APPENDIX D – DATA VALIDATION REPORT

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

LDC #13714/13965
November 17, 2005

Windward Environmental, LLC
200 West Mercer Street, Suite 401
Seattle, WA 98119
ATTN: Ms. Marina Mitchell

SUBJECT: Lower Duwamish Waterway Group Porewater Sample Data Validation

Dear Ms. Mitchell,

Enclosed is our revised EPA Level III and Level IV data validation of analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The primary analyses were performed by Analytical Resources, Inc. Samples were analyzed for GC/MS Volatiles by EPA SW 846 Method 8260B. Samples are referenced under the following Sample Delivery Groups: IE76, IE93, IF11, and II78. See the Sample Analysis Table (Attachment 1) for the number of samples reviewed.

Please feel free to contact us if you have any questions.

Sincerely,

Stella S. Cuenco
Project Manager/Senior Chemist

Attachment 1

PDF **LDC #13714 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group, Porewater)**

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)																															
Matrix: Water/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	IE76	07/08/05	07/29/05	4	0																														
B	IE93	07/08/05	07/29/05	8	0																														
C	IF11	07/08/05	07/29/05	5	0																														
Total	B/SC			17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Attachment 1

PDF

LDC #13965 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group, Porewater)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)																													
Matrix: Water/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	II78	08/29/05	09/20/05	22	0																												
Total	B/SC			22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

CHEMICAL DATA QUALITY REVIEW FOR POREWATER SAMPLES

Lower Duwamish Waterway Group
LDC# 13714 & 13965

This report details the findings of an EPA Level III and Level IV data validation of analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The primary analyses were performed by Analytical Resources, Inc. Samples were analyzed for GC/MS Volatiles by EPA SW 846 Method 8260B. Samples are referenced under the following Sample Delivery Groups: IE76, IE93, IF11, and II78. See the Sample Analysis Table (Attachment 1) for the number of samples reviewed and the Sample Validation Table (Attachment 2) for the sample identifications and analyses. Sample IDs ending in "**" underwent Level IV review.

The QC guidelines used for data qualification are those specified in the National Functional Guidelines for Organic Data Review (October 1999). Specific QC criteria used follows the Porewater Sampling of the Lower Duwamish Waterway Quality Assurance Project Plan (May 31, 2005). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The following items were evaluated during the review:

- Holding Times
- Sample Preservation
- Cooler Temperatures
- Instrument Calibration
- Blanks
- Surrogates
- Matrix Spike/Matrix Spike Duplicates
- Internal Standards
- Laboratory Control Samples
- Target Compound Identifications*
- Compound Quantitation and CRQLs*
- System Performance
- Field Duplicates

*Data were not reviewed for Level III.

Only issues which require comment or action are discussed in this report. Data deficiencies are arranged by method. Potential effects of data anomalies have been described where possible.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

Overall Data Assessment

Based upon the information reviewed, the overall data quality is considered acceptable with the noted limitations.

***I. Usability**

Instrument calibration, method, rinsate and equipment blank contamination and QC exceedance problems have warranted the qualification of a portion of the data set. No data was rejected.

Instrument calibration problems have warranted the qualification of detected results as estimated (J) and non-detected results as estimated (UJ) for several compounds.

Method, rinsate and equipment blank contamination have warranted the qualification of several compounds as non-detected (U).

Other QC accuracy and precision exceedances have warranted the qualification of detected results as estimated (J) and non-detected results as estimated (UJ) for several compounds.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J, UJ) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

GC/MS Volatiles by EPA SW 846 Method 8260B

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r2) was greater than or equal to 0.990 .

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria with the following exceptions:

Associated SDG	Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
IE76 IE93 IF11	6/20/05	Acrolein 2-Chloroethylvinyl ether 4-Methyl-2-pentanone	0.02515 (≥0.05) 0.04315 (≥0.05) 0.04723 (≥0.05)	LDW-PW-B-PZ-12** LDW-PW-B-PZ-09** LDW-PW-B-PZ-08** TRIP BLANK (6/21/05)** LDW-PW-B-PZ-11 LDW-PW-B-PZ-10 LDW-PW-B-PZ-7 LDW-PW-G-PZ-4 LDW-PW-G-PZ-1 LDW-PW-PZ-EPARB LDW-PW-PZ-MHERB TRIP BLANK (6/22/05) LDW-PW-G-PZ-05 LDW-PW-G-PZ-03 LDW-PW-G-PZ-06 LDW-PW-G-PZ-02 TRIP BLANK (6/23/05)	J (all detects) UJ (all non-detects)	A

Associated SDG	Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
II78	8/5/05	Acrolein 1,2-Dibromo-3-chloropropane	0.03432 (≥0.05) 0.02911 (≥0.05)	LDW-PW-B-PE-12 LDW-PW-B-PE-14 LDW-PW-B-PE-16 LDW-PW-B-PE-10 LDW-PW-B-PE-201 LDW-PW-B-PE-202 LDW-PW-G-PE-04 LDW-PW-G-PE-03 LDW-PW-G-PE-02 LDW-PW-G-PE-02DL LDW-PW-G-PE-01 LDW-PW-G-PE-05 LDW-PW-G-PE-06 LDW-PW-G-PE-07 LDW-PW-G-PE-08 LDW-PW-G-PE-203 LDW-PW-G-PE-204 LDW-PW-B-PE-09 LDW-PW-B-PE-11 LDW-PW-B-PE-13 LDW-PW-B-PE-15 LDW-PW-PE-01-EB TRIP BLANKS	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% with the following exceptions:

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
IE76 IE93	6/23/05	Acrolein Acetone	29.88882 26.87961	LDW-PW-B-PZ-12** LDW-PW-B-PZ-09** LDW-PW-B-PZ-08** TRIP BLANK (6/21/05)** LDW-PW-B-PZ-11 LDW-PW-B-PZ-10 LDW-PW-B-PZ-7 LDW-PW-G-PZ-4 LDW-PW-G-PZ-1 LDW-PW-PZ-EPARB LDW-PW-PZ-MHERB TRIP BLANK (6/22/05)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
IF11	6/24/05	Bromomethane Methyl iodide Dibromochloromethane	48.66726 57.88063 25.92112	LDW-PW-G-PZ-05 LDW-PW-G-PZ-03 LDW-PW-G-PZ-06 LDW-PW-G-PZ-02 TRIP BLANK (6/23/05)	J (all detects) UJ (all non-detects)	A

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
II78	8/9/05	Chloromethane	29.88071	LDW-PW-B-PE-201 LDW-PW-B-PE-202 LDW-PW-G-PE-04 LDW-PW-G-PE-03 LDW-PW-G-PE-02 LDW-PW-G-PE-05 LDW-PW-G-PE-06 LDW-PW-G-PE-203 LDW-PW-G-PE-204 LDW-PW-B-PE-11 LDW-PW-B-PE-13	J (all detects) UJ (all non-detects)	A
II78	8/10/05 (CC0610)	2-Chloroethylvinyl ether	43.51996	LDW-PW-G-PE-06RE LDW-PW-G-PE-204RE	J (all detects) UJ (all non-detects)	A
II78	8/10/05 (0460810A)	Bromomethane	29.76774	LDW-PW-G-PE-02DL LDW-PW-G-PE-01 LDW-PW-G-PE-07 LDW-PW-G-PE-08 LDW-PW-B-PE-09 LDW-PW-B-PE-15 LDW-PW-PE-01-EB TRIP BLANKS	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria with the following exceptions:

