APPENDIX D-1 ROUND 1 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 #14728/14827/14842/14847/14865/14876/14894/14896
Windward Environmental, LLC September 29, 2006
200 West Mercer Street, Suite 401
Seattle, WA 98119
ATTN: Ms. Marina Mitchell

SUBJECT: Lower Duwamish Waterway Group Sediment 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 analyses were performed by Analytical Resources, Inc. and AXYS Analytical Services, Ltd. Samples were analyzed for GC/MS Volatiles by EPA SW 846 Method 8260B, GC/MS Semivolatiles by EPA SW 846 Methods 8270D and 8270D-SIM, GC Chlorinated Pesticides by EPA SW 846 Method 8081A, GC Polychlorinated Biphenyls by EPA SW 846 Method 8082, Butyltins by EPA SW 846 Methods 8270D-SIM/Krone Method, Metals by EPA SW 846 Methods 6010B/7000, Total Solids by EPA Method 160.3, Grain Size by PSEP Method, Porosity by CalcPor Method, Dry Density by CalcDD Method, Specific Gravity by ASTM Method D854, Moisture Content by ASTM Method D2216, Wet Density by ASTM Method D2937, Atterberg Limits by ASTM Method D4318, Total Organic Carbon by Plumb Method, Salinity by Standard Method 2520B and HRGC/HRMS Dioxins/Dibenzofurans by EPA Method 1613B. Samples are referenced under the following Sample Delivery Groups: JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC17, JC21, JC32, JC42, JC48, JC95, JE74, DPWG18883/WG18543 and DPWG18912/WG18542. 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

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

LDC #14728/14827/14842/14847/14865/14876/14894/14896
Windward Environmental, LLC September 13, 2006
200 West Mercer Street, Suite 401
Seattle, WA 98119
ATTN: Ms. Marina Mitchell

SUBJECT: Lower Duwamish Waterway Group Sediment 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 analyses were performed by Analytical Resources, Inc. and AXYS Analytical Services, Ltd. Samples were analyzed for GC/MS Volatiles by EPA SW 846 Method 8260B, GC/MS Semivolatiles by EPA SW 846 Methods 8270D and 8270D-SIM, GC Chlorinated Pesticides by EPA SW 846 Method 8081A, GC Polychlorinated Biphenyls by EPA SW 846 Method 8082, Butyltins by EPA SW 846 Methods 8270D-SIM/Krone Method, Metals by EPA SW 846 Methods 6010B/7000, Total Solids by EPA Method 160.3, Grain Size by PSEP Method, Porosity by CalcPor Method, Dry Density by CalcDD Method, Specific Gravity by ASTM Method D854, Moisture Content by ASTM Method D2216, Wet Density by ASTM Method D2937, Atterberg Limits by ASTM Method D4318, Total Organic Carbon by Plumb Method, Salinity by Standard Method 2520B and HRGC/HRMS Dioxins/Dibenzofurans by EPA Method 1613B. Samples are referenced under the following Sample Delivery Groups: JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC17, JC21, JC32, JC42, JC48, JC95, JE74, DPWG18883/WG18543 and DPWG18912/WG18542. 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

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

LDC #14728/14827/14842/14847/14865/14876/14894/14896
Windward Environmental, LLC June 23, 2006
200 West Mercer Street, Suite 401
Seattle, WA 98119
ATTN: Ms. Marina Mitchell

SUBJECT: Lower Duwamish Waterway Group Sediment Sample Data Validation

Dear Ms. Mitchell,

Enclosed is our EPA Level II and Level IV data validation of analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The analyses were performed by Analytical Resources, Inc. and AXYS Analytical Services, Ltd. Samples were analyzed for GC/MS Volatiles by EPA SW 846 Method 8260B, GC/MS Semivolatiles by EPA SW 846 Methods 8270D and 8270D-SIM, GC Chlorinated Pesticides by EPA SW 846 Method 8081A, GC Polychlorinated Biphenyls by EPA SW 846 Method 8082, Butyltins by EPA SW 846 Methods 8270D-SIM/Krone Method, Metals by EPA SW 846 Methods 6010B/7000, Total Solids by EPA Method 160.3, Grain Size by PSEP Method, Porosity by CalcPor Method, Dry Density by CalcDD Method, Specific Gravity by ASTM Method D854, Moisture Content by ASTM Method D2216, Wet Density by ASTM Method D2937, Atterberg Limits by ASTM Method D4318, Total Organic Carbon by Plumb Method, Salinity by Standard Method 2520B and HRGC/HRMS Dioxins/Dibenzofurans by EPA Method 1613B. Samples are referenced under the following Sample Delivery Groups: JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC17, JC21, JC32, JC42, JC48, JC95, JE74, DPWG18883/WG18543 and DPWG18912/WG18542. 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

LDC #14728 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Salinity (SM2520B)																															
Matrix:	Tissue/Sediment			T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JC17	03/15/06	04/05/06	0	8																														
Total	B/SC			0	8	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	8

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

LDC #14827 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size								
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	JA36/JA64/JA90/JB00	04/10/06	05/01/06	0	16	0	16	0	2	0	16	0	16	0	2	0	17	0	17	0	17	0	18	0	16	0	18								
B	JB30	04/10/06	05/01/06	0	5	0	5	0	3	0	5	0	5	-	-	0	4	0	4	0	4	0	5	0	5	0	5								
C	JB31	04/10/06	05/01/06	0	10	0	10	0	3	0	10	0	10	0	3	0	5	0	5	0	5	0	10	0	10	0	10								
D	JB47/JB64/JB80/JB90	04/10/06	05/01/06	0	16	0	16	0	2	0	17	0	16	0	4	0	10	0	12	0	10	0	16	0	16	0	14								
E	JB91	04/10/06	05/01/06	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2								
F	JB82	04/10/06	05/01/06	0	11	0	11	0	3	0	11	0	11	0	11	0	6	0	6	0	6	0	11	0	11	0	11								
Total	B/SC			0	60	0	60	0	15	0	61	0	60	0	22	0	44	0	46	0	44	0	62	0	60	0	60	0	0	0	0	0	0	0	594

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, TRP and RBs.

LDC #14842 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Dioxins (1613B)																															
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	DPWG18883/WG18543	04/13/06	05/04/06	0	11																														
Total	B/SC			0	11	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	11

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

LDC #14847 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size								
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	JB01/JB22	04/13/06	05/04/06	0	9	0	9	-	-	0	9	0	9	0	3	0	5	0	5	0	5	0	9	0	9	0	9								
B	JB20	04/13/06	05/04/06	0	11	0	11	0	9	0	11	0	11	0	3	0	8	0	8	0	8	0	11	0	11	0	11								
C	JB96	04/13/06	05/04/06	0	9	0	9	0	6	0	9	0	9	0	3	0	4	0	4	0	4	0	9	0	9	0	9								
Total	B/SC			0	29	0	29	0	15	0	29	0	29	0	9	0	17	0	17	0	17	0	29	0	29	0	29	0	0	0	0	0	0	0	278

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, and TRPs.

Attachment 1

LDC #14865 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270D -SIM)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size									
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	JB46/JC05	04/18/06	05/09/06	0	10	0	10	-	-	0	10	0	10	-	-	0	8	0	8	0	8	0	10	0	10	0	10								
B	JB98/JC10	04/18/06	05/09/06	0	19	0	19	0	3	0	19	0	19	0	6	0	11	0	11	0	11	0	19	0	19	0	19								
Total	B/SC			0	29	0	29	0	3	0	29	0	29	0	6	0	19	0	19	0	19	0	29	0	29	0	29	0	0	0	0	0	0	0	269

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, TRP and RBs.

Attachment 1

LDC #14876 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size							
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	JC21	04/20/06	05/11/06	0	12	0	8	0	8	-	-	0	8	0	8	0	3	0	8	0	6	0	6	0	8	0	8	0	8						
Total	B/SC			0	12	0	8	0	8	0	0	0	8	0	8	0	3	0	8	0	6	0	6	0	8	0	8	0	8	0	0	0	0	0	91

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, TRP and RBs.

Attachment 1

LDC #14894 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size								
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	JC32	04/24/06	05/15/06	0	8	0	8	0	2	0	8	0	8	-	-	0	6	0	6	0	6	0	8	0	8	0	8								
B	JC42	04/24/06	05/15/06	0	13	0	13	0	3	0	13	0	13	-	-	0	8	0	8	0	8	0	13	0	13	0	13								
C	JC48	04/24/06	05/15/06	0	3	0	3	-	-	0	3	0	3	0	3	0	2	0	2	0	2	0	3	0	3	0	3								
D	JC95	04/24/06	05/15/06	0	12	0	12	-	-	0	12	0	12	-	-	0	6	0	6	0	6	0	12	0	12	0	12								
E	JE74	04/24/06	05/15/06	-	-	-	-	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Total	B/SC			0	36	0	36	0	7	0	36	0	36	0	3	0	22	0	22	0	22	0	36	0	36	0	36	0	0	0	0	0	0	0	328

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, and TRPs.

LDC #14896 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Dioxins (1613B)																															
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	DPWG18912/WG18542	04/13/06	05/04/06	0	12																														
Total	B/SC			0	12	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	12

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 SUBSURFACE SEDIMENT SAMPLES

Lower Duwamish Waterway Group
LDC# 14728, 14827, 14842, 14847, 14865, 14876, 14894 & 14896

This report details the findings of an EPA Level III and EPA Level IV data validation of analytical chemistry results generated in support of the Lower Duwamish Waterway Group project. The analyses were performed by Analytical Resources, Inc. and AXYS Analytical Services, Ltd. Samples were analyzed for GC/MS Volatiles by EPA SW 846 Method 8260B, GC/MS Semivolatiles by EPA SW 846 Methods 8270D and 8270D-SIM, GC Chlorinated Pesticides by EPA SW 846 Method 8081A, GC Polychlorinated Biphenyls by EPA SW 846 Method 8082, Butyltins by EPA SW 846 Methods 8270D-SIM/Krone Method, Metals by EPA SW 846 Methods 6010B/7000, Total Solids by EPA Method 160.3, Grain Size by PSEP Method, Porosity by CalcPor Method, Dry Density by CalcDD Method, Specific Gravity by ASTM Method D854, Moisture Content by ASTM Method D2216, Wet Density by ASTM Method D2937, Atterberg Limits by ASTM Method D4318, Total Organic Carbon by Plumb Method, Salinity by Standard Method 2520B and HRGC/HRMS Dioxins/Dibenzofurans by EPA Method 1613B. Samples are referenced under the following Sample Delivery Groups: JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC17, JC21, JC32, JC42, JC48, JC95, JE74, DPWG18883/WG18543 and DPWG18912/WG18542. 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), National Functional Guidelines for Inorganic Data Review (July 2002) and the EPA Region 10 SOP for the Validation of Polychlorinated Dibenzodioxin (PCDD) and Polychlorinated Dibenzofuran (PCDF) Data (Revision 2.0 January 31, 1996). Specific QC criteria used follow the Lower Duwamish Waterway Group Final Subsurface Sediment Sampling for Chemical Analyses Quality Assurance Project Plan (February 3, 2006). Where specific guidance is not available, the data has been evaluated in a conservative manner 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 Replicates

*Data were not reviewed for Level III.

Attachment 1

LDC #14728 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)																																			
LDC	SDG#	DATE REC'D	(3) DATE DUE	Salinity (SM2520B)																															
Matrix: Tissue/Sediment				T	S	T	S	T	S	T	S	T	S	T	S	T	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JC17	03/15/06	04/05/06	0	8																														
Total	B/SC			0	8	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	8

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

LDC #14827 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size									
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	JA36/JA64/JA90/JB00	04/10/06	05/01/06	0	16	0	16	0	2	0	16	0	16	0	2	0	17	0	17	0	17	0	18	0	16	0	16								
B	JB30	04/10/06	05/01/06	0	5	0	5	0	3	0	5	0	5	-	-	0	4	0	4	0	4	0	5	0	5	0	5								
C	JB31	04/10/06	05/01/06	0	10	0	10	0	3	0	10	0	10	0	3	0	5	0	5	0	5	0	10	0	10	0	10								
D	JB47/JB64/JB80/JB90	04/10/06	05/01/06	0	16	0	16	0	2	0	17	0	16	0	4	0	10	0	12	0	10	0	16	0	16	0	14								
E	JB91	04/10/06	05/01/06	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2								
F	JB82	04/10/06	05/01/06	0	11	0	11	0	3	0	11	0	11	0	11	0	6	0	6	0	6	0	11	0	11	0	11								
Total	B/SC			0	60	0	60	0	15	0	61	0	60	0	22	0	44	0	46	0	44	0	62	0	60	0	60	0	0	0	0	0	0	0	594

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, TRP and RBs.

Attachment 1

LDC #14842 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Dioxins (1613B)																													
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	DPWG18883/WG18543	04/13/06	05/04/06	0	11																												
Total	B/SC			0	11	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	11

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

14842ST.wpd

Attachment 1

LDC #14847 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size								
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	JB01/JB22	04/13/06	05/04/06	0	9	0	9	-	-	0	9	0	9	0	3	0	5	0	5	0	5	0	9	0	9	0	9								
B	JB20	04/13/06	05/04/06	0	11	0	11	0	9	0	11	0	11	0	3	0	8	0	8	0	8	0	11	0	11	0	11								
C	JB96	04/13/06	05/04/06	0	9	0	9	0	6	0	9	0	9	0	3	0	4	0	4	0	4	0	9	0	9	0	9								
Total	B/SC			0	29	0	29	0	15	0	29	0	29	0	9	0	17	0	17	0	17	0	29	0	29	0	29	0	0	0	0	0	0	0	278

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, and TRPs.

14847ST.wpd

Attachment 1

LDC #14865 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270D -SIM)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size									
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	JB46/JC05	04/18/06	05/09/06	0	10	0	10	-	-	0	10	0	10	-	-	0	8	0	8	0	8	0	10	0	10	0	10								
B	JB98/JC10	04/18/06	05/09/06	0	19	0	19	0	3	0	19	0	19	0	6	0	11	0	11	0	11	0	19	0	19	0	19								
Total	B/SC			0	29	0	29	0	3	0	29	0	29	0	6	0	19	0	19	0	19	0	29	0	29	0	29	0	0	0	0	0	0	0	269

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, TRP and RBs.

Attachment 1

LDC #14876 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size							
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	JC21	04/20/06	05/11/06	0	12	0	8	0	8	-	-	0	8	0	8	0	3	0	8	0	6	0	6	0	8	0	8	0	8						
Total	B/SC			0	12	0	8	0	8	0	0	0	8	0	8	0	3	0	8	0	6	0	6	0	8	0	8	0	8	0	0	0	0	0	91

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, TRP and RBs.

Attachment 1

LDC #14894 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081A)		PCBs (8082)		Metals & Hg (SW846)		Butyltins (Krone)		Spec. Gravity (D854)		Atterberg Limits (D4318)		Bulk Density		Total Solids (160.3)		TOC (Plumb)		Grain Size								
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	JC32	04/24/06	05/15/06	0	8	0	8	0	2	0	8	0	8	-	-	0	6	0	6	0	6	0	8	0	8	0	8								
B	JC42	04/24/06	05/15/06	0	13	0	13	0	3	0	13	0	13	-	-	0	8	0	8	0	8	0	13	0	13	0	13								
C	JC48	04/24/06	05/15/06	0	3	0	3	-	-	0	3	0	3	0	3	0	2	0	2	0	2	0	3	0	2	0	3								
D	JC95	04/24/06	05/15/06	0	12	0	12	-	-	0	12	0	12	-	-	0	6	0	6	0	6	0	12	0	12	0	12								
E	JE74	04/24/06	05/15/06	-	-	-	-	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
Total	B/SC			0	36	0	36	0	7	0	36	0	36	0	3	0	22	0	22	0	22	0	36	0	36	0	36	0	0	0	0	0	0	0	328

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include DL, RE, MS/MSD, DUP, and TRPs.

LDC #14896 (Windward Environmental, LLC - Seattle WA / Lower Duwamish Waterway Group)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Dioxins (1613B)																													
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	DPWG18912/WG18542	04/13/06	05/04/06	0	12																												
Total	B/SC			0	12	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	12

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

SDG#: JC17 VALIDATION SAMPLE TABLE **LDC#:** 14728A

Project Name: Lower Duwamish Waterway Group Parameters/Analytical Method Project #04-08-06-22

Client ID #	Lab ID #	Matrix	Date Collected	Salinity (2520B)											
LDW-SC50-2-4	JC17A	sediment	02/22/06	X											
LDW-SC50-0-2	JC17B	sediment	02/22/06	X											
LDW-SC49V-0-2	JC17C	sediment	02/22/06	X											
LDW-SC49V-2-4	JC17D	sediment	02/22/06	X											
LDW-SC49V-4-6	JC17E	sediment	02/22/06	X											
LDW-SC49V-6-8	JC17F	sediment	02/22/06	X											
LDW-SC49V-8-10	JC17G	sediment	02/22/06	X											
LDW-SC49V-10-12	JC17H	sediment	02/22/06	X											
LDW-SC49V-4-6DUP	JC17EDUP	sediment	02/22/06	X											

Note: X = Validation was performed.

