-Dichloropropane	9.59		ug/L	10.00		96	70-130			
2-Butanone	50.1		ug/L	50.00		100	70-130			
2-Chlorotoluene	9.91		ug/L	10.00		99	70-130			
2-Hexanone	47.8		ug/L	50.00		96	70-130			
4-Chlorotoluene	9.53		ug/L	10.00		95	70-130			
4-Isopropyltoluene	9.19		ug/L	10.00		92	70-130			
4-Methyl-2-Pentanone	48.4		ug/L	50.00		97	70-130			
Acetone	54.8		ug/L	50.00		110	70-130			
Benzene	10.0		ug/L	10.00		100	70-130			
Bromobenzene	9.84		ug/L	10.00		98	70-130			
Bromochloromethane	9.90		ug/L	10.00		99	70-130			
Bromodichloromethane	9.97		ug/L	10.00		100	70-130			
Bromoform	8.59		ug/L	10.00		86	70-130			
Bromomethane	8.65		ug/L	10.00		86	70-130			
Carbon Disulfide	10.8		ug/L	10.00		108	70-130			
Carbon Tetrachloride	9.37		ug/L	10.00		94	70-130			
Chlorobenzene	8.92		ug/L	10.00		89	70-130			
Chloroethane	11.2		ug/L	10.00		112	70-130			
Chloroform	10.0		ug/L	10.00		100	70-130			
Chloromethane	10.5		ug/L	10.00		105	70-130			
cis-1,2-Dichloroethene	10.0		ug/L	10.00		100	70-130			
cis-1,3-Dichloropropene	9.85		ug/L	10.00		98	70-130			
Dibromochloromethane	8.87		ug/L	10.00		89	70-130			
Dibromomethane	9.70		ug/L	10.00		97	70-130			
Dichlorodifluoromethane	9.57		ug/L	10.00		96	70-130			
Diethyl Ether	10.1		ug/L	10.00		101	70-130			
Di-isopropyl ether	9.82		ug/L	10.00		98	70-130			
Ethyl tertiary-butyl ether	11.2		ug/L	10.00		112	70-130			
Ethylbenzene	8.45		ug/L	10.00		84	70-130			
Hexachlorobutadiene	10.2		ug/L	10.00		102	70-130			
Hexachloroethane	9.03		ug/L	10.00		90	70-130			
Isopropylbenzene	7.56		ug/L	10.00		76	70-130			
Methyl tert-Butyl Ether	10.0		ug/L	10.00		100	70-130			
Methylene Chloride	10.5		ug/L	10.00		105	70-130			
Naphthalene	9.05		ug/L	10.00		90	70-130			
n-Butylbenzene	9.46		ug/L	10.00		95	70-130			
n-Propylbenzene	8.87		ug/L	10.00		89	70-130			
sec-Butylbenzene	9.71		ug/L	10.00		97	70-130			
Styrene	8.11		ug/L	10.00		81	70-130			
tert-Butylbenzene	9.05		ug/L	10.00		90	70-130			
Tertiary-amyl methyl ether	12.0		ug/L	10.00		120	70-130			
Tetrachloroethene	8.95		ug/L	10.00		90	70-130			
Tetrahydrofuran	10.1		ug/L	10.00		101	70-130			
Toluene	9.90		ug/L	10.00		99	70-130			
trans-1,2-Dichloroethene	10.4		ug/L	10.00		104	70-130			



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch B390610 - 5030B										
trans-1,3-Dichloropropene	8.74		ug/L	10.00		87	70-130			
Trichloroethene	9.86		ug/L	10.00		99	70-130			
Trichlorofluoromethane	8.66		ug/L	10.00		87	70-130			
Vinyl Acetate	10.3		ug/L	10.00		103	70-130			
Vinyl Chloride	10.1		ug/L	10.00		101	70-130			
Xylene O	8.63		ug/L	10.00		86	70-130			
Xylene P,M	17.3		ug/L	20.00		86	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0288		mg/L	0.02500		115	70-130			
Surrogate: 4-Bromofluorobenzene	0.0254		mg/L	0.02500		102	70-130			
Surrogate: Dibromofluoromethane	0.0285		mg/L	0.02500		114	70-130			
Surrogate: Toluene-d8	0.0264		mg/L	0.02500		106	70-130			
LCS Dup										
1,1,1,2-Tetrachloroethane	9.60		ug/L	10.00		96	70-130	5	25	
1,1,1-Trichloroethane	9.64		ug/L	10.00		96	70-130	4	25	
1,1,2,2-Tetrachloroethane	10.2		ug/L	10.00		102	70-130	1	25	
1,1,2-Trichloroethane	9.80		ug/L	10.00		98	70-130	2	25	
1,1-Dichloroethane	9.83		ug/L	10.00		98	70-130	7	25	
1,1-Dichloroethene	9.74		ug/L	10.00		97	70-130	2	25	
1,1-Dichloropropene	9.12		ug/L	10.00		91	70-130	4	25	
1,2,3-Trichlorobenzene	10.0		ug/L	10.00		100	70-130	11	25	
1,2,3-Trichloropropane	9.94		ug/L	10.00		99	70-130	2	25	
1,2,4-Trichlorobenzene	9.30		ug/L	10.00		93	70-130	7	25	
1,2,4-Trimethylbenzene	9.41		ug/L	10.00		94	70-130	1	25	
1,2-Dibromo-3-Chloropropane	10.7		ug/L	10.00		107	70-130	6	25	
1,2-Dibromoethane	9.34		ug/L	10.00		93	70-130	9	25	
1,2-Dichlorobenzene	9.71		ug/L	10.00		97	70-130	1	25	
1,2-Dichloroethane	9.68		ug/L	10.00		97	70-130	1	25	
1,2-Dichloropropane	9.98		ug/L	10.00		100	70-130	2	25	
1,3,5-Trimethylbenzene	9.40		ug/L	10.00		94	70-130	1	25	
1,3-Dichlorobenzene	9.75		ug/L	10.00		98	70-130	3	25	
1,3-Dichloropropane	10.0		ug/L	10.00		100	70-130	8	25	
1,4-Dichlorobenzene	9.69		ug/L	10.00		97	70-130	1	25	
1,4-Dioxane - Screen	438		ug/L	200.0		219	0-332	53	200	
1-Chlorohexane	8.32		ug/L	10.00		83	70-130	9	25	
2,2-Dichloropropane	9.27		ug/L	10.00		93	70-130	3	25	
2-Butanone	53.9		ug/L	50.00		108	70-130	7	25	
2-Chlorotoluene	9.64		ug/L	10.00		96	70-130	3	25	
2-Hexanone	53.2		ug/L	50.00		106	70-130	11	25	
4-Chlorotoluene	9.29		ug/L	10.00		93	70-130	3	25	
4-Isopropyltoluene	8.89		ug/L	10.00		89	70-130	3	25	
4-Methyl-2-Pentanone	50.8		ug/L	50.00		102	70-130	5	25	
Acetone	58.5		ug/L	50.00		117	70-130	7	25	
Benzene	9.57		ug/L	10.00		96	70-130	4	25	
Bromobenzene	9.54		ug/L	10.00		95	70-130	3	25	
Bromochloromethane	9.37		ug/L	10.00		94	70-130	6	25	
Bromodichloromethane	9.78		ug/L	10.00		98	70-130	2	25	



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch BJ90610 - 5030B										
Bromoform	9.11		ug/L	10.00		91	70-130	6	25	
Bromomethane	8.07		ug/L	10.00		81	70-130	7	25	
Carbon Disulfide	10.7		ug/L	10.00		107	70-130	2	25	
Carbon Tetrachloride	9.19		ug/L	10.00		92	70-130	2	25	
Chlorobenzene	9.59		ug/L	10.00		96	70-130	7	25	
Chloroethane	10.6		ug/L	10.00		106	70-130	5	25	
Chloroform	9.63		ug/L	10.00		96	70-130	4	25	
Chloromethane	10.1		ug/L	10.00		101	70-130	4	25	
cis-1,2-Dichloroethene	9.61		ug/L	10.00		96	70-130	4	25	
cis-1,3-Dichloropropene	9.41		ug/L	10.00		94	70-130	5	25	
Dibromochloromethane	9.57		ug/L	10.00		96	70-130	8	25	
Dibromomethane	9.47		ug/L	10.00		95	70-130	2	25	
Dichlorodifluoromethane	9.52		ug/L	10.00		95	70-130	0.5	25	
Diethyl Ether	10.1		ug/L	10.00		101	70-130	0	25	
Di-isopropyl ether	9.92		ug/L	10.00		99	70-130	1	25	
Ethyl tertiary-butyl ether	11.0		ug/L	10.00		110	70-130	2	25	
Ethylbenzene	9.20		ug/L	10.00		92	70-130	8	25	
Hexachlorobutadiene	9.85		ug/L	10.00		98	70-130	3	25	
Hexachloroethane	9.03		ug/L	10.00		90	70-130	0	25	
Isopropylbenzene	7.51		ug/L	10.00		75	70-130	0.7	25	
Methyl tert-Butyl Ether	9.93		ug/L	10.00		99	70-130	1	25	
Methylene Chloride	10.4		ug/L	10.00		104	70-130	1	25	
Naphthalene	8.35		ug/L	10.00		84	70-130	8	25	
n-Butylbenzene	9.15		ug/L	10.00		92	70-130	3	25	
n-Propylbenzene	8.72		ug/L	10.00		87	70-130	2	25	
sec-Butylbenzene	9.51		ug/L	10.00		95	70-130	2	25	
Styrene	8.78		ug/L	10.00		88	70-130	8	25	
tert-Butylbenzene	9.01		ug/L	10.00		90	70-130	0.4	25	
Tertiary-amyyl methyl ether	12.0		ug/L	10.00		120	70-130	0.08	25	
Tetrachloroethene	9.57		ug/L	10.00		96	70-130	7	25	
Tetrahydrofuran	11.1		ug/L	10.00		111	70-130	10	25	
Toluene	9.78		ug/L	10.00		98	70-130	1	25	
trans-1,2-Dichloroethene	9.85		ug/L	10.00		98	70-130	6	25	
trans-1,3-Dichloropropene	8.53		ug/L	10.00		85	70-130	2	25	
Trichloroethene	9.69		ug/L	10.00		97	70-130	2	25	
Trichlorofluoromethane	8.71		ug/L	10.00		87	70-130	0.6	25	
Vinyl Acetate	10.5		ug/L	10.00		105	70-130	2	25	
Vinyl Chloride	9.89		ug/L	10.00		99	70-130	2	25	
Xylene O	9.34		ug/L	10.00		93	70-130	8	25	
Xylene P,M	18.8		ug/L	20.00		94	70-130	8	25	
Surrogate: 1,2-Dichloroethane-d4	0.0287		mg/L	0.02500		115	70-130			
Surrogate: 4-Bromofluorobenzene	0.0277		mg/L	0.02500		111	70-130			
Surrogate: Dibromofluoromethane	0.0282		mg/L	0.02500		113	70-130			
Surrogate: Toluene-d8	0.0291		mg/L	0.02500		116	70-130			
Matrix Spike	Source: 0910039-03									
1,1,1,2-Tetrachloroethane	9.67		ug/L	10.00	ND	97	70-130			