Associated SDG	Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
IE76 IE93	6/23/05	Acrolein Acetone	0.03267 (≥0.05) 0.04081 (≥0.05)	LDW-PW-B-PZ-12** LDW-PW-B-PZ-09** LDW-PW-B-PZ-08** TRIP BLANK (6/21/05)** LDW-PW-B-PZ-11 LDW-PW-B-PZ-10 LDW-PW-B-PZ-7 LDW-PW-G-PZ-4 LDW-PW-G-PZ-1 LDW-PW-PZ-EPARB LDW-PW-PZ-MHERB TRIP BLANK (6/22/05)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
IF11	6/24/05	Acrolein 2-Chloroethylvinyl ether	0.03053 (≥0.05) 0.04115 (≥0.05)	LDW-PW-G-PZ-05 LDW-PW-G-PZ-03 LDW-PW-G-PZ-06 LDW-PW-G-PZ-02 TRIP BLANK (6/23/05)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
II78	8/8/05	Acrolein 1,2-Dibromo-3-chloropropane	0.03161 (≥0.05) 0.02537 (≥0.05)	LDW-PW-B-PE-12 LDW-PW-B-PE-14 LDW-PW-B-PE-16 LDW-PW-B-PE-10	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

*Indicates change as the result of report review.

Associated SDG	Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
II78	8/9/05	Acrolein 1,2-Dibromo-3-chloropropane	0.03540 (≥0.05) 0.03189 (≥0.05)	LDW-PW-B-PE-201 LDW-PW-B-PE-202 LDW-PW-G-PE-04 LDW-PW-G-PE-03 LDW-PW-G-PE-02 LDW-PW-G-PE-05 LDW-PW-G-PE-06 LDW-PW-G-PE-203 LDW-PW-G-PE-204 LDW-PW-B-PE-11 LDW-PW-B-PE-13	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
II78	8/10/05	Acrolein 1,2-Dibromo-3-chloropropane	0.03494 (≥0.05) 0.03417 (≥0.05)	LDW-PW-G-PE-02DL LDW-PW-G-PE-01 LDW-PW-G-PE-07 LDW-PW-G-PE-08 LDW-PW-B-PE-09 LDW-PW-B-PE-15 LDW-PW-PE-01-EB TRIP BLANKS	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

*V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Associated SDG	Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
IE76 IE93	MB-062305	6/23/05	Methylene chloride	0.3 ug/L	LDW-PW-B-PZ-12** LDW-PW-B-PZ-09** LDW-PW-B-PZ-08** TRIP BLANK (6/21/05)** LDW-PW-B-PZ-11 LDW-PW-B-PZ-10 LDW-PW-B-PZ-7 LDW-PW-G-PZ-4 LDW-PW-G-PZ-1 LDW-PW-PZ-EPARB LDW-PW-PZ-MHERB TRIP BLANK (6/22/05)
IF11	MB-062405	6/24/05	Acetone	1.2 ug/L	LDW-PW-G-PZ-05 LDW-PW-G-PZ-03 LDW-PW-G-PZ-06 LDW-PW-G-PZ-02 TRIP BLANK (6/23/05)

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Associated SDG	Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
IF11	LDW-PW-G-PZ-05	Acetone	3.3 ug/L	3.3U ug/L
IF11	LDW-PW-G-PZ-03	Acetone	2.2 ug/L	2.2U ug/L
IF11	LDW-PW-G-PZ-06	Acetone	6.2 ug/L	6.2U ug/L
IF11	LDW-PW-G-PZ-02	Acetone	3.2 ug/L	3.2U ug/L
IF11	TRIP BLANK (6/23/05)	Acetone	1.2 ug/L	1.2U ug/L

Samples "TRIP BLANK (6/21/05)**" (SDG IE76), "TRIP BLANK (6/22/05)" (SDG IE93), and "TRIP BLANK (6/23/05)" (SDG IF11), and sample "TRIP BLANKS" (SDG II78) were identified as trip blanks. No volatile contaminants were found in these blanks with the following exceptions:

Associated SDG	Trip Blank ID	Compound	Concentration	Associated Samples
IF11	TRIP BLANK (6/23/05)	Acetone	1.2 ug/L	LDW-PW-G-PZ-05 LDW-PW-G-PZ-03 LDW-PW-G-PZ-06 LDW-PW-G-PZ-02

Samples LDW-PW-PZ-EPARB and LDW-PW-PZ-MHERB (SDG IE93) were identified as rinsate blanks. No volatile contaminants were found in these blanks with the following exceptions:

Associated SDG	Rinsate Blank ID	Compound	Concentration	Associated Samples
*IE93	LDW-PW-PZ-EPARB	Vinyl chloride Acetone cis-1,2-Dichloroethene Toluene Trichlorofluoromethane	0.5 ug/L 5.0 ug/L 0.9 ug/L 0.5 ug/L 0.3 ug/L	LDW-PW-B-PZ-7 LDW-PW-G-PZ-4 LDW-PW-G-PZ-1
*IF11	LDW-PW-PZ-EPARB (SDG IE93)	Vinyl chloride Acetone cis-1,2-Dichloroethene Toluene Trichlorofluoromethane	0.5 ug/L 5.0 ug/L 0.9 ug/L 0.5 ug/L 0.3 ug/L	LDW-PW-G-PZ-05 LDW-PW-G-PZ-03 LDW-PW-G-PZ-06 LDW-PW-G-PZ-02
*IE93	LDW-PW-PZ-MHERB	Acetone Toluene	4.6 ug/L 0.4 ug/L	LDW-PW-B-PZ-11 LDW-PW-B-PZ-10
*IE76	LDW-PW-PZ-MHERB (SDG IE93)	Acetone Toluene	4.6 ug/L 0.4 ug/L	LDW-PW-B-PZ-12** LDW-PW-B-PZ-09** LDW-PW-B-PZ-08**

Sample LDW-PW-PE-01-EB (SDG II78) was identified as an equipment blank. No volatile contaminants were found in this blank with the following exceptions:

Associated SDG	Equipment Blank ID	Compound	Concentration	Associated Samples
II78	LDW-PW-PE-01-EB	1,3,5-Trimethylbenzene Acetone 1,2,4-Trimethylbenzene 2-Butanone Benzene Ethylbenzene m,p-Xylenes o-Xylene n-Propylbenzene n-Butylbenzene Naphthalene	1.0 ug/L 48 ug/L 3.1 ug/L 1.5 ug/L 1.3 ug/L 0.4 ug/L 1.8 ug/L 1.5 ug/L 0.4 ug/L 0.2 ug/L 1.4 ug/L	LDW-PW-B-PE-12 LDW-PW-B-PE-14 LDW-PW-B-PE-16 LDW-PW-B-PE-10 LDW-PW-B-PE-201 LDW-PW-B-PE-202 LDW-PW-G-PE-04 LDW-PW-G-PE-03 LDW-PW-G-PE-02 LDW-PW-G-PE-02DL LDW-PW-G-PE-01 LDW-PW-G-PE-05 LDW-PW-G-PE-05RE LDW-PW-G-PE-06 LDW-PW-G-PE-06RE LDW-PW-G-PE-07 LDW-PW-G-PE-08 LDW-PW-G-PE-203 LDW-PW-G-PE-203RE LDW-PW-G-PE-204 LDW-PW-G-PE-204RE LDW-PW-B-PE-09 LDW-PW-B-PE-11 LDW-PW-B-PE-13 LDW-PW-B-PE-15