Attachment 2

SDG#: JA36/JA64/JA90/JB00 VALIDATION SAMPLE TABLE **LDC#:** 14827A

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

Client ID #	Lab ID #	Matrix	Date Collected	VOA (8260B)	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyltins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC55-0-1	JA36A	sediment	02/06/06		X	X		X	X		X	X	X	X	X	X
LDW-SC55-1-2	JA36B	sediment	02/06/06		X	X		X	X		X	X	X	X	X	X
LDW-SC55-2-3	JA36C	sediment	02/06/06		X	X		X	X		X	X	X	X	X	X
LDW-SC49-0-1	JA36F	sediment	02/06/06		X	X		X	X		X	X	X	X	X	X
LDW-SC49-0-1RE	JA36FRE	sediment	02/06/06		X											
LDW-SC49-1-2	JA36G	sediment	02/06/06		X	X		X	X		X	X	X	X	X	X
LDW-SC49-1-2DL	JA36GDL	sediment	02/06/06					X								
LDW-SC49-2-4	JA36H	sediment	02/06/06		X	X		X	X		X	X	X	X	X	X
LDW-SC49-2-4DL	JA36HDL	sediment	02/06/06					X								
LDW-SC53-0-2	JA64A	sediment	02/07/06		X	X	X	X	X		X	X	X	X	X	X
LDW-SC53-0-2RE	JA64ARE	sediment	02/07/06		X											
LDW-SC53-2-4	JA64B	sediment	02/07/06		X	X	X	X	X		X	X	X	X	X	X
LDW-SC56-0-2	JA64Q	sediment	02/27/06								X	X	X	X		X
LDW-SC56-2-4	JA64R	sediment	02/27/06											X		X
LDW-SC-RB1	JA90A	water	02/08/06		X	X	X	X	X	X						
LDW-SC52-0-1	JA90B	sediment	02/08/06		X	X		X	X					X	X	X
LDW-SC52-0-1DL	JA90BDL	sediment	02/08/06			X										
LDW-SC52-1-2	JA90C	sediment	02/08/06		X	X		X	X		X	X	X	X	X	X
LDW-SC52-2-4	JA90D	sediment	02/08/06		X	X		X	X		X	X	X	X	X	X
LDW-SC42-0-1	JA90F	sediment	02/08/06		X	X		X	X		X	X	X	X	X	X
LDW-SC42-1-2	JA90G	sediment	02/08/06		X	X		X	X					X	X	X
LDW-SC42-2-4	JA90H	sediment	02/08/06		X	X		X	X		X	X	X	X	X	X
LDW-SC42-2-4DL	JA90HDL	sediment	02/08/06					X								
LDW-SC48-0-1	JA90M	sediment	02/08/06								X	X	X			
LDW-SC48-1-2	JA90N	sediment	02/08/06								X	X	X			

Note: X = Validation was performed.

SDG#: JA36/JA64/JA90/JB00 VALIDATION SAMPLE TABLE **LDC#:** 14827A

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

Client ID #	Lab ID #	Matrix	Date Collected	VOA (8260B)	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyltins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC3-0-2	JB00S	sediment	02/09/06		X	X		X	X	X	X	X	X	X	X	X
LDW-SC3-2-4	JB00T	sediment	02/09/06		X	X		X	X	X	X	X	X	X	X	X
LDW-SC55-0-1MS	JA36AMS	sediment	02/06/06						X							
LDW-SC55-0-1DUP	JA36ADUP	sediment	02/06/06						X					X		
LDW-SC53-0-2MS	JA64AMS	sediment	02/07/06						X						X	
LDW-SC53-0-2DUP	JA64ADUP	sediment	02/07/06						X					X	X	
LDW-SC-RB1MS	JA90AMS	water	02/08/06						X							
LDW-SC-RB1DUP	JA90ADUP	water	02/08/06						X							
LDW-SC52-0-1MS	JA90BMS	sediment	02/08/06					X								
LDW-SC52-0-1MSD	JA90BMSD	sediment	02/08/06					X								
LDW-SC42-2-4MS	JA90HMS	sediment	02/08/06		X	X		X	X						X	
LDW-SC42-2-4MSD	JA90HMSD	sediment	02/08/06		X	X		X								
LDW-SC42-2-4DUP	JA90HDUP	sediment	02/08/06						X					X	X	
LDW-SC3-0-2MS	JB00SMS	sediment	02/09/06						X	X					X	
LDW-SC3-0-2MSD	JB00SMSD	sediment	02/09/06							X						
LDW-SC3-0-2DUP	JB00SDUP	sediment	02/09/06						X					X	X	

Note: X = Validation was performed.

Attachment 2

SDG#: JB30 VALIDATION SAMPLE TABLE **LDC#:** 14827B

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyltins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC13-0-2	JB30B	sediment	02/13/06	X	X		X	X		X	X	X	X	X	X
LDW-SC13-0-2RE	JB30BRE	sediment	02/13/06		X										
LDW-SC13-2-4	JB30C	sediment	02/13/06	X	X		X	X		X	X	X	X	X	X
LDW-SC13-2-4RE	JB30CRE	sediment	02/13/06		X										
LDW-SC13-2-4DL	JB30CDL	sediment	02/13/06	X			X								
LDW-SC9-0-1	JB30S	sediment	02/13/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC9-0-1RE	JB30SRE	sediment	02/13/06		X										
LDW-SC9-0-1DL	JB30SDL	sediment	02/13/06	X			X								
LDW-SC9-1-2.6	JB30T	sediment	02/13/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC9-1-2.6RE	JB30TRE	sediment	02/13/06		X										
LDW-SC9-1-2.6DL	JB30TDL	sediment	02/13/06	X											
LDW-SC9-2.6-4	JB30U	sediment	02/13/06	X	X	X	X	X					X	X	X
LDW-SC9-2.6-4RE	JB30URE	sediment	02/13/06		X										
LDW-SC9-2.6-4DL	JB30UDL	sediment	02/13/06	X											
LDW-SC13-0-2MS	JB30BMS	sediment	02/13/06					X							
LDW-SC13-0-2DUP	JB30BDUP	sediment	02/13/06					X							
LDW-SC9-0-1MS	JB30SMS	sediment	02/13/06	X	X										
LDW-SC9-0-1MSD	JB30SMSD	sediment	02/13/06	X	X										

Note: X = Validation was performed.

Attachment 2

SDG#: JB31 VALIDATION SAMPLE TABLE **LDC#:** 14827C

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyltins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC32-0-1	JB31A	sediment	02/11/06	X	X		X	X					X	X	X
LDW-SC32-1-2	JB31B	sediment	02/11/06	X	X		X	X		X	X	X	X	X	X
LDW-SC32-2-4	JB31C	sediment	02/11/06	X	X		X	X		X	X	X	X	X	X
LDW-SC14-0-1.4	JB31H	sediment	02/13/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC14-1.4-2	JB31I	sediment	02/13/06	X	X	X	X	X	X				X	X	X
LDW-SC14-2-4.1	JB31J	sediment	02/13/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC11-0-0.8	JB31O	sediment	02/13/06	X	X		X	X					X	X	X
LDW-SC11-0.8-2	JB31P	sediment	02/13/06	X	X		X	X		X	X	X	X	X	X
LDW-SC11-2-3.4	JB31Q	sediment	02/13/06	X	X		X	X					X	X	X
LDW-SC11-3.4-4.1	JB31R	sediment	02/13/06	X	X		X	X					X	X	X
LDW-SC32-0-1MS	JB31AMS	sediment	02/11/06					X							
LDW-SC32-0-1DUP	JB31ADUP	sediment	02/11/06					X							
LDW-SC14-0-1.4MS	JB31HMS	sediment	02/13/06											X	
LDW-SC14-0-1.4DUP	JB31HDUP	sediment	02/13/06											X	
LDW-SC14-1.4-2DUP	JB31IDUP	sediment	02/13/06										X		
LDW-SC11-3.4-4.1MS	JB31RMS	sediment	02/13/06	X	X										
LDW-SC11-3.4-4.1MSD	JB31RMSD	sediment	02/13/06	X	X										

Note: X = Validation was performed.

Attachment 2

SDG#: JB47/JB64/JB80/JB90 VALIDATION SAMPLE TABLE **LDC#:** 14827D

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyltins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC30-0-2.5	JB47J	sediment	02/14/06	X	X		X	X		X	X	X	X	X	X
LDW-SC30-2.5-4	JB47K	sediment	02/14/06	X	X		X	X		X	X	X	X	X	X
LDW-SC21-0-1	JB64E	sediment	02/15/06	X	X		X	X					X	X	X
LDW-SC21-0-1DL	JB64EDL	sediment	02/15/06		X										
LDW-SC21-1-2	JB64F	sediment	02/15/06	X	X		X	X		X	X	X	X	X	X
LDW-SC21-1-2DL	JB64FDL	sediment	02/15/06		X										
LDW-SC21-2-4	JB64G	sediment	02/15/06	X	X		X	X		X	X	X	X	X	X
LDW-SC21-2-4DL	JB64GDL	sediment	02/15/06		X										
LDW-SC35-0-2	JB64L	sediment	02/15/06	X	X		X	X		X	X	X	X	X	X
LDW-SC35-2-4	JB64M	sediment	02/15/06	X	X		X	X		X	X	X	X	X	X
LDW-SC35-2-4DL	JB64MDL	sediment	02/15/06		X										
LDW-SC20-0-2	JB80G	sediment	02/15/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC20-2-4	JB80H	sediment	02/15/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC20-2-4DL	JB80HDL	sediment	02/15/06		X										
LDW-SC56-0-2	JB90A	sediment	02/07/06	X	X		X	X					X	X	
LDW-SC56-2-4	JB90B	sediment	02/07/06	X	X		X	X					X	X	
LDW-SC48-0-1	JB90C	sediment	02/08/06	X	X		X	X			X		X	X	X
LDW-SC48-0-1DL	JB90CDL	sediment	02/08/06				X								
LDW-SC48-1-2	JB90D	sediment	02/08/06	X	X		X	X			X		X	X	X
LDW-SC48-2-4	JB90E	sediment	02/08/06	X	X		X	X					X	X	X
LDW-SC1-0-2	JB90F	sediment	02/09/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC1-2-4	JB90G	sediment	02/09/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC1-2-4DL	JB90GDL	sediment	02/09/06		X										
LDW-SC30-0-2.5-4MS	JB47KMS	sediment	02/14/06				X								
LDW-SC30-0-2.5-4MSD	JB47KMSD	sediment	02/14/06				X								

Note: X = Validation was performed.

SDG#: JB47/JB64/JB80/JB90 VALIDATION SAMPLE TABLE **LDC#:** 14827D

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyltins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC21-0-1MS	JB64EMS	sediment	02/15/06					X							
LDW-SC21-0-1DUP	JB64EDUP	sediment	02/15/06					X							
LDW-SC21-2-4MS	JB64GMS	sediment	02/15/06	X	X		X								
LDW-SC21-2-4MSD	JB64GMSD	sediment	02/15/06	X	X		X								
LDW-SC20-0-2MS	JB80GMS	sediment	02/15/06											X	
LDW-SC20-0-2DUP	JB80GDUP	sediment	02/15/06										X	X	
LDW-SC20-2-4MS	JB80HMS	sediment	02/15/06			X	X	X	X						
LDW-SC20-2-4MSD	JB80HMSD	sediment	02/15/06			X	X		X						
LDW-SC20-2-4DUP	JB80HDUP	sediment	02/15/06					X							
LDW-SC56-0-2MS	JB90AMS	sediment	02/07/06					X						X	
LDW-SC56-0-2DUP	JB90ADUP	sediment	02/07/06					X					X	X	
LDW-SC56-2-4MS	JB90BMS	sediment	02/07/06				X								
LDW-SC56-2-4MSD	JB90BMSD	sediment	02/07/06				X								

Note: X = Validation was performed.

Attachment 2

SDG#: JB91 VALIDATION SAMPLE TABLE **LDC#:** 14827E

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyltins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC23-0-2	JB91C	sediment	02/17/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC23-0-2DL	JB91CDL	sediment	02/17/06			X									
LDW-SC23-2-4	JB91D	sediment	02/17/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC23-2-4DL	JB91DDL	sediment	02/17/06	X											

Note: X = Validation was performed.

Attachment 2

SDG#: JB82 | VALIDATION SAMPLE TABLE | **LDC#:** 14827F

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyltins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC36-0-1	JB82A	sediment	02/16/06	X	X		X	X	X				X	X	X
LDW-SC36-1-2	JB82B	sediment	02/16/06	X	X		X	X	X				X	X	X
LDW-SC36-2-4	JB82C	sediment	02/16/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC202-0-1	JB82G	sediment	02/16/06	X	X		X	X	X				X	X	X
LDW-SC202-0-1DL	JB82GDL	sediment	02/16/06	X											
LDW-SC202-1-2	JB82H	sediment	02/16/06	X	X		X	X	X				X	X	X
LDW-SC202-2-4	JB82I	sediment	02/16/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC39-0-1	JB82M	sediment	02/16/06	X	X	X	X	X	X				X	X	X
LDW-SC39-1-2	JB82N	sediment	02/16/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC39-2-4	JB82O	sediment	02/16/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC12-0-2	JB82S	sediment	02/16/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC12-2-4	JB82T	sediment	02/16/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC12-2-4DL	JB82TDL	sediment	02/16/06	X											
LDW-SC36-0-1MS	JB82AMS	sediment	02/16/06					X							
LDW-SC36-0-1DUP	JB82ADUP	sediment	02/16/06					X							
LDW-SC36-2-4MS	JB82CMS	sediment	02/16/06				X								
LDW-SC36-2-4MSD	JB82CMSD	sediment	02/16/06				X								
LDW-SC202-0-1MS	JB82GMS	sediment	02/16/06	X	X										
LDW-SC202-0-1MSD	JB82GMSD	sediment	02/16/06	X	X										
LDW-SC39-0-1MS	JB82MMS	sediment	02/16/06											X	
LDW-SC39-0-1DUP	JB82MDUP	sediment	02/16/06										X	X	

Note: X = Validation was performed.

Attachment 2

SDG#: DPWG18883/WG18543 VALIDATION SAMPLE TABLE **LDC#:** 14842A

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

Client ID #	Lab ID #	Matrix	Date Collected	Dioxins (1613B)											
LDW-SC26-1-2	L8708-13	sediment	02/22/06	X											
LDW-SC26-2-4	L8708-14	sediment	02/22/06	X											
LDW-SC40-0-1.3	L8708-15	sediment	02/24/06	X											
LDW-SC40-1.3-2	L8708-16	sediment	02/24/06	X											
LDW-SC40-2-4	L8708-17	sediment	02/24/06	X											
LDW-SC19-0-1	L8708-18	sediment	02/24/06	X											
LDW-SC19-1-2	L8708-19	sediment	02/24/06	X											
LDW-SC19-2-4	L8708-20	sediment	02/24/06	X											
LDW-SC28-0-1	L8708-23	sediment	02/25/06	X											
LDW-SC28-1-2	L8708-24	sediment	02/25/06	X											
LDW-SC28-2-4	L8708-25	sediment	02/25/06	X											
LDW-SC40-2-4DUP	L8708-17DUP	sediment	02/24/06	X											

Note: X = Validation was performed.

Attachment 2

SDG#: JB01/JB22 VALIDATION SAMPLE TABLE **LDC#:** 14847A

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC4-0-1	JB01P	sediment	02/09/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC4-0-1RE	JB01PRE	sediment	02/09/06		X										
LDW-SC4-1-2	JB01Q	sediment	02/09/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC4-1-2RE	JB01QRE	sediment	02/09/06		X										
LDW-SC4-2-4	JB01R	sediment	02/09/06	X	X		X	X	X				X	X	X
LDW-SC4-2-4RE	JB01RRE	sediment	02/09/06		X										
LDW-SC2-0-2	JB01U	sediment	02/09/06	X	X		X	X					X	X	X
LDW-SC2-0-2RE	JB01URE	sediment	02/09/06		X										
LDW-SC2-2-4	JB01V	sediment	02/09/06	X	X		X	X		X	X	X	X	X	X
LDW-SC2-2-4DL	JB01VDL	sediment	02/09/06	X	X										
LDW-SC33-0-2	JB22A	sediment	02/11/06	X	X		X	X		X	X	X	X	X	X
LDW-SC33-0-2RE	JB22ARE	sediment	02/11/06		X										
LDW-SC33-0-2DL	JB22ADL	sediment	02/11/06		X										
LDW-SC33-2-4	JB22B	sediment	02/11/06	X	X		X	X		X	X	X	X	X	X
LDW-SC33-2-4RE	JB22BRE	sediment	02/11/06		X										
LDW-SC201-0-1.5	JB22S	sediment	02/11/06	X	X		X	X					X	X	X
LDW-SC201-0-1.5RE	JB22SRE	sediment	02/11/06		X										
LDW-SC201-1.5-4	JB22T	sediment	02/11/06	X	X		X	X					X	X	X
LDW-SC201-1.5-4RE	JB22TRE	sediment	02/11/06		X										
LDW-SC4-0-1MS	JB01PMS	sediment	02/09/06				X	X							
LDW-SC4-0-1MSD	JB01PMSD	sediment	02/09/06				X								
LDW-SC4-0-1DUP	JB01PDUP	sediment	02/09/06					X							
LDW-SC201-1.5-4MS	JB22TMS	sediment	02/11/06	X	X		X								
LDW-SC201-1.5-4MSD	JB22TMSD	sediment	02/11/06	X	X		X								
LDW-SC201-1.5-4REMS	JB22TREMS	sediment	02/11/06		X										

Note: X = Validation was performed.

SDG#: JB01/JB22 VALIDATION SAMPLE TABLE **LDC#:** 14847A

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl- tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC201-1.5-4REMSD	JB22TREMSD	sediment	02/11/06		X										

Note: X = Validation was performed.