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch B190610 - 50308										
1,1,1-Trichloroethane	9.89		ug/L	10.00	ND	99	70-130			
1,1,2,2-Tetrachloroethane	9.91		ug/L	10.00	ND	99	70-130			
1,1,2-Trichloroethane	9.78		ug/L	10.00	ND	98	70-130			
1,1-Dichloroethane	10.2		ug/L	10.00	ND	102	70-130			
1,1-Dichloroethene	9.90		ug/L	10.00	ND	99	70-130			
1,1-Dichloropropene	9.52		ug/L	10.00	ND	95	70-130			
1,2,3-Trichlorobenzene	8.12		ug/L	10.00	ND	81	70-130			
1,2,3-Trichloropropane	9.88		ug/L	10.00	ND	99	70-130			
1,2,4-Trichlorobenzene	7.79		ug/L	10.00	ND	78	70-130			
1,2,4-Trimethylbenzene	9.29		ug/L	10.00	ND	93	70-130			
1,2-Dibromo-3-Chloropropane	9.50		ug/L	10.00	ND	95	70-130			
1,2-Dibromoethane	9.13		ug/L	10.00	ND	91	70-130			
1,2-Dichlorobenzene	9.45		ug/L	10.00	ND	94	70-130			
1,2-Dichloroethane	9.77		ug/L	10.00	ND	98	70-130			
1,2-Dichloropropane	9.98		ug/L	10.00	ND	100	70-130			
1,3,5-Trimethylbenzene	9.16		ug/L	10.00	ND	92	70-130			
1,3-Dichlorobenzene	9.56		ug/L	10.00	ND	96	70-130			
1,3-Dichloropropane	10.1		ug/L	10.00	ND	101	70-130			
1,4-Dichlorobenzene	9.87		ug/L	10.00	0.130	97	70-130			
1,4-Dioxane - Screen	131		ug/L	200.0	ND	65	0-332			
1-Chlorohexane	8.21		ug/L	10.00	ND	82	70-130			
2,2-Dichloropropane	8.86		ug/L	10.00	ND	89	70-130			
2-Butanone	51.5		ug/L	50.00	ND	103	70-130			
2-Chlorotoluene	9.71		ug/L	10.00	ND	97	70-130			
2-Hexanone	51.2		ug/L	50.00	ND	102	70-130			
4-Chlorotoluene	9.45		ug/L	10.00	ND	94	70-130			
4-Isopropyltoluene	8.92		ug/L	10.00	ND	89	70-130			
4-Methyl-2-Pentanone	46.9		ug/L	50.00	ND	94	70-130			
Acetone	54.4		ug/L	50.00	ND	109	70-130			
Benzene	9.97		ug/L	10.00	ND	100	70-130			
Bromobenzene	9.50		ug/L	10.00	ND	95	70-130			
Bromochloromethane	9.46		ug/L	10.00	ND	95	70-130			
Bromodichloromethane	9.99		ug/L	10.00	ND	100	70-130			
Bromoform	8.81		ug/L	10.00	ND	88	70-130			
Bromomethane	6.20		ug/L	10.00	ND	62	70-130			M-
Carbon Disulfide	10.9		ug/L	10.00	ND	109	70-130			
Carbon Tetrachloride	9.68		ug/L	10.00	ND	97	70-130			
Chlorobenzene	9.70		ug/L	10.00	ND	97	70-130			
Chloroethane	11.3		ug/L	10.00	ND	113	70-130			
Chloroform	9.96		ug/L	10.00	ND	100	70-130			
Chloromethane	9.86		ug/L	10.00	ND	99	70-130			
cis-1,2-Dichloroethene	10.1		ug/L	10.00	0.400	97	70-130			
cis-1,3-Dichloropropene	9.34		ug/L	10.00	ND	93	70-130			
Dibromochloromethane	9.39		ug/L	10.00	ND	94	70-130			
Dibromomethane	9.58		ug/L	10.00	ND	96	70-130			
Dichlorodifluoromethane	9.83		ug/L	10.00	ND	98	70-130			



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

Batch B190610 - 50308

Diethyl Ether	9.88		ug/L	10.00	ND	99	70-130			
Di-isopropyl ether	9.63		ug/L	10.00	ND	96	70-130			
Ethyl tertiary-butyl ether	10.4		ug/L	10.00	ND	104	70-130			
Ethylbenzene	9.29		ug/L	10.00	ND	93	70-130			
Hexachlorobutadiene	8.54		ug/L	10.00	ND	85	70-130			
Hexachloroethane	8.92		ug/L	10.00	ND	89	70-130			
Isopropylbenzene	7.60		ug/L	10.00	ND	76	70-130			
Methyl tert-Butyl Ether	9.68		ug/L	10.00	0.170	95	70-130			
Methylene Chloride	10.2		ug/L	10.00	ND	102	70-130			
Naphthalene	6.73		ug/L	10.00	ND	67	70-130			M
n-Butylbenzene	8.86		ug/L	10.00	ND	89	70-130			
n-Propylbenzene	8.80		ug/L	10.00	ND	88	70-130			
sec-Butylbenzene	9.42		ug/L	10.00	ND	94	70-130			
Styrene	8.64		ug/L	10.00	ND	86	70-130			
tert-Butylbenzene	8.88		ug/L	10.00	ND	89	70-130			
Tertiary-amyl methyl ether	10.8		ug/L	10.00	ND	108	70-130			
Tetrachloroethene	9.70		ug/L	10.00	ND	97	70-130			
Tetrahydrofuran	9.01		ug/L	10.00	ND	90	70-130			
Toluene	9.72		ug/L	10.00	ND	97	70-130			
trans-1,2-Dichloroethene	10.3		ug/L	10.00	ND	103	70-130			
trans-1,3-Dichloropropene	8.09		ug/L	10.00	ND	81	70-130			
Trichloroethene	10.4		ug/L	10.00	0.140	103	70-130			
Trichlorofluoromethane	8.83		ug/L	10.00	ND	88	70-130			
Vinyl Acetate	9.06		ug/L	10.00	ND	91	70-130			
Vinyl Chloride	9.84		ug/L	10.00	ND	98	70-130			
Xylene O	9.61		ug/L	10.00	ND	96	70-130			
Xylene P,M	18.9		ug/L	20.00	ND	95	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0286		mg/L	0.02500		114	70-130			
Surrogate: 4-Bromofluorobenzene	0.0275		mg/L	0.02500		110	70-130			
Surrogate: Dibromofluoromethane	0.0279		mg/L	0.02500		112	70-130			
Surrogate: Toluene-d8	0.0286		mg/L	0.02500		114	70-130			

Matrix Spike Dup Source: 0910039-03

1,1,1,2-Tetrachloroethane	9.76		ug/L	10.00	ND	98	70-130	0.9	30	
1,1,1-Trichloroethane	9.84		ug/L	10.00	ND	98	70-130	0.5	30	
1,1,2,2-Tetrachloroethane	9.94		ug/L	10.00	ND	99	70-130	0.3	30	
1,1,2-Trichloroethane	10.0		ug/L	10.00	ND	100	70-130	2	30	
1,1-Dichloroethane	10.3		ug/L	10.00	ND	103	70-130	1	30	
1,1-Dichloroethene	10.1		ug/L	10.00	ND	101	70-130	2	30	
1,1-Dichloropropene	9.53		ug/L	10.00	ND	95	70-130	0.1	30	
1,2,3-Trichlorobenzene	9.26		ug/L	10.00	ND	93	70-130	13	30	
1,2,3-Trichloropropane	9.78		ug/L	10.00	ND	98	70-130	1	30	
1,2,4-Trichlorobenzene	8.66		ug/L	10.00	ND	87	70-130	11	30	
1,2,4-Trimethylbenzene	9.26		ug/L	10.00	ND	93	70-130	0.3	30	
1,2-Dibromo-3-Chloropropane	10.2		ug/L	10.00	ND	102	70-130	7	30	
1,2-Dibromoethane	9.57		ug/L	10.00	ND	96	70-130	5	30	
1,2-Dichlorobenzene	9.51		ug/L	10.00	ND	95	70-130	0.6	30	