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
*IE76	LDW-PW-B-PZ-12**	Acetone	1.8 ug/L	1.8U ug/L
*IE76	LDW-PW-B-PZ-09**	Acetone	2.2 ug/L	2.2U ug/L
*IE76	LDW-PW-B-PZ-08**	Acetone	1.3 ug/L	1.3U ug/L
IE93	LDW-PW-B-PZ-7	Acetone Trichlorofluoromethane	1.5 ug/L 0.2 ug/L	1.5U ug/L 0.2U ug/L
IE93	LDW-PW-G-PZ-4	Vinyl chloride Acetone cis-1,2-Dichloroethene	1.6 ug/L 1.4 ug/L 2.0 ug/L	1.6U ug/L 1.4U ug/L 2.0U ug/L
IE93	LDW-PW-G-PZ-1	cis-1,2-Dichloroethene	1.4 ug/L	1.4U ug/L
IF11	LDW-PW-G-PZ-05	Acetone	3.3 ug/L	3.3U ug/L
IF11	LDW-PW-G-PZ-03	Acetone	2.2 ug/L	2.2U ug/L

*Indicates change as the result of report review.

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
IF11	LDW-PW-G-PZ-06	Acetone	6.2 ug/L	6.2U ug/L
IF11	LDW-PW-G-PZ-02	Acetone	3.2 ug/L	3.2U ug/L
II78	LDW-PW-B-PE-12	Acetone	60 ug/L	60U ug/L
II78	LDW-PW-B-PE-14	Acetone	5.7 ug/L	5.7U ug/L
II78	LDW-PW-B-PE-16	Acetone	48 ug/L	48U ug/L
II78	LDW-PW-B-PE-10	Acetone	9.3 ug/L	9.3U ug/L
II78	LDW-PW-B-PE-201	Acetone	12 ug/L	12U ug/L
II78	LDW-PW-B-PE-202	Acetone	12 ug/L	12U ug/L
II78	LDW-PW-G-PE-04	Acetone	6.4 ug/L	6.4U ug/L
II78	LDW-PW-G-PE-03	Acetone 1,2,4-Trimethylbenzene o-Xylene	71 ug/L 0.2 ug/L 0.3 ug/L	71U ug/L 0.2U ug/L 0.3U ug/L
II78	LDW-PW-G-PE-02	Acetone	4.5 ug/L	4.5U ug/L
II78	LDW-PW-G-PE-02DL (5x)	Acetone	7.6 ug/L	7.6U ug/L
II78	LDW-PW-G-PE-01	Acetone 1,2,4-Trimethylbenzene 2-Butanone	33 ug/L 0.2 ug/L 2.4 ug/L	33U ug/L 0.2U ug/L 2.4U ug/L
II78	LDW-PW-G-PE-05	Acetone Benzene	2.6 ug/L 3.0 ug/L	2.6U ug/L 3.0U ug/L
II78	LDW-PW-G-PE-06	Acetone Ethylbenzene m,p-Xylenes o-Xylene	3.5 ug/L 1.3 ug/L 0.7 ug/L 1.3 ug/L	3.5U ug/L 1.3U ug/L 0.7U ug/L 1.3U ug/L
II78	LDW-PW-G-PE-07 (2x)	Acetone Benzene	64 ug/L 2.2 ug/L	64U ug/L 2.2U ug/L
II78	LDW-PW-G-PE-08	Acetone Benzene o-Xylene	28 ug/L 3.2 ug/L 0.5 ug/L	28U ug/L 3.2U ug/L 0.5U ug/L
II78	LDW-PW-G-PE-203	Acetone Benzene Ethylbenzene o-Xylene	13 ug/L 2.4 ug/L 0.2 ug/L 0.6 ug/L	13U ug/L 2.4U ug/L 0.2U ug/L 0.6U ug/L

*Indicates change as the result of report review.

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
II78	LDW-PW-G-PE-203RE (5x)	Acetone Benzene	6.9 ug/L 1.6 ug/L	6.9U ug/L 1.6U ug/L
II78	LDW-PW-G-PE-204	Acetone Benzene Ethylbenzene o-Xylene	36 ug/L 4.7 ug/L 0.6 ug/L 0.7 ug/L	36U ug/L 4.7U ug/L 0.6U ug/L 0.7U ug/L
II78	LDW-PW-G-PE-204RE (5x)	Acetone Benzene	33 ug/L 4.2 ug/L	33U ug/L 4.2U ug/L
II78	LDW-PW-B-PE-09	Acetone	20 ug/L	20U ug/L
II78	LDW-PW-B-PE-11	Acetone Benzene	3.7 ug/L 0.4 ug/L	3.7U ug/L 0.4U ug/L
II78	LDW-PW-B-PE-13	Acetone	4.7 ug/L	4.7U ug/L
II78	LDW-PW-B-PE-15	Acetone 1,2,4-Trimethylbenzene	9.6 ug/L 0.3 ug/L	9.6U ug/L 0.3U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

*VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
IE93	LDW-PW-B-PZ-10MS/MSD (LDW-PW-B-PZ-10)	Chloromethane Bromomethane Vinyl chloride Methyl iodide	61.0 (75-125) 62.5 (75-125) 72.5 (75-125) -	57.5 (75-125) 62.5 (75-125) 70.0 (75-125) 67.5 (75-125)	- - - -	J (all detects) UJ (all non-detects)	A
IE93	LDW-PW-B-PZ-10MS/MSD (LDW-PW-B-PZ-10)	Acetone Bromodichloromethane 4-Methyl-2-pentanone 2-Hexanone Acrolein 1,2-Dibromo-3-chloropropane	140 (75-125) - 130 (75-125) - 137 (75-125) 130 (75-125)	137 (75-125) 130 (75-125) 144 (75-125) 134 (75-125) 152 (75-125) 135 (75-125)	- - - - - -	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A
II78	LDW-PW-B-PE-201MS/MSD (LDW-PW-B-PE-201)	Chloromethane Bromomethane Hexachlorobutadiene n-Butylbenzene	67.5 (75-125) 65.0 (75-125) 62.5 (75-125) 72.5 (75-125)	65.0 (75-125) 62.5 (75-125) 55.0 (75-125) 65.0 (75-125)	- - - -	J (all detects) UJ (all non-detects)	A