Attachment 2

SDG#: JB20 VALIDATION SAMPLE TABLE **LDC#:** 14847B

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC6-0-2	JB20A	sediment	02/10/06	X	X		X	X		X	X	X	X	X	X
LDW-SC6-0-2DL	JB20ADL	sediment	02/10/06	X											
LDW-SC6-0-2RE	JB20ARE	sediment	02/10/06		X										
LDW-SC6-2-4.5	JB20B	sediment	02/10/06	X	X		X	X		X	X	X	X	X	X
LDW-SC6-2-4.5DL	JB20BDL	sediment	02/10/06				X								
LDW-SC6-2-4.5RE	JB20BRE	sediment	02/10/06		X										
LDW-SC8-0-1	JB20V	sediment	02/10/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC8-0-1RE	JB20VRE	sediment	02/10/06		X										
LDW-SC8-1-2	JB20W	sediment	02/10/06	X	X	X	X	X					X	X	X
LDW-SC8-1-2DL	JB20WDL	sediment	02/10/06				X								
LDW-SC8-1-2RE	JB20WRE	sediment	02/10/06		X										
LDW-SC8-2-4	JB20X	sediment	02/10/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC8-2-4DL	JB20XDL	sediment	02/10/06	X			X								
LDW-SC8-2-4RE	JB20XRE	sediment	02/10/06		X										
LDW-SC7-0-1	JB20AB	sediment	02/10/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC7-0-1DL	JB20ABDL	sediment	02/10/06	X											
LDW-SC7-0-1RE	JB20ABRE	sediment	02/10/06		X										
LDW-SC7-1-1.7	JB20AC	sediment	02/10/06	X	X	X	X	X	X				X	X	X
LDW-SC7-1-1.7DL	JB20ACDL	sediment	02/10/06				X								
LDW-SC7-1-1.7RE	JB20ACRE	sediment	02/10/06		X										
LDW-SC7-1.7-4	JB20AD	sediment	02/10/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC7-1.7-4RE	JB20ADRE	sediment	02/10/06		X										
LDW-SC10-0-1	JB20AH	sediment	02/10/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC10-0-1RE	JB20AHRE	sediment	02/10/06		X										
LDW-SC10-1-2	JB20AI	sediment	02/10/06	X	X	X	X	X					X	X	X

Note: X = Validation was performed.

SDG#: JB20 VALIDATION SAMPLE TABLE **LDC#:** 14847B

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC10-1-2RE	JB20AIRE	sediment	02/10/06		X										
LDW-SC10-2-4	JB20AJ	sediment	02/10/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC10-2-4RE	JB20AJRE	sediment	02/10/06		X										
LDW-SC6-0-2MS	JB20AMS	sediment	02/10/06					X							
LDW-SC6-0-2DUP	JB20ADUP	sediment	02/10/06					X							X
LDW-SC6-0-2TRP	JB20ATRP	sediment	02/10/06												X
LDW-SC6-2-4.5MS	JB20BMS	sediment	02/10/06	X	X		X								
LDW-SC6-2-4.5MSD	JB20BMSD	sediment	02/10/06	X	X		X								
LDW-SC7-0-1DUP	JB20ABDUP	sediment	02/10/06										X		
LDW-SC7-0-1TRP	JB20ABTRP	sediment	02/10/06										X		
LDW-SC6-2-4.5REMS	JB20BREMS	sediment	02/10/06		X										X
LDW-SC6-2-4.5REMSD	JB20BREMSD	sediment	02/10/06		X										X

Note: X = Validation was performed.

Attachment 2

SDG#: JB96 VALIDATION SAMPLE TABLE **LDC#:** 14847C

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC34-0-1	JB96A	sediment	02/18/06	X	X	X	X	X					X	X	X
LDW-SC34-1-2	JB96B	sediment	02/18/06	X	X	X	X	X					X	X	X
LDW-SC34-1-2DL	JB96BDL	sediment	02/18/06	X											
LDW-SC34-2-4	JB96C	sediment	02/18/06	X	X	X	X	X					X	X	X
LDW-SC203-0-1	JB96G	sediment	02/18/06	X	X	X	X	X					X	X	X
LDW-SC203-0-1DL	JB96GDL	sediment	02/18/06		X										
LDW-SC203-1-2	JB96H	sediment	02/18/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC203-1-2DL	JB96HDL	sediment	02/18/06		X										
LDW-SC203-2-4	JB96I	sediment	02/18/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC203-2-4DL	JB96IDL	sediment	02/18/06	X	X										
LDW-SC25-0-1	JB96Q	sediment	02/18/06	X	X		X	X	X				X	X	X
LDW-SC25-1-2	JB96R	sediment	02/18/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC25-1-2DL	JB96RDL	sediment	02/18/06						X						
LDW-SC25-2-4	JB96S	sediment	02/18/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC25-2-4DL	JB96SDL	sediment	02/18/06						X						
LDW-SC34-0-1MS	JB96AMS	sediment	02/18/06					X							
LDW-SC34-0-1DUP	JB96ADUP	sediment	02/18/06					X							
LDW-SC25-2-4MS	JB96SMS	sediment	02/18/06	X	X				X						
LDW-SC25-2-4MSD	JB96SMSD	sediment	02/18/06	X	X				X						

Note: X = Validation was performed.

Attachment 2

SDG#: JB46/JC05 VALIDATION SAMPLE TABLE **LDC#:** 14865A

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC22-0-1.1	JB46A	sediment	02/14/06	X	X		X	X		X	X	X	X	X	X
LDW-SC22-0-1.1DL	JB46ADL	sediment	02/14/06		X										
LDW-SC22-0-1.1RE	JB46ARE	sediment	02/14/06		X										
LDW-SC22-1.1-2	JB46B	sediment	02/14/06	X	X		X	X		X	X	X	X	X	X
LDW-SC22-1.1-2DL	JB46BDL	sediment	02/14/06		X										
LDW-SC22-1.1-2RE	JB46BRE	sediment	02/14/06		X										
LDW-SC22-2-4	JB46C	sediment	02/14/06	X	X		X	X					X	X	X
LDW-SC22-2-4DL	JB46CDL	sediment	02/14/06		X										
LDW-SC22-2-4RE	JB46CRE	sediment	02/14/06		X										
LDW-SC16-0-2	JB46F	sediment	02/14/06	X	X		X	X		X	X	X	X	X	X
LDW-SC16-0-2DL	JB46FDL	sediment	02/14/06	X	X										
LDW-SC16-0-2RE	JB46FRE	sediment	02/14/06		X										
LDW-SC16-2-4	JB46G	sediment	02/14/06	X	X		X	X		X	X	X	X	X	X
LDW-SC16-2-4DL	JB46GDL	sediment	02/14/06		X		X								
LDW-SC16-2-4RE	JB46GRE	sediment	02/14/06		X										
LDW-SC-RB2	JB46L	water	02/14/06	X	X	X	X	X	X						
LDW-SC27-0-2	JB46Y	sediment	02/14/06	X	X		X	X		X	X	X	X	X	X
LDW-SC27-0-2DL	JB46YDL	sediment	02/14/06		X		X								
LDW-SC27-0-2RE	JB46YRE	sediment	02/14/06		X										
LDW-SC27-2-4.5	JB46Z	sediment	02/14/06	X	X		X	X		X	X	X	X	X	X
LDW-SC27-2-4.5DL	JB46ZDL	sediment	02/14/06		X										
LDW-SC27-2-4.5RE	JB46ZRE	sediment	02/14/06		X										
LDW-SC5-0-1	JC05A	sediment	02/10/06	X	X		X	X		X	X	X	X	X	X
LDW-SC5-0-1RE	JC05ARE	sediment	02/10/06		X										
LDW-SC5-1-2.2	JC05B	sediment	02/10/06	X	X		X	X					X	X	X

Note: X = Validation was performed.

SDG#: JB46/JC05 VALIDATION SAMPLE TABLE **LDC#:** 14865A

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC5-1-2.2DL	JC05BDL	sediment	02/10/06	X											
LDW-SC5-1-2.2RE	JC05BRE	sediment	02/10/06		X										
LDW-SC5-2.2-4	JC05C	sediment	02/10/06	X	X		X	X		X	X	X	X	X	X
LDW-SC5-2.2-4RE	JC05CRE	sediment	02/10/06		X										
LDW-SC22-0-1.1MS	JB46AMS	sediment	02/14/06					X							
LDW-SC22-0-1.1MSD	JB46AMSD	sediment	02/14/06					X							
LDW-SC16-2-4MS	JB46GMS	sediment	02/14/06											X	
LDW-SC16-2-4DUP	JB46GDUP	sediment	02/14/06										X	X	
LDW-SC16-2-4TRP	JB46GTRP	sediment	02/14/06										X	X	
LDW-SC-RB2MS	JB46LMS	water	02/14/06					X							
LDW-SC-RB2DUP	JB46LDUP	water	02/14/06					X							
LDW-SC5-0-1MS	JC05AMS	sediment	02/10/06					X							
LDW-SC5-0-1DUP	JC05ADUP	sediment	02/10/06					X							
LDW-SC5-0-1TRP	JC05ATRP	sediment	02/10/06												X
LDW-SC5-2.2-4MS	JC05CMS	sediment	02/10/06	X	X										
LDW-SC5-2.2-4MSD	JC05CMSD	sediment	02/10/06	X	X										

Note: X = Validation was performed.

Attachment 2

SDG#: JB98/JC10 VALIDATION SAMPLE TABLE **LDC#:** 14865B

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals. SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC15-0-1	JB98A	sediment	02/17/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC15-1-2	JB98B	sediment	02/17/06	X	X		X	X	X				X	X	X
LDW-SC15-2-4	JB98C	sediment	02/17/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC18-0-1	JB98G	sediment	02/17/06	X	X		X	X					X	X	X
LDW-SC18-1-2	JB98H	sediment	02/17/06	X	X		X	X		X	X	X	X	X	X
LDW-SC18-2-4	JB98I	sediment	02/17/06	X	X		X	X		X	X	X	X	X	X
LDW-SC31-0-1	JB98M	sediment	02/17/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC31-1-2.8	JB98N	sediment	02/17/06	X	X	X	X	X	X	X	X	X	X	X	X
LDW-SC31-2.8-4	JB98O	sediment	02/17/06	X	X	X	X	X	X				X	X	X
LDW-SC24-0-1	JB98Q	sediment	02/17/06	X	X		X	X		X	X	X	X	X	X
LDW-SC24-1-2	JB98R	sediment	02/17/06	X	X		X	X					X	X	X
LDW-SC24-2-4	JB98S	sediment	02/17/06	X	X		X	X		X	X	X	X	X	X
LDW-SC45-0-1	JC10U	sediment	02/21/06	X	X		X	X					X	X	X
LDW-SC45-0-1DL	JC10UDL	sediment	02/21/06		X										
LDW-SC45-1-2	JC10V	sediment	02/21/06	X	X		X	X		X	X	X	X	X	X
LDW-SC45-1-2DL	JC10VDL	sediment	02/21/06		X										
LDW-SC45-2-4	JC10W	sediment	02/21/06	X	X		X	X		X	X	X	X	X	X
LDW-SC45-2-4DL	JC10WDL	sediment	02/21/06		X										
LDW-SC38-0-1	JC10AT	sediment	02/21/06	X	X		X	X		X	X	X	X	X	X
LDW-SC38-0-1DL	JC10ATDL	sediment	02/21/06		X										
LDW-SC38-1-2	JC10AU	sediment	02/21/06	X	X		X	X					X	X	X
LDW-SC38-2-3	JC10AV	sediment	02/21/06	X	X		X	X					X	X	X
LDW-SC38-3-3.3	JC10AW	sediment	02/21/06	X	X		X	X					X	X	X
LDW-SC31-1-2.8MS	JB98NMS	sediment	02/17/06				X								
LDW-SC31-1-2.8MSD	JB98NMSD	sediment	02/17/06				X								

SDG#: JB98/JC10 VALIDATION SAMPLE TABLE **LDC#:** 14865B

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC31-2.8-4MS	JB98OMS	sediment	02/17/06			X	X	X	X					X	
LDW-SC31-2.8-4MSD	JB98OMSD	sediment	02/17/06			X	X		X						
LDW-SC31-2.8-4DUP	JB98ODUP	sediment	02/17/06					X					X	X	
LDW-SC45-0-1MS	JC10UMS	sediment	02/21/06					X							
LDW-SC45-0-1DUP	JC10UDUP	sediment	02/21/06					X							
LDW-SC45-2-4MS	JC10WMS	sediment	02/21/06	X	X										
LDW-SC45-2-4MSD	JC10WMSD	sediment	02/21/06	X	X										

Note: X = Validation was performed.

Attachment 2

SDG#: JC21 VALIDATION SAMPLE TABLE **LDC#:** 14876A

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

Client ID #	Lab ID #	Matrix	Date Collected	VOA (8260B)	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC-RB3	JC21A	water	02/22/06		X	X	X	X	X	X						
LDW-SC49V-0-1	JC21F	sediment	02/22/06	X												
LDW-SC49V-1-2	JC21G	sediment	02/22/06	X												
LDW-SC49V-2-3	JC21H	sediment	02/22/06	X												
LDW-SC49V-3-4	JC21I	sediment	02/22/06	X												
LDW-SC49V-4-5	JC21J	sediment	02/22/06	X												
LDW-SC49V-5-6	JC21K	sediment	02/22/06	X												
LDW-SC49V-6-7	JC21L	sediment	02/22/06	X												
LDW-SC49V-7-8	JC21M	sediment	02/22/06	X												
LDW-SC49V-8-9	JC21N	sediment	02/22/06	X												
LDW-SC49V-8-9RE	JC21NRE	sediment	02/22/06	X												
LDW-SC49V-9-10	JC21O	sediment	02/22/06	X												
LDW-SC49V-9-10RE	JC21ORE	sediment	02/22/06	X												
LDW-SC49V-10-11	JC21P	sediment	02/22/06	X												
LDW-SC49V-10-11RE	JC21PRE	sediment	02/22/06	X												
LDW-SC49V-11-12	JC21Q	sediment	02/22/06	X												
LDW-SC49V-11-12RE	JC21QRE	sediment	02/22/06	X												
LDW-SC51-0-2	JC21R	sediment	02/22/06		X	X		X	X		X	X	X	X	X	X
LDW-SC51-0-2DL	JC21RDL	sediment	02/22/06					X								
LDW-SC51-2-3.8	JC21S	sediment	02/22/06		X	X		X	X		X	X	X	X	X	X
LDW-SC37-0-1	JC21AG	sediment	02/22/06		X	X		X	X		X	X	X	X	X	X
LDW-SC37-0-1DL	JC21AGDL	sediment	02/22/06			X		X								
LDW-SC37-1-2	JC21AH	sediment	02/22/06		X	X		X	X					X	X	X
LDW-SC37-1-2DL	JC21AHDL	sediment	02/22/06		X			X								
LDW-SC37-2-4	JC21AI	sediment	02/22/06		X	X		X	X		X	X	X	X	X	X

Note: X = Validation was performed.

SDG#: JC21 | VALIDATION SAMPLE TABLE | **LDC#:** 14876A

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

Client ID #	Lab ID #	Matrix	Date Collected	VOA (8260B)	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC37-2-4DL	JC21AIDL	sediment	02/22/06		X			X								
LDW-SC26-0-1	JC21AL	sediment	02/22/06		X	X		X	X	X				X	X	X
LDW-SC26-0-1DL	JC21ALDL	sediment	02/22/06			X		X								
LDW-SC26-1-2	JC21AM	sediment	02/22/06		X	X		X	X	X	X	X	X	X	X	X
LDW-SC26-1-2DL	JC21AMDL	sediment	02/22/06			X		X								
LDW-SC26-2-4	JC21AN	sediment	02/22/06		X	X		X	X	X	X	X	X	X	X	X
LDW-SC26-2-4DL	JC21ANDL	sediment	02/22/06			X		X		X						
LDW-SC-RB3MS	JC21AMS	water	02/22/06						X							
LDW-SC-RB3DUP	JC21ADUP	water	02/22/06						X							
LDW-SC49V-11-12MS	JC21QMS	sediment	02/22/06	X												
LDW-SC49V-11-12MSD	JC21QMSD	sediment	02/22/06	X												
LDW-SC37-1-2MS	JC21AHMS	sediment	02/22/06		X	X		X	X						X	
LDW-SC37-1-2MSD	JC21AHMSD	sediment	02/22/06		X	X		X								
LDW-SC37-1-2DUP	JC21AHDUP	sediment	02/22/06						X					X	X	
LDW-SC37-1-2TRP	JC21AHTRP	sediment	02/22/06											X	X	
LDW-SC26-1-2MS	JC21AMMS	sediment	02/22/06					X								
LDW-SC26-1-2MSD	JC21AMMSD	sediment	02/22/06					X								
LDW-SC37-2-4DUP	JC21AIDUP	sediment	02/22/06													X
LDW-SC37-2-4TRP	JC21AITRP	sediment	02/22/06													X

Note: X = Validation was performed.

Attachment 2

SDG#: JC32 VALIDATION SAMPLE TABLE **LDC#:** 14894A

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC43-0-2	JC32A	sediment	02/23/06	X	X		X	X		X	X	X	X	X	X
LDW-SC43-2-4	JC32B	sediment	02/23/06	X	X		X	X		X	X	X	X	X	X
LDW-SC54-0-2	JC32R	sediment	02/23/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC54-2-4	JC32S	sediment	02/23/06	X	X	X	X	X					X	X	X
LDW-SC47-0-1	JC32AI	sediment	02/23/06	X	X		X	X		X	X	X	X	X	X
LDW-SC47-1-2	JC32AJ	sediment	02/23/06	X	X		X	X		X	X	X	X	X	X
LDW-SC47-2-3	JC32AK	sediment	02/23/06	X	X		X	X		X	X	X	X	X	X
LDW-SC47-3-4	JC32AL	sediment	02/23/06	X	X		X	X					X	X	X
LDW-SC43-0-2MS	JC32AMS	sediment	02/23/06					X							
LDW-SC43-0-2DUP	JC32ADUP	sediment	02/23/06					X							
LDW-SC47-3-4MS	JC32ALMS	sediment	02/23/06	X	X		X								
LDW-SC47-3-4MSD	JC32ALMSD	sediment	02/23/06	X	X		X								

Note: X = Validation was performed.