ESS Laboratory

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 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch BJ90610 - 5030B										
1,2-Dichloroethane	10.0		ug/L	10.00	ND	100	70-130	3	30	
1,2-Dichloropropane	9.97		ug/L	10.00	ND	100	70-130	0.1	30	
1,3,5-Trimethylbenzene	9.07		ug/L	10.00	ND	91	70-130	1	30	
1,3-Dichlorobenzene	9.68		ug/L	10.00	ND	97	70-130	1	30	
1,3-Dichloropropane	10.5		ug/L	10.00	ND	105	70-130	4	30	
1,4-Dichlorobenzene	9.99		ug/L	10.00	0.130	99	70-130	1	30	
1,4-Dioxane - Screen	344		ug/L	200.0	ND	172	0-332	90	200	
1-Chlorohexane	8.33		ug/L	10.00	ND	83	70-130	1	30	
2,2-Dichloropropane	8.84		ug/L	10.00	ND	88	70-130	0.2	30	
2-Butanone	51.9		ug/L	50.00	ND	104	70-130	0.8	30	
2-Chlorotoluene	9.62		ug/L	10.00	ND	96	70-130	0.9	30	
2-Hexanone	53.9		ug/L	50.00	ND	108	70-130	5	30	
4-Chlorotoluene	9.36		ug/L	10.00	ND	94	70-130	1	30	
4-Isopropyltoluene	9.02		ug/L	10.00	ND	90	70-130	1	30	
4-Methyl-2-Pentanone	50.0		ug/L	50.00	ND	100	70-130	6	30	
Acetone	57.5		ug/L	50.00	ND	115	70-130	6	30	
Benzene	9.93		ug/L	10.00	ND	99	70-130	0.4	30	
Bromobenzene	9.41		ug/L	10.00	ND	94	70-130	1	30	
Bromochloromethane	9.58		ug/L	10.00	ND	96	70-130	1	30	
Bromodichloromethane	10.0		ug/L	10.00	ND	100	70-130	0.5	30	
Bromoform	9.14		ug/L	10.00	ND	91	70-130	4	30	
Bromomethane	6.75		ug/L	10.00	ND	68	70-130	8	30	M-
Carbon Disulfide	11.0		ug/L	10.00	ND	110	70-130	0.09	30	
Carbon Tetrachloride	9.41		ug/L	10.00	ND	94	70-130	3	30	
Chlorobenzene	9.79		ug/L	10.00	ND	98	70-130	0.9	30	
Chloroethane	11.8		ug/L	10.00	ND	118	70-130	5	30	
Chloroform	9.81		ug/L	10.00	ND	98	70-130	2	30	
Chloromethane	10.2		ug/L	10.00	ND	102	70-130	4	30	
cis-1,2-Dichloroethene	10.2		ug/L	10.00	0.400	98	70-130	0.9	30	
cis-1,3-Dichloropropene	9.57		ug/L	10.00	ND	96	70-130	2	30	
Dibromochloromethane	10.0		ug/L	10.00	ND	100	70-130	6	30	
Dibromomethane	9.74		ug/L	10.00	ND	97	70-130	2	30	
Dichlorodifluoromethane	10.1		ug/L	10.00	ND	101	70-130	3	30	
Diethyl Ether	10.2		ug/L	10.00	ND	102	70-130	3	30	
Di-isopropyl ether	9.64		ug/L	10.00	ND	96	70-130	0.1	30	
Ethyl tertiary-butyl ether	10.6		ug/L	10.00	ND	106	70-130	2	30	
Ethylbenzene	9.43		ug/L	10.00	ND	94	70-130	1	30	
Hexachlorobutadiene	9.11		ug/L	10.00	ND	91	70-130	6	30	
Hexachloroethane	9.00		ug/L	10.00	ND	90	70-130	0.9	30	
Isopropylbenzene	7.50		ug/L	10.00	ND	75	70-130	1	30	
Methyl tert-Butyl Ether	9.80		ug/L	10.00	0.170	96	70-130	1	30	
Methylene Chloride	10.6		ug/L	10.00	ND	106	70-130	4	30	
Naphthalene	7.67		ug/L	10.00	ND	77	70-130	13	30	
n-Butylbenzene	9.44		ug/L	10.00	ND	94	70-130	6	30	
n-Propylbenzene	8.76		ug/L	10.00	ND	88	70-130	0.5	30	
sec-Butylbenzene	9.48		ug/L	10.00	ND	95	70-130	0.6	30	



ESS Laboratory

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Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch BJ90610 - 5030B										
Styrene	8.72		ug/L	10.00	ND	87	70-130	0.9	30	
tert-Butylbenzene	9.00		ug/L	10.00	ND	90	70-130	1	30	
Tertiary-amyyl methyl ether	11.1		ug/L	10.00	ND	111	70-130	2	30	
Tetrachloroethene	9.98		ug/L	10.00	ND	100	70-130	3	30	
Tetrahydrofuran	9.55		ug/L	10.00	ND	96	70-130	6	30	
Toluene	9.85		ug/L	10.00	ND	98	70-130	1	30	
trans-1,2-Dichloroethene	10.2		ug/L	10.00	ND	102	70-130	0.7	30	
trans-1,3-Dichloropropene	8.23		ug/L	10.00	ND	82	70-130	2	30	
Trichloroethene	10.3		ug/L	10.00	0.140	101	70-130	2	30	
Trichlorofluoromethane	9.03		ug/L	10.00	ND	90	70-130	2	30	
Vinyl Acetate	9.75		ug/L	10.00	ND	98	70-130	7	30	
Vinyl Chloride	10.2		ug/L	10.00	ND	102	70-130	3	30	
Xylene O	9.73		ug/L	10.00	ND	97	70-130	1	30	
Xylene P,M	19.2		ug/L	20.00	ND	96	70-130	1	30	
Surrogate: 1,2-Dichloroethane-d4	0.0283		mg/L	0.02500		113	70-130			
Surrogate: 4-Bromofluorobenzene	0.0281		mg/L	0.02500		112	70-130			
Surrogate: Dibromofluoromethane	0.0280		mg/L	0.02500		112	70-130			
Surrogate: Toluene-d8	0.0289		mg/L	0.02500		116	70-130			

8270C Semi-Volatile Organic Compounds

Batch BJ90727 - 3520C

Blank										
1,1-Biphenyl	ND	0.010	mg/L							
1,2,4-Trichlorobenzene	ND	0.010	mg/L							
1,2-Dichlorobenzene	ND	0.010	mg/L							
1,3-Dichlorobenzene	ND	0.010	mg/L							
1,4-Dichlorobenzene	ND	0.010	mg/L							
2,3,4,6-Tetrachlorophenol	ND	0.050	mg/L							
2,4,5-Trichlorophenol	ND	0.010	mg/L							
2,4,6-Trichlorophenol	ND	0.010	mg/L							
2,4-Dichlorophenol	ND	0.010	mg/L							
2,4-Dimethylphenol	ND	0.050	mg/L							
2,4-Dinitrophenol	ND	0.050	mg/L							
2,4-Dinitrotoluene	ND	0.010	mg/L							
2,6-Dinitrotoluene	ND	0.010	mg/L							
2-Chloronaphthalene	ND	0.010	mg/L							
2-Chlorophenol	ND	0.010	mg/L							
2-Methylphenol	ND	0.010	mg/L							
2-Nitroaniline	ND	0.010	mg/L							
2-Nitrophenol	ND	0.010	mg/L							
3,3'-Dichlorobenzidine	ND	0.020	mg/L							
3+4-Methylphenol	ND	0.020	mg/L							
3-Nitroaniline	ND	0.010	mg/L							
4,6-Dinitro-2-Methylphenol	ND	0.050	mg/L							
4-Bromophenyl-phenylether	ND	0.010	mg/L							



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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270C Semi-Volatile Organic Compounds