Associated SDG	Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
II78	LDW-PW-B-PE-201MS/MSD (LDW-PW-B-PE-201)	2-Butanone 4-Methyl-2-pentanone 1,2-Dibromo-3-chloropropane	138 (75-125) - 135 (75-125)	131 (75-125) 128 (75-125) -	- - -	J (all detects) J (all detects) J (all detects)	A
II78	LDW-PW-PE-01-EBMS/MSD (LDW-PW-PE-01-EB)	Bromomethane Methyl iodide	67.5 (75-125) 70.0 (75-125)	70.0 (75-125) -	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Associated SDG	LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
IE76 IE93	LCS-062305 (LDW-PW-B-PZ-12** LDW-PW-B-PZ-09** LDW-PW-B-PZ-08** TRIP BLANK (6/21/05)** LDW-PW-B-PZ-11 LDW-PW-B-PZ-10 LDW-PW-B-PZ-7 LDW-PW-G-PZ-4 LDW-PW-G-PZ-1 LDW-PW-PZ-EPARB LDW-PW-PZ-MHERB TRIP BLANK (6/22/05))	Acrolein	142 (75-125)	-	-	J (all detects)	P
IE76 IE93	LCS-062305 (LDW-PW-B-PZ-12** LDW-PW-B-PZ-09** LDW-PW-B-PZ-08** TRIP BLANK (6/21/05)** LDW-PW-B-PZ-11 LDW-PW-B-PZ-10 LDW-PW-B-PZ-7 LDW-PW-G-PZ-4 LDW-PW-G-PZ-1 LDW-PW-PZ-EPARB LDW-PW-PZ-MHERB TRIP BLANK (6/22/05))	Hexachlorobutadiene	-	-	39.0 (≤30)	J (all detects) UJ (all non-detects)	P
IF11	LCS-062405 (LDW-PW-G-PZ-05 LDW-PW-G-PZ-03 LDW-PW-G-PZ-06 LDW-PW-G-PZ-02 TRIP BLANK (6/23/05))	Bromomethane Methyl iodide	55.0 (75-125) 50.0 (75-125)	60.0 (75-125) 52.5 (75-125)	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P
IF11	LCS-062405 (LDW-PW-G-PZ-05 LDW-PW-G-PZ-03 LDW-PW-G-PZ-06 LDW-PW-G-PZ-02 TRIP BLANK (6/23/05))	Acetone Acrolein	130 (75-125) 128 (75-125)	- -	- -	J (all detects) J (all detects)	P

Associated SDG	LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
II78	LCS-080905 (LDW-PW-B-PE-201 LDW-PW-B-PE-202 LDW-PW-G-PE-04 LDW-PW-G-PE-03 LDW-PW-G-PE-02 LDW-PW-G-PE-05 LDW-PW-G-PE-06 LDW-PW-G-PE-203 LDW-PW-G-PE-204 LDW-PW-B-PE-11 LDW-PW-B-PE-13)	Chloromethane Bromomethane	67.5 (75-125) -	65.0 (75-125) 72.5 (75-125)	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P
II78	LCS-081005-20 (LDW-PW-G-PE-02DL LDW-PW-G-PE-01 LDW-PW-G-PE-07 LDW-PW-G-PE-08 LDW-PW-B-PE-09 LDW-PW-B-PE-15 LDW-PW-PE-01-EB TRIP BLANKS)	Bromomethane	72.5 (75-125)	70.0 (75-125)	-	J (all detects) UJ (all non-detects)	P
II78	LCS-081005-5 (LDW-PW-G-PE-06RE LDW-PW-G-PE-204RE)	Carbon tetrachloride 2-Chloroethylvinyl ether	74.2 (75-125) 56.6 (75-125)	- 60.0 (75-125)	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P

Standard reference material was performed at the required frequencies.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for SDG II78 with the following exceptions:

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
II78	LDW-PW-G-PE-02	cis-1,2-Dichloroethene	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-

*Indicates change as the result of report review.

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
II78	LDW-PW-G-PE-05 LDW-PW-G-PE-203 LDW-PW-G-PE-204 LDW-PW-G-PE-06	Vinyl chloride cis-1,2-Dichloroethene	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A* N/A*	-
II78	LDW-PW-G-PE-06	trans-1,2-Dichloroethene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	A

*N/A = Not applicable

Since the above results were deemed unusable, these findings did not warrant qualification of the data.

All compound quantitation and CRQLs were within validation criteria for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory for Level IV.

Tentatively identified compounds data were not reviewed for Level III.

XIV. System Performance

The system performance was acceptable for samples on which a EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

Associated SDG	Sample	Compound	Flag	A or P
II78	LDW-PW-G-PE-02	Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene	R R R R	A
II78	LDW-PW-G-PE-02DL	All TCL compounds except Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene	R	A

Associated SDG	Sample	Compound	Flag	A or P
II78	LDW-PW-G-PE-05 LDW-PW-G-PE-203 LDW-PW-G-PE-204 LDW-PW-G-PE-06	Vinyl chloride cis-1,2-Dichloroethene	R R	A
II78	LDW-PW-G-PE-05RE LDW-PW-G-PE-203RE LDW-PW-G-PE-204RE LDW-PW-G-PE-06RE	All TCL compounds except Vinyl chloride cis-1,2-Dichloroethene	R	A

XVI. Field Duplicates

No field duplicates were identified in these SDGs.

LDC #: 13714A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/05
SDG #: IE76 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/21/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD, r^2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	TB = 4

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples

1	LDW-PW-B-PZ-12	11	MB-062305	21		31	
2	LDW-PW-B-PZ-09	12		22		32	
3	LDW-PW-B-PZ-06	13		23		33	
4	TRIP BLANK	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 13744A1
SDG #: 1276

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: MC

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?		✓		
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 13744A1
SDG #: 1676

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: JC

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XI. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XII. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Tentatively identified compounds (TICs)				
Were the major ions (> 10 percent relative intensity) in the reference spectrum evaluated in sample spectrum?			✓	
Were relative intensities of the major ions within ± 20% between the sample and the reference spectra?			✓	
Did the raw data indicate that the laboratory performed a library search for all required peaks in the chromatograms (samples and blanks)?		✓		
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XVI. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XVII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC 1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1 2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2 Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Methyl ethyl ketone
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM Ethyl ether
L 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Benzyl chloride
M 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO Methyl Iodide
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 13714A1
SDG #: 1276

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

- (Y) N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
- (Y) N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
- (Y) N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?___________
- (Y) N N/A Did the initial calibration meet the acceptance criteria?
- Y (N) N/A Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	6/20/05	ICAL	FFFF		0.02515	All + Blk	J/UJ/A
			II		0.04315		
			Y		0.04723		

LDC #: 13714A1
SDG #: 1276

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	6/23/05	04006-3A	FFFF	29.88882		M + Blk	J/UJ/A
			F	26.87961			
			FFFF		0.032678		
			II		0.04081		

CONCAL1S

LDC #: 18744A1
SDG #: 18T6

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 9
2nd Reviewer: DK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a method blank associated with every sample in this SDG?
Y (N) N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y (N) N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 6/23/05
Conc. units: ug/L
Associated Samples: All

Compound	Blank ID	Sample Identification								
MB-062305										
Methylene chloride	0.3									
Acetone										
CRQL										

Blank analysis date:
Conc. units:
Associated Samples

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 13714A1
SDG #: 1676

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, incicate which matrix does not have an associated MS/MSD. Soil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LDW-PW-B-72-10 (1293)	A	60 (75-125)	57.5 (75-125)	( )	None	No Qual
			B	62.5 ( )	62.5 ( )	( )		
			C	72.5 ( )	70.0 ( )	( )		
			F	140 ( )	137 ( )	( )		
			P	( )	130 ( )	( )		
			Y	130 ( )	144 ( )	( )		
			Z	( )	134 ( )	( )		
			FFFF	137 ( )	152 ( )	( )		
			0000	( )	67.5 ( )	( )		
			MM	130 ( )	135 ( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
H.	1,1-Dichloroethene	59-172%	≤ 22%	61-145%	≤ 14%
S.	Trichloroethene	62-137%	≤ 24%	71-120%	≤ 14%
V.	Benzene	66-142%	≤ 21%	76-127%	≤ 11%
CC.	Toluene	59-139%	≤ 21%	76-125%	≤ 13%
DD.	Chlorobenzene	60-133%	≤ 21%	75-130%	≤ 13%