Attachment 2

SDG#: JC42 VALIDATION SAMPLE TABLE **LDC#:** 14894B

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC40-0-1.3	JC42A	sediment	02/24/06	X	X	X	X	X					X	X	X
LDW-SC40-1.3-2	JC42B	sediment	02/24/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC40-2-4	JC42C	sediment	02/24/06	X	X	X	X	X		X	X	X	X	X	X
LDW-SC40-2-4RE	JC42CRE	sediment	02/24/06	X											
LDW-SC17-0-1	JC42G	sediment	02/24/06	X	X		X	X					X	X	X
LDW-SC17-0-1DL	JC42GDL	sediment	02/24/06		X										
LDW-SC17-1-2	JC42H	sediment	02/24/06	X	X		X	X		X	X	X	X	X	X
LDW-SC17-1-2DL	JC42HDL	sediment	02/24/06	X	X										
LDW-SC17-2-4	JC42I	sediment	02/24/06	X	X		X	X		X	X	X	X	X	X
LDW-SC17-2-4DL	JC42IDL	sediment	02/24/06	X	X										
LDW-SC50-0-1	JC42L	sediment	02/24/06	X	X		X	X					X	X	X
LDW-SC50-0-1DL	JC42LDL	sediment	02/24/06		X										
LDW-SC50-1-2	JC42M	sediment	02/24/06	X	X		X	X		X	X	X	X	X	X
LDW-SC50-2-2.8	JC42N	sediment	02/24/06	X	X		X	X		X	X	X	X	X	X
LDW-SC50-2.8-4	JC42O	sediment	02/24/06	X	X		X	X					X	X	X
LDW-SC46-0-1	JC42Z	sediment	02/24/06	X	X		X	X					X	X	X
LDW-SC46-1-2	JC42AA	sediment	02/24/06	X	X		X	X		X	X	X	X	X	X
LDW-SC46-2-4	JC42AB	sediment	02/24/06	X	X		X	X		X	X	X	X	X	X
LDW-SC40-2-4MS	JC42CMS	sediment	02/24/06	X	X	X	X	X						X	
LDW-SC40-2-4MSD	JC42CMSD	sediment	02/24/06	X	X	X	X								
LDW-SC40-2-4DUP	JC42CDUP	sediment	02/24/06					X					X	X	
LDW-SC46-0-1DUP	JC42ZDUP	sediment	02/24/06										X		

Note: X = Validation was performed.

Attachment 2

SDG#: JC48 VALIDATION SAMPLE TABLE **LDC#:** 14894C

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC28-0-1	JC48A	sediment	02/25/06	X	X		X	X	X				X	X	X
LDW-SC28-1-2	JC48B	sediment	02/25/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC28-2-4	JC48C	sediment	02/25/06	X	X		X	X	X	X	X	X	X	X	X
LDW-SC28-0-1MS	JC48AMS	sediment	02/25/06				X	X	X					X	
LDW-SC28-0-1MSD	JC48AMSD	sediment	02/25/06				X		X						
LDW-SC28-0-1DUP	JC48ADUP	sediment	02/25/06					X					X	X	
LDW-SC28-1-2MS	JC48BMS	sediment	02/25/06	X	X										
LDW-SC28-1-2MSD	JC48BMSD	sediment	02/25/06	X	X										

Note: X = Validation was performed.

Attachment 2

SDG#: JC95 VALIDATION SAMPLE TABLE **LDC#:** 14894D

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC41-0-1	SC95A	sediment	02/21/06	X	X		X	X					X	X	X
LDW-SC41-1-2	SC95B	sediment	02/21/06	X	X		X	X		X	X	X	X	X	X
LDW-SC41-2-4	SC95C	sediment	02/21/06	X	X		X	X		X	X	X	X	X	X
LDW-SC44-0-2	SC95D	sediment	02/21/06	X	X		X	X		X	X	X	X	X	X
LDW-SC44-2-3.2	SC95E	sediment	02/21/06	X	X		X	X		X	X	X	X	X	X
LDW-SC44-3.2-4	SC95F	sediment	02/21/06	X	X		X	X					X	X	X
LDW-SC29-0-1	SC95G	sediment	02/21/06	X	X		X	X		X	X	X	X	X	X
LDW-SC29-1-2	SC95H	sediment	02/21/06	X	X		X	X					X	X	X
LDW-SC29-2-3.6	SC95I	sediment	02/21/06	X	X		X	X					X	X	X
LDW-SC19-0-1	SC95J	sediment	02/24/06	X	X		X	X					X	X	X
LDW-SC19-1-2	SC95K	sediment	02/24/06	X	X		X	X					X	X	X
LDW-SC19-2-4	SC95L	sediment	02/24/06	X	X		X	X		X	X	X	X	X	X
LDW-SC41-0-1MS	SC95AMS	sediment	02/21/06					X						X	
LDW-SC41-0-1DUP	SC95ADUP	sediment	02/21/06					X					X	X	

Note: X = Validation was performed.

Attachment 2

SDG#: JE74 VALIDATION SAMPLE TABLE **LDC#:** 14894E

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

Client ID #	Lab ID #	Matrix	Date Collected	SVOA (8270D)	SVOA (8270D -SIM)	Pest. (8081A)	PCBs (8082)	Metals SW846	Butyl-tins (Krone)	Spec. Gravity (D854)	Atterberg Limits (D4318)	Bulk Density	Total Solids (160.3)	TOC Plumb	Grain Size
LDW-SC2-0-2	JE74A	sediment	02/09/06			X									
LDW-SC2-2-4	JE74B	sediment	02/09/06			X									
LDW-SC2-0-2MS	JE74AMS	sediment	02/09/06			X									
LDW-SC2-0-2MSD	JE74AMSD	sediment	02/09/06			X									

Note: X = Validation was performed.

Attachment 2

SDG#: DPWG18912/WG18542 VALIDATION SAMPLE TABLE **LDC#:** 14896A

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

Client ID #	Lab ID #	Matrix	Date Collected	Dioxins (1613B)											
LDW-SC20-0-2	L8708-1	sediment	02/15/06	X											
LDW-SC20-2-4	L8708-2	sediment	02/15/06	X											
LDW-SC39-0-1	L8708-3	sediment	02/16/06	X											
LDW-SC39-1-2	L8708-4	sediment	02/16/06	X											
LDW-SC39-2-4	L8708-5	sediment	02/16/06	X											
LDW-SC29-0-1	L8708-6	sediment	02/21/06	X											
LDW-SC29-1-2	L8708-7	sediment	02/21/06	X											
LDW-SC29-2-3.6	L8708-8	sediment	02/21/06	X											
LDW-SC41-0-1	L8708-9	sediment	02/21/06	X											
LDW-SC41-1-2	L8708-10	sediment	02/21/06	X											
LDW-SC41-2-4	L8708-11	sediment	02/21/06	X											
LDW-SC26-0-1	L8708-12	sediment	02/22/06	X											
LDW-SC29-2-3.6DUP	L8708-8DUP	sediment	02/21/06	X											

Note: X = Validation was performed.

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.

The following qualifiers are for the dioxin/dibenzofuran analysis only:

J1 Blank Contamination: Indicates possible high bias and/or false positives.

J2 Calibration Range exceeded: Indicates possible low bias.

J3 Holding times not met: Indicates low bias for most analytes.

J4 Other QC parameters outside control limits: bias not readily determined.

J5 Other QC parameters outside control limits. The reported results appear to be biased high. The actual value of target compound in the sample may be lower than the value reported by the laboratory.

J6 Other QC parameters outside control limits. The reported results appear to be biased low. The actual value of target compound in the sample may be higher than the value reported by the laboratory.

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

I. Usability

A. Instrument calibration, method blank contamination, compound quantitation and various QC exceedance problems warranted the qualification of a portion of the data set.

- Due to initial calibration %RSD and continuing calibration %D problems, results for several compounds were qualified as estimated (J/UJ) in the volatile, semivolatile, semivolatile-SIM, pesticide and PCB analyses.

- Due to method blank contamination, several compounds were qualified as non-detected (U) in the volatile, semivolatile, semivolatile-SIM and dioxin/dibenzofuran analyses.

- Due to compound quantitation problems, detected results were qualified as estimated (J) for several compounds in the volatile and PCB analyses.

- Due to various QC accuracy and precision problems, results were qualified as estimated (J/UJ) in the volatile, semivolatile, semivolatile-SIM, pesticide, PCB, butyltin and metal analyses.

B. No action was taken when the SRM results were outside the limit of Mean ± Standard Deviation for the organic analyses since the SRM standards were outdated and there were no certified QC limits established.

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 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
JC21	3/1/06 (CC0301)	Bromomethane Chloroethane	29.31809 26.14629	LDW-SC49V-0-1** LDW-SC49V-1-2** LDW-SC49V-2-3** LDW-SC49V-3-4** LDW-SC49V-4-5** LDW-SC49V-5-6** LDW-SC49V-6-7** LDW-SC49V-7-8** LDW-SC49V-8-9** LDW-SC49V-9-10** LDW-SC49V-10-11** LDW-SC49V-11-12**	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JC21	3/2/06 (CC0302)	1,2,4-Trichlorobenzene n-Butylbenzene	25.71417 26.13321	LDW-SC49V-8-9RE**	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JC21	3/6/06 (CC0306)	1,2,4-Trichlorobenzene	28.58680	LDW-SC49V-9-10RE**	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria.

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
JC21	MB-030706	3/7/06	2-Butanone	5.1 ug/Kg	LDW-SC49V-10-11** LDW-SC49V-11-12RE**

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
JC21	LDW-SC49V-11-12RE** (1000x)	2-Butanone	12000 ug/Kg	12000U ug/Kg

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
JC21	LDW-SC49V-11-12MS/MSD (LDW-SC49V-11-12**)	Chloromethane	148 (30-139)	-	-	J (all detects)	A
JC21	LDW-SC49V-11-12MS/MSD (LDW-SC49V-11-12**)	Acrolein	2.82 (22-168)	2.80 (22-168)	-	J (all detects)	A
		1,1-Dichloroethane	69.8 (75-127)	69.6 (75-127)	-	UJ (all non-detects)	
		2-Butanone	21.5 (60-138)	-	120 (≤50)		
		Vinyl acetate	6.03 (32-115)	6.14 (32-115)	-		
		2,2-Dichloropropane	40.4 (80-133)	39.2 (80-133)	-		
		Carbon tetrachloride	61.0 (78-135)	61.1 (78-135)	-		
		Bromodichloromethane	67.2 (82-125)	77.2 (82-125)	-		
		cis-1,3-Dichloropropene	48.8 (73-127)	47.7 (73-127)	-		
		Dibromochloromethane	63.2 (77-134)	57.9 (77-134)	-		
		trans-1,3-Dichloropropene	52.4 (82-128)	50.4 (82-128)	-		
		Bromoform	70.0 (75-134)	61.1 (75-134)	-		
		Chlorobenzene	82.6 (86-118)	80.2 (86-118)	-		
		Styrene	64.1 (88-122)	62.8 (88-122)	-		
		m,p-Xylenes	-	83.5 (86-122)	-		
		1,2-Dichlorobenzene	70.4 (85-120)	66.3 (85-120)	-		
		1,3-Dichlorobenzene	75.9 (86-125)	70.5 (86-125)	-		
		1,4-Dichlorobenzene	69.4 (84-123)	64.9 (84-123)	-		
		1,1,1,2-Tetrachloroethane	61.5 (80-129)	55.7 (80-129)	-		
		trans-1,4-Dichloro-2-butene	38.2 (50-118)	34.2 (50-118)	-		
		Hexachlorobutadiene	64.6 (79-142)	56.7 (79-142)	-		
		Ethylene dibromide	70.1 (73-126)	69.6 (73-126)	-		
		n-Butylbenzene	83.2 (87-135)	74.5 (87-135)	-		
		1,2,4-Trichlorobenzene	35.9 (83-132)	33.2 (83-132)	-		
		Naphthalene	33.2 (73-136)	32.1 (73-136)	-		
		1,2,3-Trichlorobenzene	31.6 (82-128)	30.1 (82-128)	-		

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.

Standard reference material was not performed in this SDG.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

Associated SDG	Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
JC21	LDW-SC49V-8-9**	1,4-Dichlorobenzene-d4	38871 (39277-157108)	1,1,2,2-Tetrachloroethane 1,2-Dibromo-3-chloropropane Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene trans-1,4-Dichloro-2-butene	J (all detects) UJ (all non-detects)	A
JC21	LDW-SC49V-10-11**	1,4-Dichlorobenzene-d4	38359 (39277-157108)	1,1,2,2-Tetrachloroethane 1,2-Dibromo-3-chloropropane Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene trans-1,4-Dichloro-2-butene	J (all detects) UJ (all non-detects)	A
JC21	LDW-SC49V-11-12**	1,4-Dichlorobenzene-d4	41889 (42781-171124)	1,1,2,2-Tetrachloroethane 1,2-Dibromo-3-chloropropane Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene trans-1,4-Dichloro-2-butene	J (all detects) UJ (all non-detects)	A

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

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

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
JC21	LDW-SC49V-9-10**	Vinyl chloride Toluene m,p-Xylenes o-Xylene 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JC21	LDW-SC49V-10-11**	Vinyl chloride cis-1,2-Dichloroethene Toluene m,p-Xylenes	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JC21	LDW-SC49V-10-11**	trans-1,2-Dichloroethene Ethylbenzene o-Xylene 1,3,5-Trimethylbenzene 1,2,4-Trimethylbenzene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A
JC21	LDW-SC49V-11-12**	Vinyl chloride cis-1,2-Dichloroethene Toluene	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JC21	LDW-SC49V-11-12**	trans-1,2-Dichloroethene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	A

N/A = Not applicable

For the results above flagged "Not applicable", the affected compound results in the associated samples were deemed unusable and did not warrant qualification of the data.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

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
JC21	LDW-SC49V-8-9**	1,1,2,2-Tetrachloroethane 1,2-Dibromo-3-chloropropane Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene trans-1,4-Dichloro-2-butene	R R R R R R R R R R R R R R R R R R R R R R	A
JC21	LDW-SC49V-8-9RE**	All TCL compounds except 1,1,2,2-Tetrachloroethane 1,2-Dibromo-3-chloropropane Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene trans-1,4-Dichloro-2-butene	R	A
JC21	LDW-SC49V-9-10**	Vinyl chloride Toluene m,p-Xylenes o-Xylene 1,3,5-Trimethylbenzene 1,2,4-Trimethylbenzene	R R R R R R	A
JC21	LDW-SC49V-9-10RE**	All TCL compounds except Vinyl chloride Toluene m,p-Xylenes o-Xylene 1,3,5-Trimethylbenzene 1,2,4-Trimethylbenzene	R	A
JC21	LDW-SC49V-10-11**	Vinyl chloride cis-1,2-Dichloroethene Toluene m,p-Xylenes	R R R R	A

Associated SDG	Sample	Compound	Flag	A or P
JC21	LDW-SC49V-10-11RE**	All TCL compounds except Vinyl chloride cis-1,2-Dichloroethene Toluene m,p-Xylenes	R	A
JC21	LDW-SC49V-11-12**	Vinyl chloride cis-1,2-Dichloroethene Toluene	R R R	A
JC21	LDW-SC49V-11-12RE**	All TCL compounds except Vinyl chloride cis-1,2-Dichloroethene Toluene	R	A

XVI. Field Replicates

No field replicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

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Volatiles - Data Qualification Summary - SDG JC21

SDG	Sample	Compound	Flag	A or P	Reason
JC21	LDW-SC49V-0-1** LDW-SC49V-1-2** LDW-SC49V-2-3** LDW-SC49V-3-4** LDW-SC49V-4-5** LDW-SC49V-5-6** LDW-SC49V-6-7** LDW-SC49V-7-8** LDW-SC49V-8-9** LDW-SC49V-9-10** LDW-SC49V-10-11** LDW-SC49V-11-12**	Bromomethane Chloroethane	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JC21	LDW-SC49V-8-9RE**	1,2,4-Trichlorobenzene n-Butylbenzene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JC21	LDW-SC49V-9-10RE**	1,2,4-Trichlorobenzene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JC21	LDW-SC49V-11-12**	Chloromethane	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
JC21	LDW-SC49V-11-12**	Acrolein 1,1-Dichloroethane Vinyl acetate 2,2-Dichloropropane Carbon tetrachloride Bromodichloromethane cis-1,3-Dichloropropene Dibromochloromethane trans-1,3-Dichloropropene Bromoform Chlorobenzene Styrene m,p-Xylenes 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,1,1,2-Tetrachloroethane trans-1,4-Dichloro-2-butene Hexachlorobutadiene Ethylene dibromide n-Butylbenzene 1,2,4-Trichlorobenzene Naphthalene 1,2,3-Trichlorobenzene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JC21	LDW-SC49V-11-12**	2-Butanone	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)

SDG	Sample	Compound	Flag	A or P	Reason
JC21	LDW-SC49V-8-9** LDW-SC49V-10-11** LDW-SC49V-11-12**	1,1,2,2-Tetrachloroethane 1,2-Dibromo-3-chloropropane Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene trans-1,4-Dichloro-2-butene	J (all detects) UJ (all non-detects)	A	Internal standards (area)
JC21	LDW-SC49V-10-11**	trans-1,2-Dichloroethene Ethylbenzene o-Xylene 1,3,5-Trimethylbenzene 1,2,4-Trimethylbenzene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A	Compound quantitation and CRQLs
JC21	LDW-SC49V-11-12**	trans-1,2-Dichloroethene	J (all detects)	A	Compound quantitation and CRQLs
JC21	LDW-SC49V-8-9**	1,1,2,2-Tetrachloroethane 1,2-Dibromo-3-chloropropane Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene trans-1,4-Dichloro-2-butene	R R R R R R R R R R R R R R R R R R R R R R	A	Overall assessment of data

SDG	Sample	Compound	Flag	A or P	Reason
JC21	LDW-SC49V-8-9RE**	All TCL compounds except 1,1,2,2-Tetrachloroethane 1,2-Dibromo-3-chloropropane Isopropylbenzene Bromobenzene 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 4-Isopropyltoluene 1,4-Dichlorobenzene n-Butylbenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene trans-1,4-Dichloro-2-butene	R	A	Overall assessment of data
JC21	LDW-SC49V-9-10**	Vinyl chloride Toluene m,p-Xylenes o-Xylene 1,3,5-Trimethylbenzene 1,2,4-Trimethylbenzene	R R R R R R	A	Overall assessment of data
JC21	LDW-SC49V-9-10RE**	All TCL compounds except Vinyl chloride Toluene m,p-Xylenes o-Xylene 1,3,5-Trimethylbenzene 1,2,4-Trimethylbenzene	R	A	Overall assessment of data
JC21	LDW-SC49V-10-11**	Vinyl chloride cis-1,2-Dichloroethene Toluene m,p-Xylenes	R R R R	A	Overall assessment of data
JC21	LDW-SC49V-10-11RE**	All TCL compounds except Vinyl chloride cis-1,2-Dichloroethene Toluene m,p-Xylenes	R	A	Overall assessment of data
JC21	LDW-SC49V-11-12**	Vinyl chloride cis-1,2-Dichloroethene Toluene	R R R	A	Overall assessment of data
JC21	LDW-SC49V-11-12RE**	All TCL compounds except Vinyl chloride cis-1,2-Dichloroethene Toluene	R	A	Overall assessment of data

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Associated SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JC21	LDW-SC49V-11-12RE** (1000x)	2-Butanone	12000U ug/Kg	A

GC/MS Semivolatiles by EPA SW 846 Method 8270D

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 with the following exceptions:

Associated SDG	Sample	Compound	Total Time From DFTPP Tuning Until Analysis	Required Analysis Time (in Hours) From DFTPP Tuning Until Analysis
JC05	LDW-SC5-1-2.2	All TCL compounds	12 hours 1 minute	12 hours

All ion abundance requirements were met.