Batch BJ90727 - 3520C

4-Chloro-3-Methylphenol	ND	0.010	mg/L							
4-Chloroaniline	ND	0.020	mg/L							
4-Chloro-phenyl-phenyl ether	ND	0.010	mg/L							
4-Nitroaniline	ND	0.010	mg/L							
4-Nitrophenol	ND	0.050	mg/L							
Acetophenone	ND	0.010	mg/L							
Aniline	ND	0.010	mg/L							
Azobenzene	ND	0.020	mg/L							
Benzoic Acid	ND	0.100	mg/L							
Benzyl Alcohol	ND	0.010	mg/L							
bis(2-Chloroethoxy)methane	ND	0.010	mg/L							
bis(2-Chloroethyl)ether	ND	0.010	mg/L							
bis(2-chloroisopropyl)Ether	ND	0.010	mg/L							
bis(2-Ethylhexyl)phthalate	ND	0.006	mg/L							
Butylbenzylphthalate	ND	0.010	mg/L							
Carbazole	ND	0.010	mg/L							
Dibenzofuran	ND	0.010	mg/L							
Diethylphthalate	ND	0.010	mg/L							
Dimethylphthalate	ND	0.010	mg/L							
Di-n-butylphthalate	ND	0.010	mg/L							
Di-n-octylphthalate	ND	0.010	mg/L							
Hexachlorobutadiene	ND	0.010	mg/L							
Hexachlorocyclopentadiene	ND	0.025	mg/L							
Hexachloroethane	ND	0.005	mg/L							
Isophorone	ND	0.010	mg/L							
Nitrobenzene	ND	0.010	mg/L							
N-Nitrosodimethylamine	ND	0.010	mg/L							
N-Nitroso-Di-n-Propylamine	ND	0.010	mg/L							
N-nitrosodiphenylamine	ND	0.010	mg/L							
Phenol	ND	0.010	mg/L							
Pyridine	ND	0.100	mg/L							
Surrogate: 1,2-Dichlorobenzene-d4	0.0693		mg/L	0.1000		69	30-130			
Surrogate: 2,4,6-Tribromophenol	0.108		mg/L	0.1500		72	15-110			
Surrogate: 2-Chlorophenol-d4	0.0967		mg/L	0.1500		64	15-110			
Surrogate: 2-Fluorobiphenyl	0.0778		mg/L	0.1000		78	30-130			
Surrogate: 2-Fluorophenol	0.0822		mg/L	0.1500		55	15-110			
Surrogate: Nitrobenzene-d5	0.0809		mg/L	0.1000		81	30-130			
Surrogate: Phenol-d6	0.0989		mg/L	0.1500		66	15-110			
Surrogate: p-Terphenyl-d14	0.0858		mg/L	0.1000		86	30-130			
LCS										
1,1-Biphenyl	0.071	0.010	mg/L	0.1000		71	40-140			
1,2,4-Trichlorobenzene	0.061	0.010	mg/L	0.1000		61	40-140			
1,2-Dichlorobenzene	0.054	0.010	mg/L	0.1000		54	40-140			
1,3-Dichlorobenzene	0.053	0.010	mg/L	0.1000		53	40-140			
1,4-Dichlorobenzene	0.048	0.010	mg/L	0.1000		48	40-140			
2,3,4,6-Tetrachlorophenol	0.088	0.050	mg/L	0.1000		88	40-140			



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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270C Semi-Volatile Organic Compounds										
Batch BJ90727 - 3520C										
2,4,5-Trichlorophenol	0.080	0.010	mg/L	0.1000		80	30-130			
2,4,6-Trichlorophenol	0.074	0.010	mg/L	0.1000		74	30-130			
2,4-Dichlorophenol	0.068	0.010	mg/L	0.1000		68	30-130			
2,4-Dimethylphenol	0.069	0.050	mg/L	0.1000		69	30-130			
2,4-Dinitrophenol	0.049	0.050	mg/L	0.1000		49	30-130			
2,4-Dinitrotoluene	0.087	0.010	mg/L	0.1000		87	40-140			
2,6-Dinitrotoluene	0.082	0.010	mg/L	0.1000		82	40-140			
2-Chloronaphthalene	0.059	0.010	mg/L	0.1000		59	40-140			
2-Chlorophenol	0.056	0.010	mg/L	0.1000		56	30-130			
2-Methylphenol	0.061	0.010	mg/L	0.1000		61	30-130			
2-Nitroaniline	0.081	0.010	mg/L	0.1000		81	40-140			
2-Nitrophenol	0.067	0.010	mg/L	0.1000		67	30-130			
3,3'-Dichlorobenzidine	0.087	0.020	mg/L	0.1000		87	40-140			
3+4-Methylphenol	0.106	0.020	mg/L	0.2000		53	30-130			
3-Nitroaniline	0.080	0.010	mg/L	0.1000		80	40-140			
4,6-Dinitro-2-Methylphenol	0.082	0.050	mg/L	0.1000		82	30-130			
4-Bromophenyl-phenylether	0.083	0.010	mg/L	0.1000		83	40-140			
4-Chloro-3-Methylphenol	0.076	0.010	mg/L	0.1000		76	30-130			
4-Chloroaniline	0.063	0.020	mg/L	0.1000		63	40-140			
4-Chloro-phenyl-phenyl ether	0.081	0.010	mg/L	0.1000		81	40-140			
4-Nitroaniline	0.078	0.010	mg/L	0.1000		78	40-140			
4-Nitrophenol	0.103	0.050	mg/L	0.1000		103	30-130			
Acetophenone	0.058	0.010	mg/L	0.1000		58	40-140			
Aniline	0.041	0.010	mg/L	0.1000		41	40-140			
Azobenzene	0.068	0.020	mg/L	0.1000		68	40-140			
Benzoic Acid	ND	0.100	mg/L	0.1000			40-140			B-
Benzyl Alcohol	0.063	0.010	mg/L	0.1000		63	40-140			
bis(2-Chloroethoxy)methane	0.064	0.010	mg/L	0.1000		64	40-140			
bis(2-Chloroethyl)ether	0.055	0.010	mg/L	0.1000		55	40-140			
bis(2-chloroisopropyl)Ether	0.048	0.010	mg/L	0.1000		48	40-140			
bis(2-Ethylhexyl)phthalate	0.083	0.006	mg/L	0.1000		83	40-140			
Butylbenzylphthalate	0.083	0.010	mg/L	0.1000		83	40-140			
Carbazole	0.085	0.010	mg/L	0.1000		85	40-140			
Dibenzofuran	0.075	0.010	mg/L	0.1000		75	40-140			
Diethylphthalate	0.085	0.010	mg/L	0.1000		85	40-140			
Dimethylphthalate	0.080	0.010	mg/L	0.1000		80	40-140			
Di-n-butylphthalate	0.082	0.010	mg/L	0.1000		82	40-140			
Di-n-octylphthalate	0.082	0.010	mg/L	0.1000		82	40-140			
Hexachlorobutadiene	0.063	0.010	mg/L	0.1000		63	40-140			
Hexachlorocyclopentadiene	0.058	0.025	mg/L	0.1000		58	40-140			
Hexachloroethane	0.052	0.005	mg/L	0.1000		52	40-140			
Isophorone	0.053	0.010	mg/L	0.1000		53	40-140			
Nitrobenzene	0.062	0.010	mg/L	0.1000		62	40-140			
N-Nitrosodimethylamine	0.064	0.010	mg/L	0.1000		64	40-140			
N-Nitroso-Di-n-Propylamine	0.059	0.010	mg/L	0.1000		59	40-140			
N-nitrosodiphenylamine	0.090	0.010	mg/L	0.1000		90	40-140			



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270C Semi-Volatile Organic Compounds										
Batch BJ90727 - 3520C										
Phenol	0.054	0.010	mg/L	0.1000		54	30-130			
Pyridine	0.044	0.100	mg/L	0.1000		44	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	0.0641		mg/L	0.1000		64	30-130			
Surrogate: 2,4,6-Tribromophenol	0.146		mg/L	0.1500		97	15-110			
Surrogate: 2-Chlorophenol-d4	0.0879		mg/L	0.1500		59	15-110			
Surrogate: 2-Fluorobiphenyl	0.0743		mg/L	0.1000		74	30-130			
Surrogate: 2-Fluorophenol	0.0752		mg/L	0.1500		50	15-110			
Surrogate: Nitrobenzene-d5	0.0692		mg/L	0.1000		69	30-130			
Surrogate: Phenol-d6	0.0856		mg/L	0.1500		57	15-110			
Surrogate: p-Terphenyl-d14	0.0958		mg/L	0.1000		96	30-130			
LCS Dup										
1,1-Biphenyl	0.080	0.010	mg/L	0.1000		80	40-140	11	20	
1,2,4-Trichlorobenzene	0.074	0.010	mg/L	0.1000		74	40-140	19	20	
1,2-Dichlorobenzene	0.065	0.010	mg/L	0.1000		65	40-140	19	20	
1,3-Dichlorobenzene	0.065	0.010	mg/L	0.1000		65	40-140	20	20	
1,4-Dichlorobenzene	0.060	0.010	mg/L	0.1000		60	40-140	22	20	D+
2,3,4,6-Tetrachlorophenol	0.092	0.050	mg/L	0.1000		92	40-140	5	20	
2,4,5-Trichlorophenol	0.089	0.010	mg/L	0.1000		89	30-130	10	20	
2,4,6-Trichlorophenol	0.084	0.010	mg/L	0.1000		84	30-130	13	20	
2,4-Dichlorophenol	0.082	0.010	mg/L	0.1000		82	30-130	18	20	
2,4-Dimethylphenol	0.081	0.050	mg/L	0.1000		81	30-130	16	20	
2,4-Dinitrophenol	0.070	0.050	mg/L	0.1000		70	30-130	36	20	D+
2,4-Dinitrotoluene	0.091	0.010	mg/L	0.1000		91	40-140	5	20	
2,6-Dinitrotoluene	0.086	0.010	mg/L	0.1000		86	40-140	5	20	
2-Chloronaphthalene	0.067	0.010	mg/L	0.1000		67	40-140	13	20	
2-Chlorophenol	0.067	0.010	mg/L	0.1000		67	30-130	18	20	
2-Methylphenol	0.072	0.010	mg/L	0.1000		72	30-130	16	20	
2-Nitroaniline	0.086	0.010	mg/L	0.1000		86	40-140	6	20	
2-Nitrophenol	0.077	0.010	mg/L	0.1000		77	30-130	13	20	
3,3'-Dichlorobenzidine	0.086	0.020	mg/L	0.1000		86	40-140	1	20	
3+4-Methylphenol	0.119	0.020	mg/L	0.2000		59	30-130	12	20	
3-Nitroaniline	0.084	0.010	mg/L	0.1000		84	40-140	5	20	
4,6-Dinitro-2-Methylphenol	0.086	0.050	mg/L	0.1000		86	30-130	6	20	
4-Bromophenyl-phenylether	0.087	0.010	mg/L	0.1000		87	40-140	4	20	
4-Chloro-3-Methylphenol	0.082	0.010	mg/L	0.1000		82	30-130	7	20	
4-Chloroaniline	0.070	0.020	mg/L	0.1000		70	40-140	10	20	
4-Chloro-phenyl-phenyl ether	0.081	0.010	mg/L	0.1000		81	40-140	0.8	20	
4-Nitroaniline	0.082	0.010	mg/L	0.1000		82	40-140	4	20	
4-Nitrophenol	0.109	0.050	mg/L	0.1000		109	30-130	6	20	
Acetophenone	0.063	0.010	mg/L	0.1000		63	40-140	9	20	
Aniline	0.059	0.010	mg/L	0.1000		59	40-140	36	20	D+
Azobenzene	0.068	0.020	mg/L	0.1000		68	40-140	0.7	20	
Benzoic Acid	0.023	0.100	mg/L	0.1000		23	40-140		20	B-, D+
Benzyl Alcohol	0.076	0.010	mg/L	0.1000		76	40-140	19	20	
bis(2-Chloroethoxy)methane	0.072	0.010	mg/L	0.1000		72	40-140	11	20	
bis(2-Chloroethyl)ether	0.064	0.010	mg/L	0.1000		64	40-140	15	20	