LDC #: 13744A1
SDG #: 1276

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a LCS required?
Y (N) N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-062305	FFFF	142 (75-125)	( )	( )	All + BK	J dets/P
			LLL	( )	( )	39.0 (≤30)		J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC #: 13714A1
SDG #: 1276

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: AC

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

RRF = $(A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (4 std)	Recalculated RRF (4 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	6/20/05	Methylene chloride (1st internal standard)	0.74046	0.74046	0.80053	0.80053	8.4778	8.4477
			Trichlorethene (2nd internal standard)	0.46544	0.46544	0.46206	0.46206	9.3599	9.3601
			~~Toluene~~ EE (3rd internal standard)	2.29283	2.29283	2.14105	2.14105	11.6798	11.6798
2			~~Methylene chloride~~ MMM (1st internal standard)	1.20047	1.20047	1.21144	1.21144	10.80337	10.8032
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						
3			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						
4			Methylene chloride (1st internal standard)						
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13744A1
SDG #: 1E76

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Felative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calbration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	0400623A	6/23/05	Methylene chloride (1st internal standard)	0.80053	0.76245	0.76245	4.75742	4.75712
			Trichlorethene (2nd internal standard)	0.46206	0.45310	0.45310	1.94032	1.94
			EE Toluene (3rd internal standard)	2.14105	2.22834	2.22834	4.07698	4.07673
2			MMM Methylene chloride (1st internal standard)	1.21144	1.17062	1.17062	3.36969	3.3697
			Trichlorethene (2nd internal standard)					
			Toluene (3rd internal standard)					
3			Methylene chloride (1st internal standard)					
			Trichlorethene (2nd internal standard)					
			Toluene (3rd internal standard)					
4			Methylene chloride (1st internal standard)					
			Trichlorethene (2nd internal standard)					
			Toluene (3rd internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13T14A1
SDG #: 12T6

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	4	4.13844	104	104	0
Bromofluorobenzene	↓	4.13494	103	103	↓
1,2-Dichloroethane-d4	↓	4.97783	124	124	↓
~~Dibromofluoromethane~~ DCB	↓	4.35767	109	109	↓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8					
Bromofluorobenzene					
1,2-Dichloroethane-d4					
Dibromofluoromethane					

LDC #: 13744A1
SDG #: 1276

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration; SA = Spike added

RPD = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: LCS-062305

Compound	Spike Added (µg/L)		Spiked Sample Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	4	4	3.7	3.8	92.5	92.5	95.0	95.0	2.7	2.7
Trichloroethene	↓	↓	3.8	4.1	95.0	95.0	102	102	7.6	7.6
Benzene			4.0	4.1	100	100	102	102	2.5	2.5
Toluene			4.0	3.9	100	100	97.5	97.5	2.5	2.5
Chlorobenzene			3.8	4.0	95.0	95.0	100	100	5.1	5.1

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 13744 1
SDG #: 12T6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1, F:

Conc. = $\frac{(2107)(4)(1)}{(79570)(0.0583)(\quad)(\quad)}$

= 1.8197 µg/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 13714B1 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/10/05
SDG #: IE93 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/22/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	20%RSD, r^2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	SW ND	TB = 8* EB = 6.7

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples
MW H2O's

1	LDW-PW-B-PZ-11	11	~~062305MB~~	21		31	
2	LDW-PW-B-PZ-10	12	MB-062305	22		32	
3	LDW-PW-B-PZ-7	13		23		33	
4	LDW-PW-G-PZ-4	14		24		34	
5	LDW PW G PZ 1	15		25		35	
6	LDW-PW-PZ-EPARB	16		26		36	
7	LDW-PW-PZ-MHERB	17		27		37	
8	TRIP BLANK 7	18		28		38	
9	LDW-PW-B-PZ-10MS	19		29		39	
10	LDW-PW-B-PZ-10MSD	20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Methyl ethyl ketone
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Ethyl ether
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Benzyl chloride
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO. Methyl Iodide
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. D-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 13748I
SDG #: 1293

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: A

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
(Y) N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
(Y) N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?_____
(Y) N N/A Did the initial calibration meet the acceptance criteria?
Y (N) N/A Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	6/20/05	ICAL	FFFF		0.02515	All+Blk	J/UJ/A
			II		0.04315		↓
			Y		0.04703		

INICAL.1SB

LDC #: 13764B1
SDG #: 1893

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

(Y) N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?

Y (N) N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	6/23/05	040623A	FFFF	29.88882		M1 + B1<	J/UJ/A
			~~DD~~	~~25.61129~~			
			F	26.87961			J/UJ/A
			FFFF		0.03267		
			11		0.04087		

CONCAL1S

LDC #: 15714B1
SDG #: 1893

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 2
2nd Reviewer: 2

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a method blank associated with every sample in this SDG?
(Y) N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
(Y) N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 6/23/05
Conc. units: ug/L
Associated Samples: all

Compound	Blank ID	Sample Identification								
	MB-062305									
Methylene chloride	0.3									
Acetone	2.									
CRQL										

Blank analysis date:
Conc. units:
Associated Samples:

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 13748I
SDG #: 1293

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, incicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		9/10	A	60.0 (75-125)	57.5 (75-125)	( )	2	J/UJ/A
			B	62.5 ( )	62.5 ( )	( )		↓
			C	72.5 ( )	70.0 ( )	( )		↓
			F	140 ( )	137 ( )	( )		J dets/A
			P	( )	130 ( )	( )		↓
			X	130 ( )	144 ( )	( )		↓
			Z	( )	134 ( )	( )		↓
			FFFF	137 ( )	152 ( )	( )		↓
			OOOO	( )	67.5 ( )	( )		J/UJ/A
			MM	130 ( )	135 ( )	( )		J dets/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
H.	1,1-Dichloroethene	59-172%	≤ 22%	61-145%	≤ 14%
S.	Trichloroethene	62-137%	≤ 24%	71-120%	≤ 14%
V.	Benzene	66-142%	≤ 21%	76-127%	≤ 11%
CC.	Toluene	59-139%	≤ 21%	76-125%	≤ 13%
DD.	Chlorobenzene	60-133%	≤ 21%	75-130%	≤ 13%

LDC #: 13714B1
SDG #: 1E93

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VCA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a LCS required?
Y (N) N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-062305	FFFF	142 (75-125)	( )	( )	All+Blk	J dets/P
			LLLA	( )	( )	39° (≤30)		J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 13714B1
SDG #: 1E93

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: V
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

Y N /N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds detected in the field blanks?
Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 6/22/05
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: (RB) Associated Samples: 1-5

Compound	Blank ID	Blank ID	Sample Identification							
	6	7	3	4	5					
~~Methylene chloride~~ C	0.5			1.6/U						
Acetone	5.0	4.6	1.5/U	1.4/U						
~~Chloroform~~ BBB	0.9			2.0/U	1.4/U					
CC	0.5	0.4								
~~KK~~	0.3		0.2/U							
CRQL										

Blank units: _____ **Associated sample units:** _____
Sampling date: _____
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
Chloroform										
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 13714C1 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/05
SDG #: IF11 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/03/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	No MS/MSD
VIII.	Laboratory control samples	SW	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	SW	TB-5

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples

1	LDW-PW-G-PZ-05 W	11	MB-062405	21		31	
2	LDW-PW-G-PZ-03	12		22		32	
3	LDW-PW-G-PZ-06	13		23		33	
4	LDW-PW-G-PZ-02	14		24		34	
5	TRIP BLANK 3	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2 2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1 1-Dichloropropene	KKK. 1,2,4-Trichlorcbenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1 2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1 1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,' Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane'	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichlcroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Methyl ethyl ke:one
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Ethyl ether
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichlorc-1,2,2-trifluoroethane	NNNN. Benzyl chlorice
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO. methyl iodide
N. 1, ,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 13714c1
SDG #: 1F11

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
(Y) N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
(Y) N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?
(Y) N N/A Did the initial calibration meet the acceptance criteria?
Y (N) N/A Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	6/20/05	ICA2	FFFF		0.02515	All + Blk	J/UJ/A
			II		0.04315		
			Y		0.04723		↓

INICAL.1SB

LDC #: 13714C1
SDG #: 1F11

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 2
2nd Reviewer: AC

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

(Y) N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?