III. Initial Calibration

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Associated SDG	Date	Compound	%RSD	Associated Samples	Flag	A or P
JA36 JA64 JA90 JB00	2/15/06	2,4-Dinitrophenol	39.0	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-0-1RE** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC53-0-2** LDW-SC53-0-2RE** LDW-SC53-2-4** LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC3-0-2** LDW-SC3-2-4**	J (all detects) UJ (all non-detects)	A
JB31 JB91 JB82 JB96 JC05 JB98 JC10	3/16/06	2,4-Dinitrophenol	52.6	LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC23-0-2 LDW-SC23-2-4 LDW-SC23-2-4DL LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-0-1DL LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC12-2-4DL LDW-SC34-0-1 LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4 LDW-SC16-0-2DL LDW-SC5-1-2.2DL LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4	J (all detects) UJ (all non-detects)	A

Associated SDG	Date	Compound	%RSD	Associated Samples	Flag	A or P
JC21 JC42	3/16/06	2,4-Dinitrophenol	52.6	LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-1-2DL LDW-SC37-2-4 LDW-SC37-2-4DL LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4 LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC17-2-4** LDW-SC17-2-4DL** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4**	J (all detects) UJ (all non-detects)	A
JC10 JC32 JC48 JC95	3/24/06	2,4-Dinitrophenol	56.5	LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3 LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	J (all detects) UJ (all non-detects)	A

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
JA36 JA64	2/17/06 (CC0217)	2,4-Dinitrophenol	42.36107	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC53-0-2** LDW-SC53-2-4**	J (all detects) UJ (all non-detects)	A
JA36 JA64 JA90 JB00	2/20/06 (CC0220)	4-Nitrophenol	30.26263	LDW-SC49-0-1RE** LDW-SC53-0-2RE** LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC3-0-2** LDW-SC3-2-4**	J (all detects) UJ (all non-detects)	A
JB30 JB01	3/12/06 (CC0312)	2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol Indeno(1,2,3-cd)pyrene	27.31498 41.60435 27.15014	LDW-SC13-2-4DL LDW-SC9-0-1DL LDW-SC9-1-2.6DL LDW-SC9-2.6-4DL LDW-SC2-2-4DL	J (all detects) UJ (all non-detects)	A
JB31 JB91 JC42	3/19/06 (CC0319)	2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol	25.34275 44.99136	LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC17-2-4** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2**	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JB31 JB91 JB96 JC42	3/20/06 (CC0320)	2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol	44.17513 56.98769	LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC23-0-2 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4 LDW-SC17-2-4DL**	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
JB64 JB90 JB01	3/6/06 (CC0306)	Hexachlorocyclopentadiene	35.37772	LDW-SC35-0-2 LDW-SC35-2-4 LDW-SC56-0-2 LDW-SC56-2-4 LDW-SC48-0-1 LDW-SC48-1-2 LDW-SC48-2-4 LDW-SC1-0-2 LDW-SC1-2-4 LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4	J (all detects) UJ (all non-detects)	A
JB91 JB82 JC42	3/21/06 (CC0321)	Hexachlorocyclopentadiene 2,4-Dinitrophenol 4-Nitrophenol 4,6-Dinitro-2-methylphenol Indeno(1,2,3-cd)pyrene	37.40587 41.48829 29.53369 43.10033 30.46814	LDW-SC23-2-4 LDW-SC23-2-4DL LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC50-2-2.8** LDW-SC46-2-4**	J (all detects) UJ (all non-detects)	A
JB82 JB98 JC10	3/22/06 (CC0322a)	4-Chloroaniline Hexachlorocyclopentadiene 4-Nitrophenol 4,6-Dinitro-2-methylphenol	26.15447 54.33771 28.12615 32.38407	LDW-SC202-0-1DL LDW-SC12-2-4DL LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4	J (all detects) UJ (all non-detects)	A
JB96	4/3/06 (CC0403)	Pyrene 3,3'-Dichlorobenzidine	46.53064 38.41772	LDW-SC34-1-2 LDW-SC34-1-2DL	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JC05	3/17/06 (CC0317)	2,4-Dinitrophenol	45.51985	LDW-SC5-1-2.2DL	J (all detects) UJ (all non-detects)	A

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
JC10 JC32	3/25/06 (CC0325a)	4,6-Dinitro-2-methylphenol	27.09091	LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3 LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2	J (all detects) UJ (all non-detects)	A
JC21 JC42	3/17/06 (CC0317)	2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol	45.51985 36.23258	LDW-SC37-1-2DL LDW-SC37-2-4DL LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1**	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JC32 JC95	3/27/06 (CC0327)	4,6-Dinitro-2-methylphenol Pyrene	41.36213 33.73540	LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JC48	3/28/06 (CC0328)	Hexachlorocyclopentadiene 4,6-Dinitro-2-methylphenol Pyrene	34.39424 33.00027 65.18952	LDW-SC28-1-2** LDW-SC28-2-4**	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

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

Associated SDG	Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
JA36 JA64 JA90 JB00	MB-021506	2/15/06	4-Methylphenol Diethylphthalate Di-n-butylphthalate Fluoranthene Pyrene Benzo(a)anthracene Bis(2-ethylhexyl)phthalate Chrysene Di-n-octylphthalate Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene	13 ug/Kg 11 ug/Kg 17 ug/Kg 11 ug/Kg 10 ug/Kg 13 ug/Kg 63 ug/Kg 11 ug/Kg 13 ug/Kg 11 ug/Kg 13 ug/Kg 11 ug/Kg	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-0-1RE** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC53-0-2** LDW-SC53-0-2RE** LDW-SC53-2-4** LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC3-0-2** LDW-SC3-2-4**
JB30	MB-022206	2/22/06	Di-n-butylphthalate	23 ug/Kg	LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC13-2-4DL LDW-SC9-0-1 LDW-SC9-0-1DL LDW-SC9-1-2.6 LDW-SC9-1-2.6DL LDW-SC9-2.6-4 LDW-SC9-2.6-4DL
JB31 JB91	MB-022406	2/24/06	Di-n-butylphthalate Fluoranthene	16 ug/Kg 10 ug/Kg	LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC23-0-2 LDW-SC23-2-4 LDW-SC23-2-4DL
JB01 JB22	MB-022106	2/21/06	Phenol Di-n-butylphthalate	16 ug/Kg 12 ug/Kg	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC2-2-4DL LDW-SC33-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4
JB20	MB-022206	3/22/06	Di-n-butylphthalate	26 ug/Kg	LDW-SC6-0-2 LDW-SC6-0-2DL LDW-SC6-2-4.5 LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC8-2-4DL LDW-SC7-0-1 LDW-SC7-0-1DL LDW-SC7-1-1.7 LDW-SC7-1.7-4 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4

Associated SDG	Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
JB96	MB-030406	3/4/06	Di-n-butylphthalate	31 ug/Kg	LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-1-2DL LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4
JB46 JC05	MB-022406	2/24/06	Di-n-butylphthalate	12 ug/Kg	LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-0-2DL LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC5-0-1 LDW-SC5-1-2.2 LDW-SC5-1-2.2DL LDW-SC5-2.2-4
JC21	MB-030706	3/7/06	Di-n-butylphthalate	20 ug/Kg	LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-1-2DL LDW-SC37-2-4 LDW-SC37-2-4DL LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4
JC42	MB-030906	3/9/06	Di-n-butylphthalate Di-n-octylphthalate	11 ug/Kg 11 ug/Kg	LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC17-2-4** LDW-SC17-2-4DL** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4**
JC42	MB-032906	3/29/06	Phenol	30 ug/Kg	LDW-SC40-2-4RE**
JC48	MB-031406	3/14/06	Bis(2-ethylhexyl)phthalate	29 ug/Kg	LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4**

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
JA36	LDW-SC55-0-1**	4-Methylphenol Fluoranthene Pyrene Bis(2-ethylhexyl)phthalate	25 ug/Kg 54 ug/Kg 35 ug/Kg 27 ug/Kg	25U ug/Kg 54U ug/Kg 35U ug/Kg 27U ug/Kg
JA36	LDW-SC49-0-1**	Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	55 ug/Kg 220 ug/Kg	55U ug/Kg 220U ug/Kg
JA36	LDW-SC49-0-1RE**	Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	52 ug/Kg 230 ug/Kg	52U ug/Kg 230U ug/Kg
JA36	LDW-SC49-1-2**	Bis(2-ethylhexyl)phthalate	210 ug/Kg	210U ug/Kg
JA36	LDW-SC49-2-4**	Di-n-butylphthalate Benzo(a)anthracene Bis(2-ethylhexyl)phthalate	27 ug/Kg 64 ug/Kg 210 ug/Kg	27U ug/Kg 64U ug/Kg 210U ug/Kg
JA64	LDW-SC53-0-2**	Bis(2-ethylhexyl)phthalate	520 ug/Kg	520U ug/Kg
JA64	LDW-SC53-0-2RE**	Bis(2-ethylhexyl)phthalate	530 ug/Kg	530U ug/Kg
JA90	LDW-SC42-0-1**	Bis(2-ethylhexyl)phthalate	180 ug/Kg	180U ug/Kg
JA90	LDW-SC42-1-2**	Bis(2-ethylhexyl)phthalate	400 ug/Kg	400U ug/Kg
JA90	LDW-SC42-2-4**	Bis(2-ethylhexyl)phthalate	210 ug/Kg	210U ug/Kg
JB00	LDW-SC3-0-2**	Bis(2-ethylhexyl)phthalate	42 ug/Kg	42U ug/Kg
JB30	LDW-SC13-0-2	Di-n-butylphthalate	180 ug/Kg	180U ug/Kg
JB30	LDW-SC13-2-4	Di-n-butylphthalate	27 ug/Kg	27U ug/Kg
JB30	LDW-SC9-0-1	Di-n-butylphthalate	35 ug/Kg	35U ug/Kg
JB30	LDW-SC9-1-2.6	Di-n-butylphthalate	38 ug/Kg	38U ug/Kg
JB30	LDW-SC9-2.6-4	Di-n-butylphthalate	25 ug/Kg	25U ug/Kg
JB31	LDW-SC14-2-4.1	Di-n-butylphthalate	23 ug/Kg	23U ug/Kg
JB01	LDW-SC4-0-1	Phenol	39 ug/Kg	39U ug/Kg
JB01	LDW-SC4-1-2	Phenol Di-n-butylphthalate	43 ug/Kg 32 ug/Kg	43U ug/Kg 32U ug/Kg
JB01	LDW-SC4-2-4	Phenol	24 ug/Kg	24U ug/Kg

Associated SDG	Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
JB01	LDW-SC2-0-2	Phenol	36 ug/Kg	36U ug/Kg
JB01	LDW-SC2-2-4	Phenol	26 ug/Kg	26U ug/Kg
JB22	LDW-SC33-2-4	Phenol Di-n-butylphthalate	31 ug/Kg 23 ug/Kg	31U ug/Kg 23U ug/Kg
JB22	LDW-SC201-0-1.5	Phenol Di-n-butylphthalate	27 ug/Kg 40 ug/Kg	27U ug/Kg 40U ug/Kg
JB22	LDW-SC201-1.5-4	Phenol Di-n-butylphthalate	30 ug/Kg 24 ug/Kg	30U ug/Kg 24U ug/Kg
JB20	LDW-SC6-0-2	Di-n-butylphthalate	33 ug/Kg	33U ug/Kg
JB20	LDW-SC6-2-4.5	Di-n-butylphthalate	40 ug/Kg	40U ug/Kg
JB20	LDW-SC8-0-1	Di-n-butylphthalate	32 ug/Kg	32U ug/Kg
JB20	LDW-SC8-1-2	Di-n-butylphthalate	23 ug/Kg	23U ug/Kg
JB20	LDW-SC8-2-4	Di-n-butylphthalate	31 ug/Kg	31U ug/Kg
JB20	LDW-SC7-0-1	Di-n-butylphthalate	32 ug/Kg	32U ug/Kg
JB20	LDW-SC7-1-1.7	Di-n-butylphthalate	20 ug/Kg	20U ug/Kg
JB20	LDW-SC10-0-1	Di-n-butylphthalate	31 ug/Kg	31U ug/Kg
JB96	LDW-SC34-1-2 (5x)	Di-n-butylphthalate	180 ug/Kg	180U ug/Kg
JB96	LDW-SC25-1-2 (3x)	Di-n-butylphthalate	83 ug/Kg	83U ug/Kg
JB46	LDW-SC22-0-1.1	Di-n-butylphthalate	29 ug/Kg	29U ug/Kg
JB46	LDW-SC22-1.1-2	Di-n-butylphthalate	37 ug/Kg	37U ug/Kg
JB46	LDW-SC27-2-4.5	Di-n-butylphthalate	26 ug/Kg	26U ug/Kg
JC05	LDW-SC5-0-1	Di-n-butylphthalate	30 ug/Kg	30U ug/Kg
JC05	LDW-SC5-1-2.2	Di-n-butylphthalate	21 ug/Kg	21U ug/Kg
JC21	LDW-SC51-0-2 (3x)**	Di-n-butylphthalate	69 ug/Kg	69U ug/Kg
JC42	LDW-SC40-0-1.3**	Di-n-butylphthalate	26 ug/Kg	26U ug/Kg

Associated SDG	Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
JC42	LDW-SC50-2-2.8**	Di-n-butylphthalate	23 ug/Kg	23U ug/Kg
JC48	LDW-SC28-0-1 (3x)**	Bis(2-ethylhexyl)phthalate	510 ug/Kg	510U ug/Kg
JC48	LDW-SC28-1-2 (3x)**	Bis(2-ethylhexyl)phthalate	310 ug/Kg	310U ug/Kg
JC48	LDW-SC28-2-4 (3x)**	Bis(2-ethylhexyl)phthalate	280 ug/Kg	280U ug/Kg

VI. Surrogate Spikes

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

Associated SDG	Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
JA90	LDW-SC52-1-2**	Phenol-d5 2-Fluorophenol	36.6 (40-130) 36.8 (40-130)	Phenol 2-Chlorophenol 4-Methylphenol 2-Nitrophenol 2,4-Dichlorophenol 4-Chloro-3-methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2,4-Dinitrophenol 4-Nitrophenol 4,6-Dinitro-2-methylphenol	J (all detects) UJ (all non-detects)	P
JB30	LDW-SC9-1-2.6	Nitrobenzene-d5 Terphenyl-d14 Phenol-d5 2-Fluorobiphenyl 1,2-Dichlorobenzene-d4 2-Fluorophenol 2-Chlorophenol-d4	34.6 (40-130) 31.6 (40-130) 35.2 (40-130) 39.4 (40-130) 36.8 (40-130) 35.2 (40-130) 38.7 (40-130)	All TCL compounds	J (all detects) UJ (all non-detects)	A

Associated SDG	Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
JB80	LDW-SC20-2-4	Terphenyl-d14 1,2-Dichlorobenzene-d4	38.2 (40-130) 33.6 (40-130)	Bis(2-chloroethyl) ether 1,3-Dichlorobenzene 2,2'-Oxybis(1-chloropropane) Hexachloroethane Nitrobenzene Isophorone Bis(2-chloroethoxy)methane Naphthalene 4-Chloroaniline 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene 2-Nitroaniline Dimethylphthalate Acenaphthylene 2,6-Dinitrotoluene 3-Nitroaniline Acenaphthene Dibenzofuran 2,4-Dinitrotoluene Diethylphthalate 4-Chlorophenyl-phenyl ether Fluorene 4-Nitroaniline 4-Bromophenyl-phenyl ether Phenanthrene Anthracene Di-n-butylphthalate Fluoranthene Pyrene 3,3'-Dichlorobenzidine Benzo(a)anthracene Chrysene Bis(2-ethylhexyl)phthalate Di-n-octylphthalate Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene Aniline 1-Methylnaphthalene	J (all detects) UJ (all non-detects)	P
JB90	LDW-SC48-1-2	2-Fluorophenol 2-Chlorophenol-d4	27.7 (40-130) 38.7 (40-130)	Phenol 2-Chlorophenol 4-Methylphenol 2-Nitrophenol 2,4-Dichlorophenol 4-Chloro-3-methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2,4-Dinitrophenol 4-Nitrophenol 4,6-Dinitro-2-methylphenol	J (all detects) UJ (all non-detects)	P
JB22	LDW-SC33-2-4	Nitrobenzene-d5 Terphenyl-d14 1,2-Dichlorobenzene-d4 Phenol-d5 2-Fluorophenol	34.4 (40-130) 35.0 (40-130) 34.8 (40-130) 38.1 (40-130) 36.5 (40-130)	All TCL compounds	J (all detects) UJ (all non-detects)	P
JC10	LDW-SC38-1-2	Nitrobenzene-d5 Terphenyl-d14 1,2-Dichlorobenzene-d4 Phenol-d5 2-Fluorophenol 2,4,6-Tribromophenol 2-Chlorophenol-d4	37.1 (40-130) 33.5 (40-130) 32.0 (40-130) 36.0 (40-130) 33.6 (40-130) 36.5 (40-130) 35.5 (40-130)	All TCL compounds	J (all detects) UJ (all non-detects)	P