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270C Semi-Volatile Organic Compounds

Batch B390727 - 3520C

bis(2-chloroisopropyl)Ether	0.054	0.010	mg/L	0.1000		54	40-140	11	20	
bis(2-Ethylhexyl)phthalate	0.082	0.006	mg/L	0.1000		82	40-140	0.4	20	
Butylbenzylphthalate	0.084	0.010	mg/L	0.1000		84	40-140	1	20	
Carbazole	0.079	0.010	mg/L	0.1000		79	40-140	7	20	
Dibenzofuran	0.081	0.010	mg/L	0.1000		81	40-140	7	20	
Diethylphthalate	0.088	0.010	mg/L	0.1000		88	40-140	3	20	
Dimethylphthalate	0.085	0.010	mg/L	0.1000		85	40-140	5	20	
Di-n-butylphthalate	0.081	0.010	mg/L	0.1000		81	40-140	1	20	
Di-n-octylphthalate	0.082	0.010	mg/L	0.1000		82	40-140	0.2	20	
Hexachlorobutadiene	0.080	0.010	mg/L	0.1000		80	40-140	23	20	D+
Hexachlorocyclopentadiene	0.071	0.025	mg/L	0.1000		71	40-140	20	20	
Hexachloroethane	0.066	0.005	mg/L	0.1000		66	40-140	24	20	D+
Isophorone	0.062	0.010	mg/L	0.1000		62	40-140	15	20	
Nitrobenzene	0.072	0.010	mg/L	0.1000		72	40-140	14	20	
N-Nitrosodimethylamine	0.081	0.010	mg/L	0.1000		81	40-140	24	20	D+
N-Nitroso-Di-n-Propylamine	0.068	0.010	mg/L	0.1000		68	40-140	14	20	
N-nitrosodiphenylamine	0.093	0.010	mg/L	0.1000		93	40-140	3	20	
Phenol	0.062	0.010	mg/L	0.1000		62	30-130	14	20	
Pyridine	0.046	0.100	mg/L	0.1000		46	40-140	5	20	
Surrogate: 1,2-Dichlorobenzene-d4	0.0786		mg/L	0.1000		79	30-130			
Surrogate: 2,4,6-Tribromophenol	0.153		mg/L	0.1500		102	15-110			
Surrogate: 2-Chlorophenol-d4	0.102		mg/L	0.1500		68	15-110			
Surrogate: 2-Fluorobiphenyl	0.0860		mg/L	0.1000		86	30-130			
Surrogate: 2-Fluorophenol	0.0832		mg/L	0.1500		55	15-110			
Surrogate: Nitrobenzene-d5	0.0788		mg/L	0.1000		79	30-130			
Surrogate: Phenol-d6	0.0978		mg/L	0.1500		65	15-110			
Surrogate: p-Terphenyl-d14	0.0966		mg/L	0.1000		97	30-130			

8270C(SIM) Semi-Volatile Organic Compounds

Batch B390825 - 3510C

Blank										
2-Methylnaphthalene	ND	0.00020	mg/L							
Acenaphthene	ND	0.00020	mg/L							
Acenaphthylene	ND	0.00020	mg/L							
Anthracene	ND	0.00020	mg/L							
Benzo(a)anthracene	ND	0.00005	mg/L							
Benzo(a)pyrene	ND	0.00005	mg/L							
Benzo(b)fluoranthene	ND	0.00005	mg/L							
Benzo(g,h,i)perylene	ND	0.00020	mg/L							
Benzo(k)fluoranthene	ND	0.00005	mg/L							
Chrysene	ND	0.00005	mg/L							
Dibenzo(a,h)Anthracene	ND	0.00005	mg/L							
Fluoranthene	ND	0.00020	mg/L							
Fluorene	ND	0.00020	mg/L							
Hexachlorobenzene	ND	0.00020	mg/L							



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8270C(SIM) Semi-Volatile Organic Compounds

Batch BJ90825 - 3510C

Indeno(1,2,3-cd)Pyrene	ND	0.00005	mg/L							
Naphthalene	ND	0.00020	mg/L							
Pentachlorophenol	ND	0.00100	mg/L							
Phenanthrene	ND	0.00020	mg/L							
Pyrene	ND	0.00020	mg/L							
Surrogate: 1,2-Dichlorobenzene-d4	0.000602		mg/L	0.0006250		96	30-130			
Surrogate: 2,4,6-Tribromophenol	0.000682		mg/L	0.0009375		73	15-110			
Surrogate: 2-Fluorobiphenyl	0.000542		mg/L	0.0006250		87	30-130			
Surrogate: Nitrobenzene-d5	0.000572		mg/L	0.0006250		92	30-130			
Surrogate: p-Terphenyl-d14	0.000618		mg/L	0.0006250		99	30-130			

LCS

2-Methylnaphthalene	0.00045	0.00020	mg/L	0.0005000		90	40-140			
Acenaphthene	0.00047	0.00020	mg/L	0.0005000		94	40-140			
Acenaphthylene	0.00040	0.00020	mg/L	0.0005000		80	40-140			
Anthracene	0.00047	0.00020	mg/L	0.0005000		94	40-140			
Benzo(a)anthracene	0.00047	0.00005	mg/L	0.0005000		94	40-140			
Benzo(a)pyrene	0.00048	0.00005	mg/L	0.0005000		96	40-140			
Benzo(b)fluoranthene	0.00045	0.00005	mg/L	0.0005000		90	40-140			
Benzo(g,h,i)perylene	0.00047	0.00020	mg/L	0.0005000		94	40-140			
Benzo(k)fluoranthene	0.00050	0.00005	mg/L	0.0005000		100	40-140			
Chrysene	0.00047	0.00005	mg/L	0.0005000		94	40-140			
Dibenzo(a,h)Anthracene	0.00047	0.00005	mg/L	0.0005000		94	40-140			
Fluoranthene	0.00042	0.00020	mg/L	0.0005000		84	40-140			
Fluorene	0.00048	0.00020	mg/L	0.0005000		95	40-140			
Hexachlorobenzene	0.00039	0.00020	mg/L	0.0005000		78	40-140			
Indeno(1,2,3-cd)Pyrene	0.00048	0.00005	mg/L	0.0005000		95	40-140			
Naphthalene	0.00042	0.00020	mg/L	0.0005000		84	40-140			
Pentachlorophenol	0.00237	0.00100	mg/L	0.002500		95	30-130			
Phenanthrene	0.00044	0.00020	mg/L	0.0005000		88	40-140			
Pyrene	0.00046	0.00020	mg/L	0.0005000		92	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	0.000622		mg/L	0.0006250		100	30-130			
Surrogate: 2,4,6-Tribromophenol	0.000870		mg/L	0.0009375		93	15-110			
Surrogate: 2-Fluorobiphenyl	0.000590		mg/L	0.0006250		94	30-130			
Surrogate: Nitrobenzene-d5	0.000652		mg/L	0.0006250		104	30-130			
Surrogate: p-Terphenyl-d14	0.000578		mg/L	0.0006250		92	30-130			

LCS Dup

2-Methylnaphthalene	0.00037	0.00020	mg/L	0.0005000		74	40-140	20	20	
Acenaphthene	0.00040	0.00020	mg/L	0.0005000		81	40-140	15	20	
Acenaphthylene	0.00034	0.00020	mg/L	0.0005000		69	40-140	14	20	
Anthracene	0.00044	0.00020	mg/L	0.0005000		88	40-140	7	20	
Benzo(a)anthracene	0.00043	0.00005	mg/L	0.0005000		86	40-140	9	20	
Benzo(a)pyrene	0.00046	0.00005	mg/L	0.0005000		91	40-140	5	20	
Benzo(b)fluoranthene	0.00044	0.00005	mg/L	0.0005000		87	40-140	3	20	
Benzo(g,h,i)perylene	0.00043	0.00020	mg/L	0.0005000		86	40-140	8	20	
Benzo(k)fluoranthene	0.00048	0.00005	mg/L	0.0005000		95	40-140	6	20	
Chrysene	0.00044	0.00005	mg/L	0.0005000		88	40-140	6	20	