Y (N) N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	6/24/05	0400624	B	48.66T26		MI + BLK	J / UJ / A
			0000	5T.88063			
			T	25.92112			
			FFFF		0.03053		
			11		0.04115		

CONCAL.1S

LDC #: 13714C1
SDG #: 1E11

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 6/24/05
Conc. units: ug/L
Associated Samples: All

Compound	Blank ID	Sample Identification								
	MB-062405	1	2	3	4	5				
Methylene chloride										
Acetone	1.2	3.3/4	2.2/4	6.2/4	3.7/4	1.2/4				
CRQL										

Blank analysis date:
Conc. units:
Associated Samples:

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
CRQL										

All results were qualifiec using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 13741

SDG #: 1F11

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: 9

2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

(Y) N /N/A Were field blanks identified in this SDG?

(Y) N N/A Were target compounds detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L

Sampling date: 6/23/05

Field blank type: (circle one) Field Blank / Rinsate / (Trip Blank) / Other:_____ Associated Samples: 1-4

Compound	Blank ID	Sample Identification								
	5	1	2	3	4					
Methylene chloride										
Acetone	1.0	3.3/U	2.2/U	6.2/U	3.2/U					
Chloroform										
CRQL										

Blank units:_____ **Associated sample units:**_____

Sampling date:_____

Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other:_____ Associated Samples:_____

Compound	Blank ID	Sample Identification								
Methylene chloride										
Acetone										
Chloroform										
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 13714C1
SDG #: 1R11

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a LCS required?
Y (N) N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-062405	B	55.0 (75-125)	60.0 (75-125)	( )	All + Bk	J/UJ/P
			F	130 (↓)	(↓)	( )		J dets/P
			FFFF	128 (↓)	(↓)	( )		↓
			OOOO	50.0 (↓)	52.5 (↓)	( )		J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 13965A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 9/11/05

SDG #: II78 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/1/05
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD, $r^2 \geq 0.990$
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS/P
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	SW	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII	Field blanks	SW	EB = 26 *TB = 27

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; * ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples water

1	1	LDW-PW-B-PE-12	11	3	LDW-PW-G-PE-01	21	4	LDW-PW-G-PE-204RE	31	3	LDW-PW-PE-01-EBMSD	
2	1	LDW-PW-B-PE-14	12	2	LDW-PW-G-PE-05	22	3	LDW-PW-B-PE-09	32			
3	1	LDW-PW-B-PE-16	13	5	LDW-PW-G-PE-05RE	23	2	LDW-PW-B-PE-11	33			
4	1	LDW-PW-B-PE-10	14	2	LDW-PW-G-PE-06	24	2	LDW-PW-B-PE-13	34	1	MB08085	20ml
5	2	LDW-PW-B-PE-201	15	4	LDW-PW-G-PE-06RE	25	3	LDW-PW-B-PE-15	35	2	MB08095	20
6	2	LDW-PW-B-PE-202	16	3	LDW-PW-G-PE-07	26	3	LDW-PW-PE-01-EB	36	3	MB08105-20	20
7	2	LDW-PW-G-PE-04	17	3	LDW-PW-G-PE-08	27	3	TRIP BLANKS	37	4	MB08105-5	5
8	2	LDW-PW-G-PE-03	18	2	LDW-PW-G-PE-203	28	2	LDW-PW-B-PE-201MS	38	5	MB08135	5
9	2	LDW-PW-G-PE-02	19	5	LDW-PW-G-PE-203RE	29	2	LDW-PW-B-PE-201MSD	39			
10	3	LDW-PW-G-PE-02DL	20	2	LDW-PW-G-PE-204	30	3	LDW-PW-PE-01-EBMS	40			

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	S. Trichloroethene	KK. Trichlorofluoromethane	CCC. tert-Butylbenzene	UUU. 1,2-Dichlorotetrafluoroethane
B. Bromomethane	T. Dibromochloromethane	LL. Methyl-tert-butyl ether	DDD. 1,2,4-Trimethylbenzene	VVV. 4-Ethyltoluene
C. Vinyl choride**	U. 1,1,2-Trichloroethane	MM. 1,2-Dibromo-3-chloropropane	EEE. sec-Butylbenzene	WWW. Ethanol
D. Chloroethane	V. Benzene	NN. Methyl ethyl ketone	FFF. 1,3-Dichlorobenzene	XXX. Di-isopropyl ether
E. Methylene chloride	W. trans-1,3-Dichloropropene	OO. 2,2-Dichloropropane	GGG. p-Isopropyltoluene	YYY. tert-Butanol
F. Acetone	X. Bromoform*	PP. Bromochloromethane	HHH. 1,4-Dichlorobenzene	ZZZ. tert-Butyl alcohol
G. Carbon disulfide	Y. 4-Methyl-2-pentanone	QQ. 1,1-Dichloropropene	III. n-Butylbenzene	AAAA. Ethyl tert-butyl ether
H. 1,1-Dichloroethene**	Z. 2-Hexanone	RR. Dibromomethane	JJJ. 1,2-Dichlorobenzene	BBBB. tert-Amyl methyl ether
I. 1,1-Dichloroethane*	AA. Tetrachloroethene	SS. 1,3-Dichloropropane	KKK. 1,2,4-Trichlorobenzene	CCCC.1-Chlorohexane
J. 1,2-Dichloroethene, total	BB. 1,1,2,2-Tetrachloroethane*	TT. 1,2-Dibromoethane	LLL. Hexachlorobutadiene	DDDD. Isopropyl alcohol
K. Chloroform**	CC. Toluene**	UU. 1,1,1,2-Tetrachloroethane	MMM. Naphthalene	EEEE. Acetonitrile
L. 1,2-Dichloroethane	DD. Chlorobenzene*	VV. Isopropylbenzene	NNN. 1,2,3-Trichlorobenzene	FFFF. Acrolein
M. 2-Butanone	EE. Ethylbenzene**	WW. Bromobenzene	OOO. 1,3,5-Trichlorobenzene	GGGG. Acrylonitrile
N. 1,1,1-Trichloroethane	FF. Styrene	XX. 1,2,3-Trichloropropane	PPP. trans-1,2-Dichloroethene	HHHH. 1,4-Dioxane
O. Carbon tetrachloride	GG. Xylenes, total	YY. n-Propylbenzene	QQQ. cis-1,2-Dichloroethene	IIII. Isobutyl alcohol
P. Bromodichloromethane	HH. Vinyl acetate	ZZ. 2-Chlorotoluene	RRR. m,p-Xylenes	JJJJ. Methacrylonitrile
Q. 1,2-Dichloropropane**	II. 2-Chloroethylvinyl ether	AAA 1,3,5-Trimethylbenzene	SSS. o-Xylene	KKKK. Propionitrile
R. cis-1,3-Dichloropropene	JJ. Dichlorodifluoromethane	BBB. 4-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	LLLL. Methyl Iodide