Associated SDG	Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
JC10	LDW-SC38-2-3	Terphenyl-d14 1,2-Dichlorobenzene-d4	38.4 (40-130) 37.0 (40-130)	Bis(2-chloroethyl) ether 1,3-Dichlorobenzene 2,2'-Oxybis(1-chloropropane) Hexachloroethane Nitrobenzene Isophorone Bis(2-chloroethoxy)methane Naphthalene 4-Chloroaniline 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene 2-Nitroaniline Dimethylphthalate Acenaphthylene 2,6-Dinitrotoluene 3-Nitroaniline Acenaphthene Dibenzofuran 2,4-Dinitrotoluene Diethylphthalate 4-Chlorophenyl-phenyl ether Fluorene 4-Nitroaniline 4-Bromophenyl-phenyl ether Phenanthrene Anthracene Di-n-butylphthalate Fluoranthene Pyrene 3,3'-Dichlorobenzidine Benzo(a)anthracene Chrysene Bis(2-ethylhexyl)phthalate Di-n-octylphthalate Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene Aniline 1-Methylnaphthalene	J (all detects) UJ (all non-detects)	P
JC42	LDW-SC40-2-4**	2-Fluorophenol 2-Chlorophenol-d4	33.1 (40-130) 31.7 (40-130)	Phenol 2-Chlorophenol 4-Methylphenol 2-Nitrophenol 2,4-Dichlorophenol 4-Chloro-3-methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2,4-Dinitrophenol 4-Nitrophenol 4,6-Dinitro-2-methylphenol	J (all detects) UJ (all non-detects)	A
JC95	LDW-SC41-1-2	Nitrobenzene-d5 Terphenyl-d14 1,2-Dichlorobenzene-d4 Phenol-d5 2-Fluorophenol 2-Chlorophenol-d4	35.3 (40-130) 35.2 (40-130) 34.9 (40-130) 37.9 (40-130) 32.0 (40-130) 38.1 (40-130)	All TCL compounds	J (all detects) UJ (all non-detects)	P

Surrogate recoveries (%R) were not within QC limits for several samples in SDGs JB30, JB22, JB96 and JC42. Since these samples were diluted out, no data were qualified.

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
JA90	LDW-SC42-2-4MS/MSD (LDW-SC42-2-4**)	Pyrene	-	135 (40-130)	-	J (all detects)	A
JB22	LDW-SC201-1.5-4MS/MSD (LDW-SC201-1.5-4)	Pyrene	35.3 (40-130)	10.2 (40-130)	-	J (all detects) UJ (all non-detects)	A
JB20	LDW-SC6-2-4.5MS/MSD (LDW-SC6-2-4.5)	Phenanthrene Chrysene Benzo(k)fluoranthene	7.5 (40-130) 0 (40-130) 12.8 (40-130)	7.7 (40-130) 0 (40-130) 9.3 (40-130)	- - -	J (all detects) UJ (all non-detects)	A

Although the percent recoveries of chrysene in LDW-SC6-2-4.5MS/MSD were severely low (0%), the associated result was qualified as estimated (J/UJ) due to matrix interference.

Percent recoveries (%R) and relative percent differences (RPD) were not within the QC limits for SDGs JB64, JB96, JC10, and JC21. Since the MS/MSD samples were diluted out, no data were qualified.

VIII. Laboratory Control Samples (LCS)

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

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JA36 JA64 JA90 JB00	LCS-021506	4-Chloroaniline 3,3'-Dichlorobenzidine Aniline	12.2 (40-130) 24.8 (40-130) 5.0 (40-130)	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-0-1RE** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC53-0-2** LDW-SC53-0-2RE** LDW-SC53-2-4** LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC3-0-2** LDW-SC3-2-4**	J (all detects) UJ (all non-detects)	P

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JB30	LCS-022206	4-Chloroaniline 3,3'-Dichlorobenzidine Aniline	9.2 (40-130) 10.5 (40-130) 0 (40-130)	LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC13-2-4DL LDW-SC9-0-1 LDW-SC9-0-1DL LDW-SC9-1-2.6 LDW-SC9-1-2.6DL LDW-SC9-2.6-4 LDW-SC9-2.6-4DL	J (all detects) UJ (all non-detects)	P
JB31 JB91	LCS-022406	4-Chloroaniline 3,3'-Dichlorobenzidine Aniline	14.4 (40-130) 20.4 (40-130) 5.4 (40-130)	LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC23-0-2 LDW-SC23-2-4 LDW-SC23-2-4DL	J (all detects) UJ (all non-detects)	P
JB47 JB64 JB80 JB90	LCS-022106	4-Chloroaniline 3,3'-Dichlorobenzidine Aniline	16.5 (40-130) 20.6 (40-130) 8.6 (40-130)	LDW-SC30-0-2.5 LDW-SC30-2.5-4 LDW-SC21-0-1 LDW-SC21-1-2 LDW-SC21-2-4 LDW-SC35-0-2 LDW-SC35-2-4 LDW-SC20-0-2 LDW-SC20-2-4 LDW-SC56-0-2 LDW-SC56-2-4 LDW-SC48-0-1 LDW-SC48-1-2 LDW-SC48-2-4 LDW-SC1-0-2 LDW-SC1-2-4	J (all detects) UJ (all non-detects)	P
JB82	LCS-022806	4-Chloroaniline 3-Nitroaniline 3,3'-Dichlorobenzidine	0 (40-130) 24.2 (40-130) 0 (40-130)	LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-0-1DL LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC12-2-4DL	J (all detects) UJ (all non-detects)	P
JB01 JB22	LCS-022106	4-Chloroaniline Hexachlorocyclopentadiene 4,6-Dinitro-2-methylphenol 3,3'-Dichlorobenzidine Aniline	18.9 (40-130) 36.0 (40-130) 39.2 (40-130) 23.8 (40-130) 4.7 (40-130)	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC2-2-4DL LDW-SC33-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4	J (all detects) UJ (all non-detects)	P

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JB20	LCS-022206	4-Chloroaniline 3,3'-Dichlorobenzidine Aniline	27.6 (40-130) 29.8 (40-130) 9.4 (40-130)	LDW-SC6-0-2 LDW-SC6-0-2DL LDW-SC6-2-4.5 LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC8-2-4DL LDW-SC7-0-1 LDW-SC7-0-1DL LDW-SC7-1-1.7 LDW-SC7-1.7-4 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4	J (all detects) UJ (all non-detects)	P
JB96	LCS-030406	4-Chloroaniline Hexachlorocyclopentadiene 3-Nitroaniline 3,3'-Dichlorobenzidine Aniline	0 (40-130) 36.6 (40-130) 25.2 (40-130) 9.6 (40-130) 0 (40-130)	LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-1-2DL LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4	J (all detects) UJ (all non-detects)	P
JB46 JC05	LCS-022406	4-Chloroaniline 3-Nitroaniline 3,3'-Dichlorobenzidine Aniline	7.0 (40-130) 33.8 (40-130) 4.1 (40-130) 0 (40-130)	LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-0-2DL LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC5-0-1 LDW-SC5-1-2.2 LDW-SC5-1-2.2DL LDW-SC5-2.2-4	J (all detects) UJ (all non-detects)	P
JB98 JC10	LCS-030206	4-Chloroaniline 3,3'-Dichlorobenzidine Aniline	16.1 (40-130) 15.3 (40-130) 2.0 (40-130)	LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4 LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3	J (all detects) UJ (all non-detects)	P

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JC21	LCS-030706	4-Chloroaniline 3-Nitroaniline 3,3'-Dichlorobenzidine Aniline	2.8 (40-130) 30.8 (40-130) 5.1 (40-130) 0 (40-130)	LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-1-2DL LDW-SC37-2-4 LDW-SC37-2-4DL LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4	J (all detects) UJ (all non-detects)	P
JC32 JC95	LCS-030706	4-Chloroaniline 3-Nitroaniline 4-Nitroaniline 3,3'-Dichlorobenzidine Aniline	0 (40-130) 0 (40-130) 19.2 (40-130) 0 (40-130) 3.0 (40-130)	LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	J (all detects) UJ (all non-detects)	P
JC32 JC95	LCS-030706	Dibenz(a,h)anthracene	132 (40-130)	LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	J (all detects)	P
JC42	LCS-030906	4-Chloroaniline 3,3'-Dichlorobenzidine Aniline	9.2 (40-130) 19.7 (40-130) 3.8 (40-130)	LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC17-2-4** LDW-SC17-2-4DL** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4**	J (all detects) UJ (all non-detects)	P

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JC42	LCS-032906	4-Chloroaniline 3-Nitroaniline 3,3'-Dichlorobenzidine Aniline	0 (40-130) 22.8 (40-130) 0 (40-130) 0 (40-130)	LDW-SC40-2-4RE**	J (all detects) UJ (all non-detects)	P
JC48	LCS-031406	4-Chloroaniline Hexachlorocyclopentadiene 2,4-Dinitrophenol 3,3'-Dichlorobenzidine Aniline	18.5 (40-130) 37.4 (40-130) 28.4 (40-130) 20.6 (40-130) 7.4 (40-130)	LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4**	J (all detects) UJ (all non-detects)	P

Although the percent recoveries of aniline, 4-chloroaniline, 3-nitroaniline and 3,3'-dichlorobenzidine were severely low (<10%) in a number of LCS samples above, the results in the associated samples were qualified as estimated (J/UJ).

The vendor of the LCS mix indicated that due to the instability of these compounds in solution, concentrations cannot be guaranteed. The laboratory assayed the LCS spiking solution to check the concentrations. The recoveries were between 40% to 56% of the expected concentration.

The non-detect results were not rejected despite the severely low recoveries since the concentrations of these compounds were low in the LCS mix prior to extraction.

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 with the following exceptions:

Associated SDG	Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
JA36	LDW-SC49-0-1**	Perylene-d12	310168 (323390-1293562)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
JA64	LDW-SC53-0-2	Perylene-d12	315796 (323390-1293562)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A

Associated SDG	Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
JA36	LDW-SC49-0-1RE**	Perylene-d12	172684 (248155-992620)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
JA64	LDW-SC53-0-2RE	Perylene-d12	230042 (248155-992620)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
JB30	LDW-SC9-1-2.6	Perylene-d12	229681 (423754-1695016)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
JB30	LDW-SC9-2.6-4	Perylene-d12	418809 (423754-1695016)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
JB82	LDW-SC12-2-4	Di-n-octylphthalate-d4	1343918 (308475-1233900)	Bis(2-ethylhexyl)phthalate Di-n-octylphthalate	J (all detects) J (all detects)	A
JB82	LDW-SC202-0-1	Di-n-octylphthalate-d4	1253286 (308475-1233900)	Bis(2-ethylhexyl)phthalate Di-n-octylphthalate	J (all detects) J (all detects)	A
JB01	LDW-SC2-2-4	Perylene-d12	337682 (383464-1533858)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
JB20	LDW-SC8-2-4	Perylene-d12	381352 (412312-1649248)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
JB20	LDW-SC7-0-1	Perylene-d12	318980 (412312-1649248)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
JB20	LDW-SC6-0-2	Perylene-d12	322930 (412312-1649248)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A

Associated SDG	Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
JB96	LDW-SC34-1-2	Phenanthrene-d10	202093 (253792-1015170)	4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenyl ether Phenanthrene Anthracene Di-n-butylphthalate Fluoranthene	J (all detects) UJ (all non-detects)	A
JB96	LDW-SC34-1-2DL	Phenanthrene-d10	214170 (253792-1015170)	4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenyl ether Phenanthrene Anthracene Di-n-butylphthalate Fluoranthene	J (all detects) UJ (all non-detects)	A
JC21	LDW-SC37-1-2	Di-n-octylphthalate-d4	1253465 (305312-1221250)	Bis(2-ethylhexyl)phthalate Di-n-octylphthalate	J (all detects) J (all detects)	A
JC21	LDW-SC37-2-4	Di-n-octylphthalate-d4	1257463 (305312-1221250)	Bis(2-ethylhexyl)phthalate Di-n-octylphthalate	J (all detects) J (all detects)	A
JC32	LDW-SC47-3-4	Perylene-d12	85039 (96656-386624)	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A
JC42	LDW-SC17-1-2**	Chrysene-d12 Di-n-octylphthalate-d4	665836 (165880-663518) 1303891 (308475-1233900)	Pyrene 3,3'-Dichlorobenzidine Benzo(a)anthracene Chrysene Bis(2-ethylhexyl)phthalate Di-n-octylphthalate	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A

Raw data were not evaluated for the samples reviewed by Level III criteria.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which an 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 with the following exceptions:

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
JB30 JC21	LDW-SC13-2-4 LDW-SC37-2-4	Fluoranthene	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
JB30 JB20	LDW-SC9-0-1 LDW-SC8-2-4	Bis(2-ethylhexyl)phthalate	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JB91	LDW-SC23-2-4	Fluoranthene Chrysene	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JB96	LDW-SC203-2-4	Dimethylphthalate	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JB46 JC05	LDW-SC16-0-2 LDW-SC5-1-2.2	Fluoranthene Pyrene	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JC21	LDW-SC37-1-2	Pyrene Benzo(b)fluoranthene	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JC42	LDW-SC17-2-4**	Phenanthrene	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-

N/A = Not applicable

For the results above flagged "Not applicable", the affected compound results in the associated samples were deemed unusable and did not warrant qualification of the data.

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 EPA Level IV or EPA Level III.

XIV. System Performance

The system performance was acceptable for samples on which an 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
JA36	LDW-SC49-0-1**	All TCL compounds except Phenol	R	A
JA36	LDW-SC49-0-1RE**	Phenol	R	A
JA64	LDW-SC53-0-2**	All TCL compounds except Fluorene	R	A
JA64	LDW-SC53-0-2RE**	Fluorene	R	A
JB30 JC21	LDW-SC13-2-4 LDW-SC37-2-4	Fluoranthene	R	A
JB30 JC21	LDW-SC13-2-4DL LDW-SC37-2-4DL	All TCL compounds except Fluoranthene	R	A
JB20 JB30	LDW-SC8-2-4 LDW-SC9-0-1	Bis(2-ethylhexyl)phthalate	R	A
JB20 JB30	LDW-SC8-2-4DL LDW-SC9-0-1DL	All TCL compounds except Bis(2-ethylhexyl)phthalate	R	A
JB01 JB20 JB30 JB82 JB96 JC42	LDW-SC2-2-4DL LDW-SC6-0-2DL LDW-SC7-0-1DL LDW-SC9-1-2.6DL LDW-SC9-2.6-4DL LDW-SC12-2-4DL LDW-SC202-0-1DL LDW-SC34-1-2DL LDW-SC17-1-2DL** LDW-SC40-2-4RE**	All TCL compounds	R	A
JB91	LDW-SC23-2-4	Fluoranthene Chrysene	R R	A
JB91	LDW-SC23-2-4DL	All TCL compounds except Fluoranthene Chrysene	R	A
JB96	LDW-SC203-2-4	Dimethylphthalate	R	A
JB96	LDW-SC203-2-4DL	All TCL compounds except Dimethylphthalate	R	A
JB46 JC05	LDW-SC16-0-2 LDW-SC5-1-2.2	Fluoranthene Pyrene	R R	A
JB46 JC05	LDW-SC16-0-2DL LDW-SC5-1-2.2DL	All TCL compounds except Fluoranthene Pyrene	R	A
JC21	LDW-SC37-1-2	Pyrene Benzo(b)fluoranthene	R R	A

Associated SDG	Sample	Compound	Flag	A or P
JC21	LDW-SC37-1-2DL	All TCL compounds except Pyrene Benzo(b)fluoranthene	R	A
JC42	LDW-SC17-2-4**	Phenanthrene	R	A
JC42	LDW-SC17-2-4DL**	All TCL compounds except Phenanthrene	R	A

XVI. Field Replicates

Samples LDW-SC36-0-1 and LDW-SC202-0-1, samples LDW-SC36-0-1 and LDW-SC202-0-1DL, samples LDW-SC36-1-2 and LDW-SC202-1-2, and samples LDW-SC36-2-4 and LDW-SC202-2-4 (SDG JB82), samples LDW-SC33-0-2 and LDW-SC201-0-1.5 and samples LDW-SC33-2-4 and LDW-SC201-1.5-4 (SDG JB22), samples LDW-SC34-0-1 and LDW-SC203-0-1, samples LDW-SC34-1-2 and LDW-SC203-1-2, samples LDW-SC34-1-2DL and LDW-SC203-1-2, samples LDW-SC34-2-4 and LDW-SC203-2-4, and samples LDW-SC34-2-4 and LDW-SC203-2-4DL (SDG JB96) were identified as field replicates. No semivolatiles were detected in any of the samples with the following exceptions:

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1	
JB82	Phenanthrene	51	37	32 (≤50)
JB82	Anthracene	29	14	70 (≤50)
JB82	Di-n-butylphthalate	24	14	53 (≤50)
JB82	Fluoranthene	160	110	37 (≤50)
JB82	Pyrene	150	93	47 (≤50)
JB82	Benzo(a)anthracene	81	51	45 (≤50)
JB82	Bis(2-ethylhexyl)phthalate	73	54	30 (≤50)
JB82	Chrysene	110	72	42 (≤50)
JB82	Benzo(b)fluoranthene	92	120	26 (≤50)
JB82	Benzo(k)fluoranthene	96	91	5 (≤50)
JB82	Benzo(a)pyrene	74	56	28 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1	
JB82	Indeno(1,2,3-cd)pyrene	35	19	59 (≤50)
JB82	Benzo(g,h,i)perylene	31	16	64 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1DL	
JB82	Phenanthrene	51	38	29 (≤50)
JB82	Anthracene	29	60U	Not calculable
JB82	Di-n-butylphthalate	24	60U	Not calculable
JB82	Fluoranthene	160	85	61 (≤50)
JB82	Pyrene	150	88	52 (≤50)
JB82	Benzo(a)anthracene	81	50	47 (≤50)
JB82	Bis(2-ethylhexyl)phthalate	73	50	37 (≤50)
JB82	Chrysene	110	63	54 (≤50)
JB82	Benzo(b)fluoranthene	92	76	19 (≤50)
JB82	Benzo(k)fluoranthene	96	60	46 (≤50)
JB82	Benzo(a)pyrene	74	45	49 (≤50)
JB82	Indeno(1,2,3-cd)pyrene	35	39	11 (≤50)
JB82	Benzo(g,h,i)perylene	31	33	6 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-1-2	LDW-SC202-1-2	
JB82	Phenanthrene	24	27	12 (≤50)
JB82	Fluoranthene	65	69	6 (≤50)
JB82	Pyrene	70	78	11 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-1-2	LDW-SC202-1-2	
JB82	Benzo(a)anthracene	30	28	7 (≤50)
JB82	Chrysene	36	30	18 (≤50)
JB82	Benzo(b)fluoranthene	25	29	15 (≤50)
JB82	Benzo(k)fluoranthene	28	27	4 (≤50)
JB82	Benzo(a)pyrene	20	20	0 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-2-4	LDW-SC202-2-4	
JB82	Phenanthrene	38U	24	Not calculable
JB82	Fluoranthene	34	42	21 (≤50)
JB82	Pyrene	22	28	24 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC33-0-2	LDW-SC201-0-1.5	
JB22	Acenaphthene	200	12	177 (≤50)
JB22	Fluorene	170	17	164 (≤50)
JB22	Phenanthrene	640	120	137 (≤50)
JB22	Anthracene	210	47	127 (≤50)
JB22	Fluoranthene	1500	320	130 (≤50)
JB22	Pyrene	1100	500	75 (≤50)
JB22	Benzo(a)anthracene	260	140	60 (≤50)
JB22	Bis(2-ethylhexyl)phthalate	400	380	5 (≤50)
JB22	Chrysene	490	210	80 (≤50)
JB22	Benzo(b)fluoranthene	360	310	15 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC33-0-2	LDW-SC201-0-1.5	
JB22	Benzo(k)fluoranthene	240	260	8 (≤50)
JB22	Benzo(a)pyrene	230	200	14 (≤50)
JB22	Indeno(1,2,3-cd)pyrene	57	51	11 (≤50)
JB22	Benzo(g,h,i)perylene	54	42	25 (≤50)
JB22	Phenol	99U	27	Not calculable
JB22	Acenaphthylene	99U	12	Not calculable
JB22	Di-n-butylphthalate	99U	40	Not calculable
JB22	Dibenz(a,h)anthracene	99U	14	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC33-2-4	LDW-SC201-1.5-4	
JB22	Phenol	31	30	3 (≤50)
JB22	Naphthalene	17	27	45 (≤50)
JB22	Acenaphthene	66	21	103 (≤50)
JB22	Dibenzofuran	25	20U	Not calculable
JB22	Fluorene	65	17	117 (≤50)
JB22	Phenanthrene	170	54	104 (≤50)
JB22	Anthracene	110	32	110 (≤50)
JB22	Di-n-butylphthalate	23	24	4 (≤50)
JB22	Fluoranthene	850	190	127 (≤50)
JB22	Pyrene	470	58	21 (≤50)
JB22	Benzo(a)anthracene	150	48	103 (≤50)
JB22	Bis(2-ethylhexyl)phthalate	130	100	26 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC33-2-4	LDW-SC201-1.5-4	
JB22	Chrysene	170	73	80 (≤50)
JB22	Benzo(b)fluoranthene	120	140	15 (≤50)
JB22	Benzo(k)fluoranthene	86	120	33 (≤50)
JB22	Benzo(a)pyrene	79	90	13 (≤50)
JB22	Indeno(1,2,3-cd)pyrene	16	20	22 (≤50)
JB22	Benzo(g,h,i)perylene	14	17	19 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-0-1	LDW-SC203-0-1	
JB96	Phenanthrene	280	180	43 (≤50)
JB96	Anthracene	84	140	50 (≤50)
JB96	Fluoranthene	810	1100	30 (≤50)
JB96	Pyrene	540	800	39 (≤50)
JB96	Benzo(a)anthracene	260	350	30 (≤50)
JB96	Bis(2-ethylhexyl)phthalate	920	1800	65 (≤50)
JB96	Chrysene	360	530	38 (≤50)
JB96	Benzo(b)fluoranthene	380	540	35 (≤50)
JB96	Benzo(k)fluoranthene	280	400	35 (≤50)
JB96	Benzo(a)pyrene	230	330	36 (≤50)
JB96	Indeno(1,2,3-cd)pyrene	75	110	29 (≤50)
JB96	Benzo(g,h,i)perylene	63	84	29 (≤50)
JB96	Dimethylphthalate	110U	1700	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-1-2	LDW-SC203-1-2	
JB96	Phenanthrene	340	440	26 (≤50)
JB96	Anthracene	160	170	6 (≤50)
JB96	Di-n-butylphthalate	180	110u	Not calculable
JB96	Fluoranthene	1300	1300	0 (≤50)
JB96	Pyrene	920	910	1 (≤50)
JB96	Benzo(a)anthracene	430	480	11 (≤50)
JB96	Bis(2-ethylhexyl)phthalate	3900	2600	40 (≤50)
JB96	Chrysene	720	680	6 (≤50)
JB96	Di-n-octylphthalate	220	110u	Not calculable
JB96	Benzo(b)fluoranthene	530	640	19 (≤50)
JB96	Benzo(k)fluoranthene	470	550	16 (≤50)
JB96	Benzo(a)pyrene	400	450	12 (≤50)
JB96	Indeno(1,2,3-cd)pyrene	200	160	22 (≤50)
JB96	Benzo(g,h,i)perylene	200	140	35 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-1-2DL	LDW-SC203-1-2	
JB96	Phenanthrene	270	440	48 (≤50)
JB96	Fluoranthene	870	1300	40 (≤50)
JB96	Pyrene	780	910	15 (≤50)
JB96	Benzo(a)anthracene	360	480	29 (≤50)
JB96	Bis(2-ethylhexyl)phthalate	2800	2600	7 (≤50)
JB96	Chrysene	570	680	18 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-1-2DL	LDW-SC203-1-2	
JB96	Benzo(b)fluoranthene	380	640	51 (≤50)
JB96	Benzo(k)fluoranthene	330	550	50 (≤50)
JB96	Benzo(a)pyrene	340	450	28 (≤50)
JB96	Indeno(1,2,3-cd)pyrene	190	160	17 (≤50)
JB96	Benzo(g,h,i)perylene	210	140	40 (≤50)
JB96	Anthracene	390U	170	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-2-4	LDW-SC203-2-4	
JB96	Phenanthrene	110	170	43 (≤50)
JB96	Fluoranthene	300	700	80 (≤50)
JB96	Pyrene	460	630	31 (≤50)
JB96	Benzo(a)anthracene	130	250	63 (≤50)
JB96	Bis(2-ethylhexyl)phthalate	670	590	13 (≤50)
JB96	Chrysene	190	370	64 (≤50)
JB96	Di-n-octylphthalate	64	69U	Not calculable
JB96	Benzo(b)fluoranthene	220	280	24 (≤50)
JB96	Benzo(k)fluoranthene	210	260	21 (≤50)
JB96	Benzo(a)pyrene	150	190	24 (≤50)
JB96	Indeno(1,2,3-cd)pyrene	52	71	31 (≤50)
JB96	Dimethylphthalate	99U	8400	Not calculable
JB96	Anthracene	99U	160	Not calculable
JB96	Benzo(g,h,i)perylene	99U	60	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-2-4	LDW-SC203-2-4DL	
JB96	Phenanthrene	110	190	53 (≤50)
JB96	Fluoranthene	300	720	82 (≤50)
JB96	Pyrene	460	470	47 (≤50)
JB96	Benzo(a)anthracene	130	280	73 (≤50)
JB96	Bis(2-ethylhexyl)phthalate	670	620	8 (≤50)
JB96	Chrysene	190	400	71 (≤50)
JB96	Di-n-octylphthalate	64	230U	Not calculable
JB96	Benzo(b)fluoranthene	220	320	37 (≤50)
JB96	Benzo(k)fluoranthene	210	270	25 (≤50)
JB96	Benzo(a)pyrene	150	200	29 (≤50)
JB96	Indeno(1,2,3-cd)pyrene	52	230U	Not calculable
JB96	Dimethylphthalate	99U	8800	Not calculable
JB96	Anthracene	99U	180	Not calculable

XVII. Field Blanks

Samples LDW-SC-RB1 (SDG JA90), LDW-SC-RB2 (SDG JB46), and samples LDW-SC-RB3 (SDG JC21) were identified as rinsate blanks. No semivolatile contaminants were found in this blank with the following exceptions:

Associated SDG	Rinsate Blank ID	Compound	Concentration (ug/L)
JC05	LDW-SC-RB2	Di-n-butylphthalate	0.7
JC21	LDW-SC-RB3	Di-n-butylphthalate	0.7

Lower Duwamish Waterway Group
Semivolatiles - Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC21, JC32, JC42, JC48 and JC95

SDG	Sample	Compound	Flag	A or P	Reason
JA36 JA64 JA90 JB00 JB31 JB91 JB82 JB96	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-0-1RE** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC53-0-2** LDW-SC53-0-2RE** LDW-SC53-2-4** LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC3-0-2** LDW-SC3-2-4** LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC23-0-2 LDW-SC23-2-4 LDW-SC23-2-4DL LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-0-1DL LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC12-2-4DL LDW-SC34-0-1 LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4	2,4-Dinitrophenol	J (all detects) UJ (all non-detects)	A	Initial calibration (%RSD)

SDG	Sample	Compound	Flag	A or P	Reason
JC05 JB98 JC10 JC21 JC32 JC42 JC48 JC95	LDW-SC16-0-2DL LDW-SC5-1-2.2DL LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4 LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3 LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-1-2DL LDW-SC37-2-4 LDW-SC37-2-4DL LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4 LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC17-2-4** LDW-SC17-2-4DL** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	2,4-Dinitrophenol	J (all detects) UJ (all non-detects)	A	Initial calibration (%RSD)

SDG	Sample	Compound	Flag	A or P	Reason
JA36 JA64 JC05	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC53-0-2** LDW-SC53-2-4** LDW-SC5-1-2.2DL	2,4-Dinitrophenol	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JA36 JA64 JA90 JB00	LDW-SC49-0-1RE** LDW-SC53-0-2RE** LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC3-0-2** LDW-SC3-2-4**	4-Nitrophenol	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB30 JB01	LDW-SC13-2-4DL LDW-SC9-0-1DL LDW-SC9-1-2.6DL LDW-SC9-2.6-4DL LDW-SC2-2-4DL	2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol Indeno(1,2,3-cd)pyrene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB31 JB91 JB96 JC21 JC42	LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC23-0-2 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4 LDW-SC37-1-2DL LDW-SC37-2-4DL LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-2-4** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC17-2-4DL**	2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

SDG	Sample	Compound	Flag	A or P	Reason
JB64 JB90 JB01	LDW-SC35-0-2 LDW-SC35-2-4 LDW-SC56-0-2 LDW-SC56-2-4 LDW-SC48-0-1 LDW-SC48-1-2 LDW-SC48-2-4 LDW-SC1-0-2 LDW-SC1-2-4 LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4	Hexachlorocyclopentadiene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB91 JB82 JC42	LDW-SC23-2-4 LDW-SC23-2-4DL LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC50-2-2.8** LDW-SC46-2-4**	Hexachlorocyclopentadiene 2,4-Dinitrophenol 4-Nitrophenol 4,6-Dinitro-2-methylphenol Indeno(1,2,3-cd)pyrene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB82 JB98 JC10	LDW-SC202-0-1DL LDW-SC12-2-4DL LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4	4-Chloroaniline Hexachlorocyclopentadiene 4-Nitrophenol 4,6-Dinitro-2-methylphenol	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB96	LDW-SC34-1-2 LDW-SC34-1-2DL	Pyrene 3,3'-Dichlorobenzidine	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JC10 JC32	LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3 LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2	4,6-Dinitro-2-methylphenol	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

SDG	Sample	Compound	Flag	A or P	Reason
JC32 JC95	LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	4,6-Dinitro-2-methylphenol Pyrene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JC48	LDW-SC28-1-2** LDW-SC28-2-4**	Hexachlorocyclopentadiene 4,6-Dinitro-2-methylphenol Pyrene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JA90 JB90	LDW-SC52-1-2** LDW-SC48-1-2	Phenol 2-Chlorophenol 4-Methylphenol 2-Nitrophenol 2,4-Dichlorophenol 4-Chloro-3-methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2,4-Dinitrophenol 4-Nitrophenol 4,6-Dinitro-2-methylphenol	J (all detects) UJ (all non-detects)	P	Surrogate recovery (%R)
JB30	LDW-SC9-1-2.6	All TCL compounds	J (all detects) UJ (all non-detects)	A	Surrogate recovery (%R)
JB22 JC10 JC95	LDW-SC33-2-4 LDW-SC38-1-2 LDW-SC41-1-2	All TCL compounds	J (all detects) UJ (all non-detects)	P	Surrogate recovery (%R)

SDG	Sample	Compound	Flag	A or P	Reason
JB80 JC10	LDW-SC20-2-4 LDW-SC38-2-3	Bis(2-chloroethyl) ether 1,3-Dichlorobenzene 2,2'-Oxybis(1-chloropropane) Hexachloroethane Nitrobenzene Isophorone Bis(2-chloroethoxy)methane Naphthalene 4-Chloroaniline 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene 2-Nitroaniline Dimethylphthalate Acenaphthylene 2,6-Dinitrotoluene 3-Nitroaniline Acenaphthene Dibenzofuran 2,4-Dinitrotoluene Diethylphthalate 4-Chlorophenyl-phenyl ether Fluorene 4-Nitroaniline 4-Bromophenyl-phenyl ether Phenanthrene Anthracene Di-n-butylphthalate Fluoranthene Pyrene 3,3'-Dichlorobenzidine Benzo(a)anthracene Chrysene Bis(2-ethylhexyl)phthalate Di-n-octylphthalate Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene Aniline 1-Methylnaphthalene	J (all detects) UJ (all non-detects)	P	Surrogate recovery (%R)
JC42	LDW-SC40-2-4**	Phenol 2-Chlorophenol 4-Methylphenol 2-Nitrophenol 2,4-Dichlorophenol 4-Chloro-3-methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2,4-Dinitrophenol 4-Nitrophenol 4,6-Dinitro-2-methylphenol	J (all detects) UJ (all non-detects)	A	Surrogate recovery (%R)
JA90	LDW-SC42-2-4**	Pyrene	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
JB22	LDW-SC201-1.5-4	Pyrene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
JB20	LDW-SC6-2-4.5	Phenanthrene Chrysene Benzo(k)fluoranthene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

SDG	Sample	Compound	Flag	A or P	Reason
JA36 JA64 JA90 JB00 JB31 JB91 JB47 JB64 JB80 JB90 JB20 JB30	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-0-1RE** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC53-0-2** LDW-SC53-0-2RE** LDW-SC53-2-4** LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC3-0-2** LDW-SC3-2-4** LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC23-0-2 LDW-SC23-2-4 LDW-SC23-2-4DL LDW-SC30-0-2.5 LDW-SC30-2.5-4 LDW-SC21-0-1 LDW-SC21-1-2 LDW-SC21-2-4 LDW-SC35-0-2 LDW-SC35-2-4 LDW-SC20-0-2 LDW-SC20-2-4 LDW-SC56-0-2 LDW-SC56-2-4 LDW-SC48-0-1 LDW-SC48-1-2 LDW-SC48-2-4 LDW-SC1-0-2 LDW-SC1-2-4 LDW-SC6-0-2 LDW-SC6-0-2DL LDW-SC6-2-4.5 LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC8-2-4DL LDW-SC7-0-1 LDW-SC7-0-1DL LDW-SC7-1-1.7 LDW-SC7-1.7-4 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4 LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC13-2-4DL LDW-SC9-0-1 LDW-SC9-0-1DL LDW-SC9-1-2.6 LDW-SC9-1-2.6DL LDW-SC9-2.6-4 LDW-SC9-2.6-4DL	4-Chloroaniline 3,3'-Dichlorobenzidine Aniline	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

SDG	Sample	Compound	Flag	A or P	Reason
JB98 JC10 JC42	LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4 LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3 LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC17-2-4** LDW-SC17-2-4DL** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4**	4-Chloroaniline 3,3'-Dichlorobenzidine Aniline	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JB82	LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-0-1DL LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC12-2-4DL	4-Chloroaniline 3-Nitroaniline 3,3'-Dichlorobenzidine	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JB01 JB22	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC2-2-4DL LDW-SC33-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4	4-Chloroaniline Hexachlorocyclopentadiene 4,6-Dinitro-2-methylphenol 3,3'-Dichlorobenzidine Aniline	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