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270C(SIM) Semi-Volatile Organic Compounds										
Batch BJ90825 - 3510C										
Dibenzo(a,h)Anthracene	0.00045	0.00005	mg/L	0.0005000		90	40-140	5	20	
Fluoranthene	0.00040	0.00020	mg/L	0.0005000		79	40-140	7	20	
Fluorene	0.00042	0.00020	mg/L	0.0005000		84	40-140	13	20	
Hexachlorobenzene	0.00031	0.00020	mg/L	0.0005000		62	40-140	23	20	D+
Indeno(1,2,3-cd)Pyrene	0.00045	0.00005	mg/L	0.0005000		90	40-140	5	20	
Naphthalene	0.00036	0.00020	mg/L	0.0005000		72	40-140	15	20	
Pentachlorophenol	0.00221	0.00100	mg/L	0.002500		88	30-130	7	20	
Phenanthrene	0.00040	0.00020	mg/L	0.0005000		80	40-140	10	20	
Pyrene	0.00042	0.00020	mg/L	0.0005000		85	40-140	8	20	
Surrogate: 1,2-Dichlorobenzene-d4	0.000520		mg/L	0.0006250		83	30-130			
Surrogate: 2,4,6-Tribromophenol	0.000700		mg/L	0.0009375		75	15-110			
Surrogate: 2-Fluorobiphenyl	0.000495		mg/L	0.0006250		79	30-130			
Surrogate: Nitrobenzene-d5	0.000530		mg/L	0.0006250		85	30-130			
Surrogate: p-Terphenyl-d14	0.000560		mg/L	0.0006250		90	30-130			



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Notes and Definitions

U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression.
M-	Matrix Spike recovery is below lower control limit.
D+	Relative percent difference for duplicate is outside of criteria.
C-	Continuing Calibration recovery is below lower control limit.
B+	Blank Spike recovery is above upper control limit.
B-	Blank Spike recovery is below lower control limit.
ND	Analyte NOT DETECTED above the detection limit
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910039

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: A-179

<http://www.health.ri.gov/labs/waterlabs-instate.php>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine Potable and Non Potable Water: RI002

http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/labcert/labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 242405

<http://www4.egov.nh.gov/des/nhelap/namesearch.asp>

New York (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301

http://www.mde.state.md.us/assets/document/WSP_Labs-2009apr20.pdf

South Carolina Volatile Organic Compounds in Potable Water: 78003

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

ESS Laboratory

Division of Thielsch Engineering, Inc.
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 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time: Standard Other _____
 If faster than 5 days, prior approval by laboratory is required # _____
 State where samples were collected from:
 MA RI CT NH NJ NY ME Other _____
 Is this project for any of the following: USACE Other _____
 MA-MCP Navy _____

Reporting Limits: ESS LAB PROJECT ID: 0910039
 Electronic Deliverable: Yes ___ No ___
 Format: Excel ___ Access ___ PDF ___ Other ___

Co. Name	Project #	Project Name (20 Char. or less)	Number of Containers	Type of Containers	Write Required Analysis		
EA							
ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code
	10/2/09	12:20	X	X		SED-08	1
	↓	10:20	X	X		Floc-01	↓
		12:05	X	X		Floc-02	↓
						Trip Blank	

Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters
 Cooler Present: Yes No No NA: Internal Use Only
 Seals Intact: Yes No No NA: Pickup
 Cooler Temp: 3.1°C
 Preservation Code: 1- NP, 2- HCl, 3- H₂SO₄, 4- HNO₃, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____
 Sampled by: RAW: MJE
 Comments: NO TRH ANALYSIS ON FLOC SAMPLES OF IR-20 ANALYSIS

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
<i>[Signature]</i>	10/2/09 12:30	<i>[Signature]</i>	10/4 2:30pm
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Ron Mack
EA Engineering, Science, and Technology
2530 Post Road
Warwick, RI 02886

RE: Lincoln Lace & Braid (61891.05)
ESS Laboratory Work Order Number: 0910276

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Digitally signed by Melissa Pagliarini
Date: 2009.10.28 16:55:08 -04'00'

Laurel Stoddard
Laboratory Director

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

ESS Laboratory certifies that the test results meet the requirements of NELAC and A2LA, except where noted within this project narrative.



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid

ESS Laboratory Work Order: 0910276

SAMPLE RECEIPT

The following samples were received on October 20, 2009 for the analyses specified on the enclosed Chain of Custody Record.

These samples were originally received on October 2, 2009 as ESS Laboratory Sample IDs 0910039-01, 0910039-02 and 0910039-03.

Lab Number	SampleName	Matrix	Analysis
0910276-01	SW-U-S	Surface Water	§
0910276-02	SW-D-S	Surface Water	§
0910276-03	SW-SL	Surface Water	§



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid

ESS Laboratory Work Order: 0910276

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid
Client Sample ID: SW-U-S
Date Sampled: 10/02/09 09:00

ESS Laboratory Work Order: 0910276
ESS Laboratory Sample ID: 0910276-01
Sample Matrix: Surface Water
Units: §

200 Series/SM3113B Dissolved Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Lead	See Attached						

Environmental Chemistry
 Site Assessment
 Quality Assurance Services



Environmental Services
 Site Sampling
 Data Auditing

Elizabeth Ouk
 ESS Laboratory
 185 Frances Avenue
 Cranston, RI 02910-2211
 COLLECTED BY: Customer
 TIME: 9:00
 LOCATION: 0910276-01

REPORTED: 10/28/2009
 ORDER #: G0920929
 SAMPLE DATE: 10/2/2009
 DATE RECEIVED: 10/22/2009
 SAMPLE ID: Grab
 DESCRIPTION: WATER

CERTIFICATE OF ANALYSIS

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det Limits*	Result
Test Parameters					LAB-ID#: 0920929-01
Lead (Dissolved)	EPA 200.8	10/27/2009	mg/L	0.0004	0.0008

Due to matrix interference, reproducible arsenic results were unattainable.



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid
Client Sample ID: SW-D-S
Date Sampled: 10/02/09 09:15

ESS Laboratory Work Order: 0910276
ESS Laboratory Sample ID: 0910276-02
Sample Matrix: Surface Water
Units: §

200 Series/SM3113B Dissolved Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Lead	See Attached						

Environmental Chemistry
Site Assessment
Quality Assurance Services



Environmental Services
Site Sampling
Data Auditing

Elizabeth Ouk
ESS Laboratory
185 Frances Avenue
Cranston, RI 02910-2211
COLLECTED BY: Customer
TIME: 9:15
LOCATION: 0910276-02

REPORTED: 10/28/2009
ORDER #: G0920929
SAMPLE DATE: 10/2/2009
DATE RECEIVED: 10/22/2009
SAMPLE ID: Grab
DESCRIPTION: WATER

CERTIFICATE OF ANALYSIS

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det Limits*	Result
Test Parameters					LAB-ID#: <u>0920929-02</u>
Lead (Dissolved)	EPA 200.8	10/27/2009	mg/L	0.0004	0.0010

Due to matrix interference, reproducible arsenic results were unattainable.



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid
Client Sample ID: SW-SL
Date Sampled: 10/02/09 09:35

ESS Laboratory Work Order: 0910276
ESS Laboratory Sample ID: 0910276-03
Sample Matrix: Surface Water
Units: §

200 Series/SM3113B Dissolved Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Lead	See Attached						

Environmental Chemistry
 Site Assessment
 Quality Assurance Services



Environmental Services
 Site Sampling
 Data Auditing

Elizabeth Ouk
 ESS Laboratory
 185 Frances Avenue
 Cranston, RI 02910-2211
 COLLECTED BY: Customer
 TIME: 9:35
 LOCATION: 0910276-03

CERTIFICATE OF ANALYSIS

REPORTED: 10/28/2009
 ORDER #: G0920929
 SAMPLE DATE: 10/2/2009
 DATE RECEIVED: 10/22/2009
 SAMPLE ID: Grab
 DESCRIPTION: WATER

RESULTS OF ANALYSIS

Parameter	Analytical Method	Date Analyzed	Units	Det Limits*	Result
Test Parameters					
				LAB-ID#: <u>0920929-03</u>	
Lead (Dissolved)	EPA 200.8	10/27/2009	mg/L	0.0004	ND

Due to matrix interference, reproducible arsenic results were unattainable.

- NA = Not Applicable
- ND = Not Detected
- < = Less Than
- * = Detection Limit

Approved By: *Janet Murphy* 10/28/09
 Lab Manager / Date



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology

Client Project ID: Lincoln Lace & Braid

ESS Laboratory Work Order: 0910276

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid

ESS Laboratory Work Order: 0910276

Notes and Definitions

Z-08	See Attached
ND	Analyte NOT DETECTED above the detection limit (LOD for DoD Reports)
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
LOD	Limit of Detection
[CALC]	Calculated Analyte



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology

Client Project ID: Lincoln Lace & Braid

ESS Laboratory Work Order: 0910276

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: A-179

<http://www.health.ri.gov/labs/waterlabs-instate.php>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine Potable and Non Potable Water: RI002

http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/labcert/labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 242405

<http://www4.egov.nh.gov/des/nhelap/namesearch.asp>

New York (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301

http://www.mdc.state.md.us/assets/document/WSP_labs-2009apr20.pdf

South Carolina Volatile Organic Compounds in Potable Water: 78003

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Attachment B
Sediment and Iron Floc Analytical Report
9 October 2009



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

PROJECT NARRATIVE

Ron Mack
EA Engineering, Science, and Technology
2530 Post Road
Warwick, RI 02886

RE: Lincoln Lace & Braid Site
ESS Laboratory Work Order Number: 0910040

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this Project Narrative, the entire report has been paginated. The ESS Laboratory Certifications sheet is the final report page. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director



Digitally signed by Melissa Pagliarini
Date: 2009.10.09 16:15:34 -04'00'

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration may be used instead of automated integration because it produces more accurate results. All ICP Metals were analyzed using the established linear dynamic range to determine acceptable analytical results.

ESS Laboratory certifies that the test results meet the requirements of NELAC and A2LA, except where noted within this project narrative.