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

)C #: 13965A1
)G #: 1178

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer:
2nd Reviewer:

ETHOD: GC/MS VOA (EPA SW 846 Method 8260B)

lease see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?_____
N N/A Did the initial calibration meet the acceptance criteria?
Y N N/A Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	8/5/05	ICALFIN01	FFFF		0.03432	1→12, 14,	J/UJ/A
			MM		0.02911	16→18, 22→31,	— — ↓
						20, MB08085,	
						MB08095,	
						MBC8105-20	

LDC #: 13965A1
SDG #: 1178

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	8/8/05	0400808A	FFFF		0.03161	MB080805, [illegible]	J/UJ/A
			MM		0.02537	1-4	↓
	8/9/05	0400809	~~JJ~~	~~39.59039~~		5-9, 12,	J/UJ/A
			A	29.88071		14, 18, 20	
			FFFF		0.03540	23, 24, 28, 29,	
			MM		0.03189	MB080905	
	8/10/05	CC0610	II	43.51996		15, 21,	J/UJ/A
						MB08105-5	
	8/10/05	0400810A	B	29.76774		10, 11, 16, 17, 22,	J/UJ/A
			FFFF		0.03494	0.25-27, 30, 31	
			MM		0.03417	↓	
		Batch #5 - CCV	OK				

LDC #: 13965A/
SDG #: 1178

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

Y N /N/A Were field blanks identified in this SDG?
Y /N N/A Were target compounds detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: EB Associated Samples: 1-5 25

Compound	Blank ID 2	Blank ID	Sample Identification							
Sampling Date	8/1/05		1	2	3	4	5	6	7	8
~~Methylene chloride~~ AAA	1.0		-	-	-	-	-	-	-	-
~~Acetone~~ F ~~DDD~~	~~48~~ 48		60 U	5.7 U	48 U	9.3 U	12 U	12 U	6.4 U	7.1 U
~~Chloroform~~ DDD	3.1		-	-	-	-	-	-	-	0.2 U
M	1.5		-	-	-	-	-	-	-	-
V	1.3		-	-	-	-	-	-	-	-
EE	0.4		-	-	-	-	-	-	-	-
RRR	1.8		-	-	-	-	-	-	-	-
~~CRQL~~ SSS	1.5		-	-	-	-	-	-	-	0.3 U

Blank units: ug/L **Associated sample units:** ug/L
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: EB Associated Samples: 1-5 25

Compound	Blank ID 3	Blank ID	Sample Identification							
Sampling Date	8/1/05		1	2	3	4	5	6	7	8
~~Methylene chloride~~ YY	0.4		-	-	-	-	-	-	-	-
Acetone III	0.2		-	-	-	-	-	-	-	-
~~Chloroform~~ MMM	1.4		-	-	-	-	-	-	-	-
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 13965A1
SDG #: 1178

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 2 of 3
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

Y N /N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L

Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: EB Associated Samples: 1-8 25

Compound	Blank ID 3	Blank ID	Sample Identification 5X					2X		
Sampling Date	8/1/05		9	10	11	12	14	16	17	18
~~Methylene chloride~~ AAA	1.0		.	.	.	.	.	.	.	.
Acetone F	48		4.5U	7.6U	33U	2.6U	3.5U	6U	28U	13U
~~Chloroform~~ DDD	31		.	.	0.2U	.	.	.	.	.
M	1.5		.	.	2.4U	.	.	.	.	.
V	1.3		.	.	.	3.0U	9.4	2.2U	3.2U	2.4U
BE	0.4		.	.	.	.	1.3U	.	.	0.2U
RRR	1.8		.	.	.	.	0.7U	.	.	.
CRQL SSS	1.5		.	.	.	.	1.3U	.	0.5U	0.6U

Blank units: ug/L **Associated sample units:** ug/L

Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: EB Associated Samples: 1-8 25

Compound	Blank ID	Blank ID	Sample Identification							
Sampling Date			9	10	11	12	14	16	17	18
~~Methylene chloride~~ YY	0.4		.	.	.	.	.	.	.	.
Acetone III	0.2		.	.	.	.	.	.	.	.
~~Chloroform~~ MMM	1.4		.	.	.	.	.	.	.	.
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants wthin five times the field blank concentration were also qualified as not detected, "U".

LDC #: 13965A1
SDG #: 1178

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: D
2nd Reviewer: AC

METHOD: GC/MS VOA (EPA SW 846 Method 8260)

Y N /N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: EB Associated Samples: 1 thru 25

Compound	Blank ID 3	Blank ID	SX		SX		Sample Identification			
Sampling Date	8/1/05		19	20	21	22	23	24	25	
Methylene chloride AAA	1.0									
Acetone F	48		6.9u	36u	33u	20u	3.7u	4.7u	9.6u	
Chloroform DDD	3.1							- -	0.3u	
M	1.5									
V	1.3		1.6u	4.7u	4.2u		0.4u			
EE	0.4			0.6u						
RRR	1.8									
CRQL SSS	1.5			0.7u						

Blank units: ug/L **Associated sample units:** ug/L
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: EB Associated Samples: 1 thru 25

Compound	Blank ID 3	Blank ID	Sample Identification							
Sampling Date	8/1/05		19	20	21	22	23	24	25	
Methylene chloride YY	0.4									
Acetone III	2.7									
Chloroform MMM	1.4									
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as Methylene chloride, Acetone, 2-Butanone and Carbon disulfide that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 13965A1
SDG #: 1178

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		28 + 29	A	67.5 (75-125)	65.0 (75-125)	( )	5	J/UJ/A
			B	65.0 ( )	62.5 ( )	( )		
			M	138 ( )	131 ( )	( )		J/Adet
			Y	( )	128 ( )	( )		
			MM	135 ( )	( )	( )		
			LLL	62.5 ( )	55.0 ( )	( )		J/UJ/A
			III	72.5 ( )	65.0 ( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		30 + 31	B	67.5 (75-125)	70.0 (75-125)	( )	26	J/UJ/A
			LLL	70.0 ( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
H.	1,1-Dichloroethene	59-172%	≤ 22%	61-145%	≤ 14%
S.	Trichloroethene	62-137%	≤ 24%	71-120%	≤ 14%
V.	Benzene	66-142%	≤ 21%	76-127%	≤ 11%
CC.	Toluene	59-139%	≤ 21%	76-125%	≤ 13%
DD.	Chlorobenzene	60-133%	≤ 21%	75-130%	≤ 13%

LDC #: 13965A1
SDG #: 1178

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-080905	A	67.5 (75-125)	65.0 (75-125)	( )	5-9, 12, 14	J/UJ/P
			B	( )	72.5 (↓)	( )	18, 20, 23, 24	↓
				( )	( )	( )	MB080905	
				( )	( )	( )		
		LCS-081005-20	B	72.5 (↓)	70.0 (↓)	( )	10, 11, 16, 17	↓
				( )	( )	( )	22, 25-27,	
				( )	( )	( )	MB080105-20	
				( )	( )	( )		
		LCS-081005-5	~~B~~ O	74.2 (↓)	(↓)	( )	15, 21,	↓
			II	56.6 (↓)	60.0 (↓)	( )	MB080105 5	
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 13965A1
SDG #: 1178

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and CRQLs

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?
Y N N/A Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Date	compound ~~Sample ID~~	Exceeded cal Range Finding	Associated Samples	Qualifications
		666	Exceeded cal Range	9	J/ A det
		C, 999	↓	12, 18, 20	↓
		C, PPP, 666	↓	14	↓
				PB	

Comments: See sample calculation verification worksheet for recalculations

LDC #: 13965A1
SDG #: 1178

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overal quality and usability of the data acceptable?

#	Date	compound ~~Sample ID~~	Finding	Asscciated Samples	Qualifications
		F, PPP, QQQ, S	F, PPP, S- lower result QQQ - exceeded cal range	9	R/A
		All except F, PPP, QQQ, S	diluted, higher RL	10	↓
		C, QQQ	exceeded cal range	12, 18, 20	↓
		All except C, QQQ	diluted, higher RL	13, 19, 21	↓
		C, QQQ	exceeded cal range	14	↓
		All except C, QQQ	diluted, higher RL	15	↓
				~~16~~	

Comments: #14 PPP exceeded cal range but was ND in #15 (DO)

Attachment 1

PDF

LDC #13714 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group, Porewater)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)																															
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	IE76	07/08/05	07/29/05	4	0																														
B	IE93	07/08/05	07/29/05	8	0																														
C	IF11	07/08/05	07/29/05	5	0																														
Total	B/SC			17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Attachment 1

PDF

LDC #13965 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group, Porewater)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)																													
Matrix: Water/Sediment				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	II78	08/29/05	09/20/05	22	0																												
Total	B/SC			22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

Attachment 2

Attachment 2

SDG#: IE76 VALIDATION SAMPLE TABLE **LDC#:** 13714A

Project Name: Lower Duwamish Waterway Group, Porewater Parameters/Analytical Method Project #04-08-06-24

Client ID #	Lab ID #	Matrix	Date Collected	VOA (8260B)											
LDW-PW-B-PZ-12	IE76A	water	06/21/05	X											
LDW-PW-B-PZ-09	IE76B	water	06/21/05	X											
LDW-PW-B-PZ-08	IE76C	water	06/21/05	X											
TRIP BLANK	IE76D	water	06/21/05	X											

Note: X = Validation was performed.

Attachment 2

SDG#: IE93 VALIDATION SAMPLE TABLE **LDC#:** 13714B

Project Name: Lower Duwamish Waterway Group, Porewater Parameters/Analytical Method Project #04-08-06-24

Client ID #	Lab ID #	Matrix	Date Collected	VOA (8260B)											
LDW-PW-B-PZ-11	IE93A	water	06/22/05	X											
LDW-PW-B-PZ-10	IE93B	water	06/22/05	X											
LDW-PW-B-PZ-7	IE93C	water	06/22/05	X											
LDW-PW-G-PZ-4	IE93D	water	06/22/05	X											
LDW-PW-G-PZ-1	IE93E	water	06/22/05	X											
LDW-PW-PZ-EPARB	IE93F	water	06/22/05	X											
LDW-PW-PZ-MHERB	IE93G	water	06/22/05	X											
TRIP BLANK	IE93H	water	06/22/05	X											
LDW-PW-B-PZ-10MS	IE93BMS	water	06/22/05	X											
LDW-PW-B-PZ-10MSD	IE93BMSD	water	06/22/05	X											

Note: X = Validation was performed.

13714VALB.wpd

Attachment 2

SDG#: IF11 VALIDATION SAMPLE TABLE **LDC#:** 13714C

Project Name: Lower Duwamish Waterway Group, Porewater Parameters/Analytical Method Project #04-08-06-24

Client ID #	Lab ID #	Matrix	Date Collected	VOA (8260B)											
LDW-PW-G-PZ-05	IF11A	water	06/23/05	X											
LDW-PW-G-PZ-03	IF11B	water	06/23/05	X											
LDW-PW-G-PZ-06	IF11C	water	06/23/05	X											
LDW-PW-G-PZ-02	IF11D	water	06/23/05	X											
TRIP BLANK	IF11E	water	06/23/05	X											

Note: X = Validation was performed.

Attachment 2

SDG#: II78 VALIDATION SAMPLE TABLE **LDC#:** 13965A

Project Name: Lower Duwamish Waterway Group, Porewater Parameters/Analytical Method Project #04-08-06-26

Client ID #	Lab ID #	Matrix	Date Collected	VOA (8260B)											
LDW-PW-B-PE-12	II78A	water	08/01/05	X											
LDW-PW-B-PE-14	II78B	water	08/01/05	X											
LDW-PW-B-PE-16	II78C	water	08/01/05	X											
LDW-PW-B-PE-10	II78D	water	08/01/05	X											
LDW-PW-B-PE-201	II78E	water	08/01/05	X											
LDW-PW-B-PE-202	II78F	water	08/01/05	X											
LDW-PW-G-PE-04	II78G	water	08/01/05	X											
LDW-PW-G-PE-03	II78H	water	08/01/05	X											
LDW-PW-G-PE-02	II78I	water	08/01/05	X											
LDW-PW-G-PE-02DL	II78IDL	water	08/01/05	X											
LDW-PW-G-PE-01	II78J	water	08/01/05	X											
LDW-PW-G-PE-05	II78K	water	08/01/05	X											
LDW-PW-G-PE-05RE	II78KRE	water	08/01/05	X											
LDW-PW-G-PE-06	II78L	water	08/01/05	X											
LDW-PW-G-PE-06RE	II78LRE	water	08/01/05	X											
LDW-PW-G-PE-07	II78M	water	08/01/05	X											
LDW-PW-G-PE-08	II78N	water	08/01/05	X											
LDW-PW-G-PE-203	II78O	water	08/01/05	X											
LDW-PW-G-PE-203RE	II78ORE	water	08/01/05	X											
LDW-PW-G-PE-204	II78P	water	08/01/05	X											
LDW-PW-G-PE-204RE	II78PRE	water	08/01/05	X											
LDW-PW-B-PE-09	II78Q	water	08/01/05	X											
LDW-PW-B-PE-11	II78R	water	08/01/05	X											
LDW-PW-B-PE-13	II78S	water	08/01/05	X											
LDW-PW-B-PE-15	II78T	water	08/01/05	X											

Note: X = Validation was performed.

SDG#: II78 VALIDATION SAMPLE TABLE **LDC#:** 13965A

Project Name: Lower Duwamish Waterway Group, Porewater Parameters/Analytical Method Project #04-08-06-26

Client ID #	Lab ID #	Matrix	Date Collected	VOA (8260B)											
LDW-PW-PE-01-EB	II78U	water	08/01/05	X											
TRIP BLANKS	II78V	water	06/07/05	X											
LDW-PW-B-PE-201MS	II78EMS	water	08/01/05	X											
LDW-PW-B-PE-201MSD	II78EMSD	water	08/01/05	X											
LDW-PW-PE-01-EBMS	II78UMS	water	08/01/05	X											
LDW-PW-PE-01-EBMSD	II78UMSD	water	08/01/05	X											

Note: X = Validation was performed.