Sample Receipt

The following sample(s) were received on October 02, 2009 for the analyses specified on the enclosed Chain of Custody Record.

Laboratory ID	Matrix	Client SampleID
0910040-01	Soil	SED-01
0910040-02	Soil	SED-02
0910040-03	Soil	SED-03
0910040-04	Soil	SED-04
0910040-05	Soil	SED-05
0910040-06	Soil	SED-06
0910040-07	Soil	SED-07
0910040-08	Soil	SED-08
0910040-09	Sludge	Floc-01
0910040-10	Sludge	Floc-02



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910040

PROJECT NARRATIVE

3050B/6000/7000 Total Metals

BJ90724-DUP1 **Relative percent difference for duplicate is outside of criteria.**

Lead

BJ90724-MS1 **Matrix Spike recovery is above upper control limit.**

Iron

BJ90724-MS1 **Matrix Spike recovery is below lower control limit.**

Lead

No other observations noted.

End of Project Narrative.



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SED-01
Date Sampled: 10/02/09 10:30
Percent Solids: 77

ESS Laboratory Work Order: 0910040
ESS Laboratory Sample ID: 0910040-01
Sample Matrix: Soil

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	ND	mg/kg dry	1.84	7060A	7	5	JP	10/08/09 17:43	1.75	100
Iron	24900	mg/kg dry	148	6010B		20	JP	10/08/09 23:17	1.75	100
Lead	21.3	mg/kg dry	7.4	6010B	150	1	SVD	10/07/09 22:05	1.75	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SED-01
 Date Sampled: 10/02/09 10:30
 Percent Solids: 77
 Initial Volume: 19.7
 Final Volume: 1
 Extraction Method: 3546

ESS Laboratory Work Order: 0910040
 ESS Laboratory Sample ID: 0910040-01
 Sample Matrix: Soil
 Analyst: ML
 Prepared: 10/2/09 12:30

8100M Total Petroleum Hydrocarbons

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>
Total Petroleum Hydrocarbons	ND	mg/kg dry	49.4	500	1	10/05/09 16:35

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
Surrogate: O-Terphenyl	73 %		40-140



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SED-02
 Date Sampled: 10/02/09 10:40
 Percent Solids: 83

ESS Laboratory Work Order: 0910040
 ESS Laboratory Sample ID: 0910040-02
 Sample Matrix: Soil

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	ND	mg/kg dry	1.69	7060A	7	5	JP	10/08/09 17:49	1.76	100
Iron	4880	mg/kg dry	6.8	6010B		1	SVD	10/07/09 22:18	1.76	100
Lead	ND	mg/kg dry	6.8	6010B	150	1	SVD	10/07/09 22:18	1.76	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SED-02
Date Sampled: 10/02/09 10:40
Percent Solids: 83
Initial Volume: 19.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 0910040
ESS Laboratory Sample ID: 0910040-02
Sample Matrix: Soil
Analyst: ML
Prepared: 10/2/09 12:30

8100M Total Petroleum Hydrocarbons

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>
Total Petroleum Hydrocarbons	ND	mg/kg dry	45.6	500	1	10/05/09 17:10

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
Surrogate: O-Terphenyl	70 %		40-140



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SED-03
 Date Sampled: 10/02/09 10:50
 Percent Solids: 60

ESS Laboratory Work Order: 0910040
 ESS Laboratory Sample ID: 0910040-03
 Sample Matrix: Soil

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	2.82	mg/kg dry	2.30	7060A	7	5	JP	10/08/09 17:55	1.79	100
Iron	13200	mg/kg dry	9.3	6010B		1	SVD	10/07/09 22:22	1.79	100
Lead	72.1	mg/kg dry	9.3	6010B	150	1	SVD	10/07/09 22:22	1.79	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SED-03
 Date Sampled: 10/02/09 10:50
 Percent Solids: 60
 Initial Volume: 20
 Final Volume: 1
 Extraction Method: 3546

ESS Laboratory Work Order: 0910040
 ESS Laboratory Sample ID: 0910040-03
 Sample Matrix: Soil
 Analyst: ML
 Prepared: 10/2/09 12:30

8100M Total Petroleum Hydrocarbons

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>
Total Petroleum Hydrocarbons	ND	mg/kg dry	62.5	500	1	10/05/09 18.25

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
Surrogate: O-Terphenyl	88 %		40-140



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SED-04
Date Sampled: 10/02/09 11:05
Percent Solids: 68

ESS Laboratory Work Order: 0910040
ESS Laboratory Sample ID: 0910040-04
Sample Matrix: Soil

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	3.09	mg/kg dry	2.07	7060A	7	5	JP	10/08/09 18:01	1.76	100
Iron	10200	mg/kg dry	8.4	6010B		1	SVD	10/07/09 22:27	1.76	100
Lead	69.4	mg/kg dry	8.4	6010B	150	1	SVD	10/07/09 22:27	1.76	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SED-04
 Date Sampled: 10/02/09 11:05
 Percent Solids: 68
 Initial Volume: 20.7
 Final Volume: 1
 Extraction Method: 3546

ESS Laboratory Work Order: 0910040
 ESS Laboratory Sample ID: 0910040-04
 Sample Matrix: Soil
 Analyst: ML
 Prepared: 10/2/09 12:30

8100M Total Petroleum Hydrocarbons

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>
Total Petroleum Hydrocarbons	ND	mg/kg dry	53.3	500	1	10/05/09 19:00
<i>Surrogate: O-Terphenyl</i>		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>		
		92 %		40-140		



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SED-05
 Date Sampled: 10/02/09 11:20
 Percent Solids: 77

ESS Laboratory Work Order: 0910040
 ESS Laboratory Sample ID: 0910040-05
 Sample Matrix: Soil

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	ND	mg/kg dry	1.84	7060A	7	5	JP	10/08/09 18:07	1.75	100
Iron	10400	mg/kg dry	7.4	6010B		1	SVD	10/07/09 22:31	1.75	100
Lead	24.6	mg/kg dry	7.4	6010B	150	1	SVD	10/07/09 22:31	1.75	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SED-05
Date Sampled: 10/02/09 11:20
Percent Solids: 77
Initial Volume: 20.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 0910040
ESS Laboratory Sample ID: 0910040-05
Sample Matrix: Soil
Analyst: ML
Prepared: 10/2/09 12:30

8100M Total Petroleum Hydrocarbons

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>
Total Petroleum Hydrocarbons	ND	mg/kg dry	46.6	500	1	10/05/09 17:51

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
<i>Surrogate: O-Terphenyl</i>	78 %		40-140



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SED-06
Date Sampled: 10/02/09 11:35
Percent Solids: 62

ESS Laboratory Work Order: 0910040
ESS Laboratory Sample ID: 0910040-06
Sample Matrix: Soil

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	3.55	mg/kg dry	2.21	7060A	7	5	JP	10/08/09 18:36	1.81	100
Iron	11600	mg/kg dry	8.9	6010B		1	SVD	10/07/09 22:54	1.81	100
Lead	48.8	mg/kg dry	8.9	6010B	150	1	SVD	10/07/09 22:54	1.81	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SED-06
Date Sampled: 10/02/09 11:35
Percent Solids: 62
Initial Volume: 20.3
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 0910040
ESS Laboratory Sample ID: 0910040-06
Sample Matrix: Soil
Analyst: ML
Prepared: 10/2/09 12:30

8100M Total Petroleum Hydrocarbons

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>
Total Petroleum Hydrocarbons	ND	mg/kg dry	59.6	500	1	10/05/09 19:34

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
Surrogate: <i>O-Terphenyl</i>	89 %		40-140



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: SED-07
Date Sampled: 10/02/09 11:50
Percent Solids: 71

ESS Laboratory Work Order: 0910040
ESS Laboratory Sample ID: 0910040-07
Sample Matrix: Soil

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	3.97	mg/kg dry	1.99	7060A	7	5	JP	10/08/09 18:53	1.75	100
Iron	30300	mg/kg dry	161	6010B		20	JP	10/08/09 23:22	1.75	100
Lead	1270	mg/kg dry	8.1	6010B	150	1	SVD	10/07/09 22:58	1.75	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lacc & Braid Site
 Client Sample ID: SED-07
 Date Sampled: 10/02/09 11:50
 Percent Solids: 71
 Initial Volume: 20.2
 Final Volume: 1
 Extraction Method: 3546

ESS Laboratory Work Order: 0910040
 ESS Laboratory Sample ID: 0910040-07
 Sample Matrix: Soil
 Analyst: ML
 Prepared: 10/2/09 12:30

8100M Total Petroleum Hydrocarbons

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>
Total Petroleum Hydrocarbons	158	mg/kg dry	52.3	500	1	10/05/09 20:09

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
Surrogate: O-Terphenyl	104 %		40-140



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology

Client Project ID: Lincoln Lace & Braid Site

Client Sample ID: SED-08

Date Sampled: 10/02/09 12:20

Percent Solids: 57

ESS Laboratory Work Order: 0910040

ESS Laboratory Sample ID: 0910040-08

Sample Matrix: Soil

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	7.71	mg/kg dry	2.40	7060A	7	5	JP	10/08/09 18:59	1.81	100
Iron	105000	mg/kg dry	194	6010B		20	JP	10/08/09 23:34	1.81	100
Lead	398	mg/kg dry	9.7	6010B	150	1	SVD	10/07/09 23:11	1.81	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site
 Client Sample ID: SED-08
 Date Sampled: 10/02/09 12:20
 Percent Solids: 57
 Initial Volume: 20.2
 Final Volume: 1
 Extraction Method: 3546

ESS Laboratory Work Order: 0910040
 ESS Laboratory Sample ID: 0910040-08
 Sample Matrix: Soil
 Analyst: ML
 Prepared: 10/2/09 12:30

8100M Total Petroleum Hydrocarbons

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>
Total Petroleum Hydrocarbons	370	mg/kg dry	65.1	500	1	10/05/09 20:44

	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>
Surrogate: <i>O-Terphenyl</i>	105 %		40-140



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: Floc-01
Date Sampled: 10/02/09 10:20
Percent Solids: N/A

ESS Laboratory Work Order: 0910040
ESS Laboratory Sample ID: 0910040-09
Sample Matrix: Sludge

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	ND	mg/kg wet	2.40	7060A	7	5	JP	10/08/09 19:04	1.03	100
Lead	ND	mg/kg wet	9.7	6010B	150	1	SVD	10/07/09 23:16	1.03	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
Client Project ID: Lincoln Lace & Braid Site
Client Sample ID: Floc-02
Date Sampled: 10/02/09 12:05
Percent Solids: N/A

ESS Laboratory Work Order: 0910040
ESS Laboratory Sample ID: 0910040-10
Sample Matrix: Sludge

3050B/6000/7000 Total Metals

RI - RES DEC

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>
Arsenic	ND	mg/kg wet	2.15	7060A	7	5	JP	10/08/09 19:10	1.15	100
Lead	ND	mg/kg wet	8.7	6010B	150	1	SVD	10/07/09 23:21	1.15	100



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910040

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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3050B/6000/7000 Total Metals

Batch BJ90724 - 3050B

Blank										
Arsenic	ND	0.33	mg/kg wet							
Iron	ND	6.7	mg/kg wet							
Lead	ND	6.7	mg/kg wet							
LCS										
Arsenic	37.0	6.60	mg/kg wet	33.33		111	80-120			
Iron	168	6.7	mg/kg wet	166.7		101	80-120			
Lead	33.7	6.7	mg/kg wet	33.33		101	80-120			
LCS Dup										
Arsenic	36.8	6.60	mg/kg wet	33.33		110	80-120	0.8	20	
Iron	167	6.7	mg/kg wet	166.7		100	80-120	0.6	20	
Lead	33.5	6.7	mg/kg wet	33.33		100	80-120	0.6	20	
Duplicate Source: 0910040-05										
Arsenic	0.644	1.79	mg/kg dry		1.35			71	35	
Iron	8170	7.2	mg/kg dry		10400			24	35	
Lead	12.2	7.2	mg/kg dry		24.6			67	35	D+
Matrix Spike Source: 0910040-05										
Arsenic	29.9	7.26	mg/kg dry	36.69	1.35	78	75-125			
Iron	12400	7.3	mg/kg dry	183.4	10400	NR	75-125			M+
Lead	45.1	7.3	mg/kg dry	36.69	24.6	56	75-125			M-
Reference										
Arsenic	180	24.8	mg/kg wet	158.0		114	82-118			
Iron	13900	10.0	mg/kg wet	18600		75	50-149			
Lead	170	10.0	mg/kg wet	172.0		99	79-120			

8100M Total Petroleum Hydrocarbons

Batch BJ90212 - 3546

Blank										
Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							
Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons	ND	37.5	mg/kg wet							
Tricontane (C30)	ND	0.2	mg/kg wet							
<i>Surrogate: O-Terphenyl</i>	4.23		mg/kg wet	5.000		85	40-140			



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology
 Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910040

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch B390212 - 3546										
LCS										
Decane (C10)	1.9	0.2	mg/kg wet	2.500		76	40-140			
Docosane (C22)	2.2	0.2	mg/kg wet	2.500		89	40-140			
Dodecane (C12)	2.2	0.2	mg/kg wet	2.500		86	40-140			
Eicosane (C20)	2.2	0.2	mg/kg wet	2.500		89	40-140			
Hexacosane (C26)	2.2	0.2	mg/kg wet	2.500		87	40-140			
Hexadecane (C16)	2.2	0.2	mg/kg wet	2.500		86	40-140			
Nonadecane (C19)	2.4	0.2	mg/kg wet	2.500		94	40-140			
Nonane (C9)	1.6	0.2	mg/kg wet	2.500		66	30-140			
Octacosane (C28)	2.2	0.2	mg/kg wet	2.500		88	40-140			
Octadecane (C18)	2.2	0.2	mg/kg wet	2.500		88	40-140			
Tetracosane (C24)	2.2	0.2	mg/kg wet	2.500		90	40-140			
Tetradecane (C14)	2.1	0.2	mg/kg wet	2.500		84	40-140			
Tricontane (C30)	2.2	0.2	mg/kg wet	2.500		90	40-140			
<i>Surrogate: O-Terphenyl</i>	<i>4.30</i>		<i>mg/kg wet</i>	<i>5.000</i>		<i>86</i>	<i>40-140</i>			
LCS Dup										
Decane (C10)	1.7	0.2	mg/kg wet	2.500		69	40-140	9	50	
Docosane (C22)	2.0	0.2	mg/kg wet	2.500		79	40-140	11	50	
Dodecane (C12)	2.0	0.2	mg/kg wet	2.500		79	40-140	8	50	
Eicosane (C20)	2.0	0.2	mg/kg wet	2.500		79	40-140	11	50	
Hexacosane (C26)	1.9	0.2	mg/kg wet	2.500		78	40-140	11	50	
Hexadecane (C16)	2.0	0.2	mg/kg wet	2.500		79	40-140	9	50	
Nonadecane (C19)	2.1	0.2	mg/kg wet	2.500		85	40-140	10	50	
Nonane (C9)	1.5	0.2	mg/kg wet	2.500		62	30-140	6	50	
Octacosane (C28)	2.0	0.2	mg/kg wet	2.500		78	40-140	11	50	
Octadecane (C18)	2.0	0.2	mg/kg wet	2.500		80	40-140	10	50	
Tetracosane (C24)	2.0	0.2	mg/kg wet	2.500		80	40-140	11	50	
Tetradecane (C14)	1.9	0.2	mg/kg wet	2.500		77	40-140	8	50	
Tricontane (C30)	2.0	0.2	mg/kg wet	2.500		80	40-140	12	50	
<i>Surrogate: O-Terphenyl</i>	<i>3.83</i>		<i>mg/kg wet</i>	<i>5.000</i>		<i>77</i>	<i>40-140</i>			



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology

Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910040

Notes and Definitions

U	Analyte included in the analysis, but not detected
M+	Matrix Spike recovery is above upper control limit.
M-	Matrix Spike recovery is below lower control limit.
D+	Relative percent difference for duplicate is outside of criteria.
D	Diluted.
ND	Analyte NOT DETECTED above the detection limit
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: EA Engineering, Science, and Technology

Client Project ID: Lincoln Lace & Braid Site

ESS Laboratory Work Order: 0910040

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: A-179

<http://www.health.ri.gov/labs/waterlabs-instate.php>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine Potable and Non Potable Water: RI002

http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/labcert/labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 242405

<http://www4.egov.nh.gov/des/nhelap/namesearch.asp>

New York (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301

http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

South Carolina Volatile Organic Compounds in Potable Water: 78003

CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01

Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)

<http://www.A2LA.org/dirsearchnew/newsearch.cfm>

CPSC ID# 1141

Lead Paint, Lead in Children's Metals Jewelry

<http://www.cpsc.gov/cgi-bin/labapplist.aspx>

Turn Time: Standard Other _____
 If faster than 5 days, prior approval by laboratory is required # _____
 State where samples were collected from: MA CT NH NJ NY ME Other _____
 Reporting Limits: RI
 Electronic Deliverable: RES: GA
 Format: Excel Access PDF Other _____
 Electronic Deliverable: Yes No _____
 Project Name (20 Char. or less): _____
 USACE Other _____

ESS LAB PROJECT ID: 0910040
 Project # 02886
 Project Name (20 Char. or less): Lincoln Lake + Brand
 Address: 2350 Post Road
 City: Warwick State: RI Zip: 02886
 Telephone # 401-736-3440 Fax # 401-736-3440
 Email Address: smack@east.com

ESS LAB Sample #	Date	Collection Time	COMP	CKAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Type of Containers	Number of Containers	Write Required Analysis
1	10/2/09	9:00	X SW			SW-U/S	1	1	1	Total Pb Total As Dissolved Pb Dissolved As VOC SVOC TPH LAB FILTER
2		9:15				SW-D/S	1	1	1	
3		9:35				SW-SL	1	1	1	
4		10:30				SED-01	1	1	1	
5		10:40				SED-02	1	1	1	
6		10:50				SED-03	1	1	1	
7		11:05				SED-04	1	1	1	
8		11:20				SED-05	1	1	1	
9		11:35				SED-06	1	1	1	
10		11:50				SED-07	1	1	1	

Containers: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters
 Cooler Present: Yes No Internal Use Only: Yes No NA: Pickup Technicians
 Seals Intact: Yes No NA: Pickup Technicians
 Cooler Temp: 3.1 C
 Preservation Code: 1- NP, 2- HCl, 3- H₂SO₄, 4- HNO₃, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____
 Sampled by: RGM: MDR
 Comments: SEE LAUREL STANDARD RE: FLOC-01 AND FLOC-02
- CAUTION: GLASS PRESENT IN SOME SED SAMPLES
 Relinquished by: (Signature) [Signature] Date/Time 10/2/09 2:30
 Received by: (Signature) [Signature] Date/Time 10/2/09 12:30
 Relinquished by: (Signature) _____ Date/Time _____
 Received by: (Signature) _____ Date/Time _____