SDG	Sample	Compound	Flag	A or P	Reason
JB96	LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-1-2DL LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4	4-Chloroaniline Hexachlorocyclopentadiene 3-Nitroaniline 3,3'-Dichlorobenzidine Aniline	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JB46 JC05 JC21 JC42	LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-0-2DL LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC5-0-1 LDW-SC5-1-2.2 LDW-SC5-1-2.2DL LDW-SC5-2.2-4 LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-1-2DL LDW-SC37-2-4 LDW-SC37-2-4DL LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4 LDW-SC40-2-4RE**	4-Chloroaniline 3-Nitroaniline 3,3'-Dichlorobenzidine Aniline	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JC32 JC95	LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	4-Chloroaniline 3-Nitroaniline 4-Nitroaniline 3,3'-Dichlorobenzidine Aniline	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

SDG	Sample	Compound	Flag	A or P	Reason
JC32 JC95	LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	Dibenz(a,h)anthracene	J (all detects)	P	Laboratory control samples (%R)
JC48	LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4**	4-Chloroaniline Hexachlorocyclopentadiene 2,4-Dinitrophenol 3,3'-Dichlorobenzidine Aniline	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JA36 JA64 JB30 JB01 JB20 JC32	LDW-SC49-0-1** LDW-SC53-0-2 LDW-SC49-0-1RE** LDW-SC53-0-2RE LDW-SC9-1-2.6 LDW-SC9-2.6-4 LDW-SC2-2-4 LDW-SC8-2-4 LDW-SC7-0-1 LDW-SC6-0-2 LDW-SC47-3-4	Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects)	A	Internal standards (area)
JB82 JC21	LDW-SC12-2-4 LDW-SC202-0-1 LDW-SC37-1-2 LDW-SC37-2-4	Bis(2-ethylhexyl)phthalate Di-n-octylphthalate	J (all detects) J (all detects)	A	Internal standards (area)
JB96	LDW-SC34-1-2 LDW-SC34-1-2DL	4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenyl ether Phenanthrene Anthracene Di-n-butylphthalate Fluoranthene	J (all detects) UJ (all non-detects)	A	Internal standards (area)
JC42	LDW-SC17-1-2**	Pyrene 3,3'-Dichlorobenzidine Benzo(a)anthracene Chrysene Bis(2-ethylhexyl)phthalate Di-n-octylphthalate	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A	Internal standards (area)
JA36	LDW-SC49-0-1**	All TCL compounds except Phenol	R	A	Overall assessment of data
JA36	LDW-SC49-0-1RE**	Phenol	R	A	Overall assessment of data

SDG	Sample	Compound	Flag	A or P	Reason
JA64	LDW-SC53-0-2**	All TCL compounds except Fluorene	R	A	Overall assessment of data
JA64	LDW-SC53-0-2RE**	Fluorene	R	A	Overall assessment of data
JB30 JC21	LDW-SC13-2-4 LDW-SC37-2-4	Fluoranthene	R	A	Overall assessment of data
JB30 JC21	LDW-SC13-2-4DL LDW-SC37-2-4DL	All TCL compounds except Fluoranthene	R	A	Overall assessment of data
JB20 JB30	LDW-SC8-2-4 LDW-SC9-0-1	Bis(2-ethylhexyl)phthalate	R	A	Overall assessment of data
JB20 JB30	LDW-SC8-2-4DL LDW-SC9-0-1DL	All TCL compounds except Bis(2-ethylhexyl)phthalate	R	A	Overall assessment of data
JB01 JB20 JB30 JB82 JB96 JC42	LDW-SC2-2-4DL LDW-SC6-0-2DL LDW-SC7-0-1DL LDW-SC9-1-2.6DL LDW-SC9-2.6-4DL LDW-SC12-2-4DL LDW-SC202-0-1DL LDW-SC34-1-2DL LDW-SC17-1-2DL** LDW-SC40-2-4RE**	All TCL compounds	R	A	Overall assessment of data
JB91	LDW-SC23-2-4	Fluoranthene Chrysene	R R	A	Overall assessment of data
JB91	LDW-SC23-2-4DL	All TCL compounds except Fluoranthene Chrysene	R	A	Overall assessment of data
JB96	LDW-SC203-2-4	Dimethylphthalate	R	A	Overall assessment of data
JB96	LDW-SC203-2-4DL	All TCL compounds except Dimethylphthalate	R	A	Overall assessment of data
JB46 JC05	LDW-SC16-0-2 LDW-SC5-1-2.2	Fluoranthene Pyrene	R R	A	Overall assessment of data
JB46 JC05	LDW-SC16-0-2DL LDW-SC5-1-2.2DL	All TCL compounds except Fluoranthene Pyrene	R	A	Overall assessment of data
JC21	LDW-SC37-1-2	Pyrene Benzo(b)fluoranthene	R R	A	Overall assessment of data
JC21	LDW-SC37-1-2DL	All TCL compounds except Pyrene Benzo(b)fluoranthene	R	A	Overall assessment of data

SDG	Sample	Compound	Flag	A or P	Reason
JC42	LDW-SC17-2-4**	Phenanthrene	R	A	Overall assessment of data
JC42	LDW-SC17-2-4DL**	All TCL compounds except Phenanthrene	R	A	Overall assessment of data

Lower Duwamish Waterway Group
Semivolatiles - Laboratory Blank Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC21, JC32, JC42, JC48 and JC95

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JA36	LDW-SC55-0-1**	4-Methylphenol Fluoranthene Pyrene Bis(2-ethylhexyl)phthalate	25U ug/Kg 54U ug/Kg 35U ug/Kg 27U ug/Kg	A
JA36	LDW-SC49-0-1**	Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	55U ug/Kg 220U ug/Kg	A
JA36	LDW-SC49-0-1RE**	Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	52U ug/Kg 230U ug/Kg	A
JA36	LDW-SC49-1-2**	Bis(2-ethylhexyl)phthalate	210U ug/Kg	A
JA36	LDW-SC49-2-4**	Di-n-butylphthalate Benzo(a)anthracene Bis(2-ethylhexyl)phthalate	27U ug/Kg 64U ug/Kg 210U ug/Kg	A
JA64	LDW-SC53-0-2**	Bis(2-ethylhexyl)phthalate	520U ug/Kg	A
JA64	LDW-SC53-0-2RE**	Bis(2-ethylhexyl)phthalate	530U ug/Kg	A
JA90	LDW-SC42-0-1**	Bis(2-ethylhexyl)phthalate	180U ug/Kg	A
JA90	LDW-SC42-1-2**	Bis(2-ethylhexyl)phthalate	400U ug/Kg	A
JA90	LDW-SC42-2-4**	Bis(2-ethylhexyl)phthalate	210U ug/Kg	A
JB00	LDW-SC3-0-2**	Bis(2-ethylhexyl)phthalate	42U ug/Kg	A
JB30	LDW-SC13-0-2	Di-n-butylphthalate	180U ug/Kg	A
JB30	LDW-SC13-2-4	Di-n-butylphthalate	27U ug/Kg	A
JB30	LDW-SC9-0-1	Di-n-butylphthalate	35U ug/Kg	A

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JB30	LDW-SC9-1-2.6	Di-n-butylphthalate	38U ug/Kg	A
JB30	LDW-SC9-2.6-4	Di-n-butylphthalate	25U ug/Kg	A
JB31	LDW-SC14-2-4.1	Di-n-butylphthalate	23U ug/Kg	A
JB01	LDW-SC4-0-1	Phenol	39U ug/Kg	A
JB01	LDW-SC4-1-2	Phenol Di-n-butylphthalate	43U ug/Kg 32U ug/Kg	A
JB01	LDW-SC4-2-4	Phenol	24U ug/Kg	A
JB01	LDW-SC2-0-2	Phenol	36U ug/Kg	A
JB01	LDW-SC2-2-4	Phenol	26U ug/Kg	A
JB22	LDW-SC33-2-4	Phenol Di-n-butylphthalate	31U ug/Kg 23U ug/Kg	A
JB22	LDW-SC201-0-1.5	Phenol Di-n-butylphthalate	27U ug/Kg 40U ug/Kg	A
JB22	LDW-SC201-1.5-4	Phenol Di-n-butylphthalate	30U ug/Kg 24U ug/Kg	A
JB20	LDW-SC6-0-2	Di-n-butylphthalate	33U ug/Kg	A
JB20	LDW-SC6-2-4.5	Di-n-butylphthalate	40U ug/Kg	A
JB20	LDW-SC8-0-1	Di-n-butylphthalate	32U ug/Kg	A
JB20	LDW-SC8-1-2	Di-n-butylphthalate	23U ug/Kg	A
JB20	LDW-SC8-2-4	Di-n-butylphthalate	31U ug/Kg	A
JB20	LDW-SC7-0-1	Di-n-butylphthalate	32U ug/Kg	A
JB20	LDW-SC7-1-1.7	Di-n-butylphthalate	20U ug/Kg	A
JB20	LDW-SC10-0-1	Di-n-butylphthalate	31U ug/Kg	A
JB96	LDW-SC34-1-2 (5x)	Di-n-butylphthalate	180U ug/Kg	A
JB96	LDW-SC25-1-2 (3x)	Di-n-butylphthalate	83U ug/Kg	A

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JB46	LDW-SC22-0-1.1	Di-n-butylphthalate	29U ug/Kg	A
JB46	LDW-SC22-1.1-2	Di-n-butylphthalate	37U ug/Kg	A
JB46	LDW-SC27-2-4.5	Di-n-butylphthalate	26U ug/Kg	A
JC05	LDW-SC5-0-1	Di-n-butylphthalate	30U ug/Kg	A
JC05	LDW-SC5-1-2.2	Di-n-butylphthalate	21U ug/Kg	A
JC21	LDW-SC51-0-2 (3x)	Di-n-butylphthalate	69U ug/Kg	A
JC42	LDW-SC40-0-1.3**	Di-n-butylphthalate	26U ug/Kg	A
JC42	LDW-SC50-2-2.8**	Di-n-butylphthalate	23U ug/Kg	A
JC48	LDW-SC28-0-1 (3x)**	Bis(2-ethylhexyl)phthalate	510U ug/Kg	A
JC48	LDW-SC28-1-2 (3x)**	Bis(2-ethylhexyl)phthalate	310U ug/Kg	A
JC48	LDW-SC28-2-4 (3x)**	Bis(2-ethylhexyl)phthalate	280U ug/Kg	A

GC/MS Semivolatiles by EPA SW 846 Method 8270D using Selected Ion Monitoring (SIM).

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.

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 with the following exceptions:

Associated SDG	Date	Compound	%RSD	Associated Samples	Flag	A or P
JC32 JC48 JC95	3/29/06	Benzoic acid	32.4	LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC28-0-1** LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	J (all detects) UJ (all non-detects)	A

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

Average relative response factors (RRF) for all target compounds and system monitoring compounds were within validation criteria.

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 20.0% for all calibration check compounds and less than or equal to 25.0% for all other compounds. with the following exceptions:

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
JA36	2/17/06 (CC0217)	Benzoic acid Pentachlorophenol	55.17499 43.48128	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-1-2**	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P
JB30	3/23/06 (CC0323)	Benzyl alcohol Benzoic acid 1,2,4-Trichlorobenzene 2,4-Dimethylphenol	26.50282 73.23721 57.88957 88.64881	LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4	J (all detects) UJ (all non-detects)	A
JB31 JB64 JB80 JB90 JB91	3/8/06 (CC0308)	2,4-Dimethylphenol	38.83397	LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC21-0-1DL LDW-SC21-1-2DL LDW-SC21-2-4DL LDW-SC35-2-4DL LDW-SC20-2-4DL LDW-SC1-2-4DL	J (all detects) UJ (all non-detects)	A
JB82 JC42	3/27/06 (CC0327)	Benzyl alcohol Benzoic acid 1,2,4-Trichlorobenzene N-Nitrosodimethylamine	26.34815 65.01052 55.96413 26.23907	LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-1-2 LDW-SC17-0-1DL** LDW-SC17-1-2DL** LDW-SC50-0-1DL** LDW-SC46-0-1** LDW-SC46-1-2**	J (all detects) UJ (all non-detects)	A
JB82 JC32 JC42	3/28/06 (CC0328)	Benzoic acid 1,2,4-Trichlorobenzene	55.15318 28.07924	LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC17-2-4DL** LDW-SC46-2-4**	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
JB01 JB22	3/23/06 (CC0323)	Benzyl alcohol 2,4-Dimethylphenol Benzoic acid 1,2,4-Trichlorobenzene	26.50282 88.64881 73.23721 57.88957	LDW-SC2-2-4 LDW-SC33-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4	J (all detects) UJ (all non-detects)	A
JB01 JC42	3/24/06 (CC0324)	2,4-Dimethylphenol 1,2,4-Trichlorobenzene Benzoic acid	50.2 74.1 68.5	LDW-SC4-2-4 LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-1-2** LDW-SC17-2-4** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4**	J (all detects) UJ (all non-detects)	A
JB20	3/21/06 (CC0321)	Benzyl alcohol 2-Methylphenol Benzoic acid Butylbenzylphthalate N-Nitrosodimethylamine	28.52349 37.64089 32.22979 30.42071 34.56052	LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC7-1.7-4	J (all detects) UJ (all non-detects)	A
JB20 JB46 JC05	3/22/06 (CC0322)	N-Nitroso-di-n-propylamine 2,4-Dimethylphenol Benzoic acid 1,2,4-Trichlorobenzene	63.05188 31.04829 53.16914 40.23781	LDW-SC8-2-4 LDW-SC7-0-1 LDW-SC7-1-1.7 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4 LDW-SC22-0-1.1DL LDW-SC22-1.1-2DL LDW-SC22-2-4DL LDW-SC16-0-2DL LDW-SC16-2-4DL LDW-SC27-0-2DL	J (all detects) UJ (all non-detects)	P
JB96 JC21	3/28/06 (CC0328)	1,2,4-Trichlorobenzene	34.64259	LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC25-2-4 LDW-SC26-0-1DL LDW-SC26-1-2DL LDW-SC26-2-4DL	J (all detects) UJ (all non-detects)	A
JB96 JC48	3/29/06 (CC0329)	2-Methylphenol N-Nitroso-di-n-propylamine 2,4-Dimethylphenol Benzoic acid 1,2,4-Trichlorobenzene	30.34775 68.48982 26.00940 28.74877 72.81242	LDW-SC203-0-1DL LDW-SC203-1-2DL LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC28-1-2** LDW-SC28-2-4**	J (all detects) UJ (all non-detects)	P
JB46 JC05	3/21/06 (CC0321)	Benzyl alcohol 2-Methylphenol Benzoic acid Butylbenzylphthalate N-Nitrosodimethylamine	28.52350 37.64067 32.22981 30.42067 34.56033	LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5	J (all detects) UJ (all non-detects)	A

Associated SDG	Date	Compound	%D	Associated Samples	Flag	A or P
JB46 JC05 JC21	3/27/06 (CC0327)	2-Methylphenol 2,4-Dimethylphenol 1,2,4-Trichlorobenzene	45.21235 36.37108 32.61737	LDW-SC5-1-2.2 LDW-SC37-0-1DL	J (all detects) UJ (all non-detects)	A
JB98 JC10	3/20/06 (CC0320)	N-Nitroso-di-n-propylamine 1,2,4-Trichlorobenzene	25.26880 73.20858	LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4 LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JC21	3/24/06 (CC0324)	2-Methylphenol N-Nitroso-di-n-propylamine	48.55131 36.48049	LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

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

Associated SDG	Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
JA36 JA64 JA90 JB00	MB-021506	2/15/06	Butylbenzylphthalate N-Nitrosodiphenylamine	6.0 ug/Kg 6.0 ug/Kg	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC53-0-2** LDW-SC53-2-4** LDW-SC52-0-1** LDW-SC52-0-1DL** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC3-0-2** LDW-SC3-2-4**
JB82	MB-022806	2/28/06	Benzoic acid	38 ug/Kg	LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4

Associated SDG	Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
JB01 JB22	MB-022106	2/21/06	Benzoic acid	76 ug/Kg	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC33-0-2 LDW-SC33-0-2DL LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4
JB96	MB-030406	3/4/06	Benzoic acid	32 ug/Kg	LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-0-1DL LDW-SC203-1-2 LDW-SC203-1-2DL LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4
JB46 JC05	MB-022406	2/24/06	Benzoic acid	41 ug/Kg	LDW-SC22-0-1.1 LDW-SC22-0-1.1DL LDW-SC22-1.1-2 LDW-SC22-1.1-2DL LDW-SC22-2-4 LDW-SC22-2-4DL LDW-SC16-0-2 LDW-SC16-0-2DL LDW-SC16-2-4 LDW-SC16-2-4DL LDW-SC27-0-2 LDW-SC27-0-2DL LDW-SC27-2-4.5 LDW-SC27-2-4.5DL LDW-SC5-0-1 LDW-SC5-1-2.2 LDW-SC5-2.2-4
JC42	MB-030906	3/9/06	Benzoic acid	34 ug/Kg	LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-0-1DL** LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC17-2-4** LDW-SC17-2-4DL** LDW-SC50-0-1** LDW-SC50-0-1DL** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4**

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
JA36	LDW-SC49-1-2**	Butylbenzylphthalate	24 ug/Kg	24U ug/Kg
JA36	LDW-SC49-2-4**	Butylbenzylphthalate	28 ug/Kg	28U ug/Kg
JA64	LDW-SC53-0-2**	Butylbenzylphthalate	38 ug/Kg	38U ug/Kg
JA90	LDW-SC52-1-2**	Butylbenzylphthalate	12 ug/Kg	12U ug/Kg
JA90	LDW-SC42-0-1**	Butylbenzylphthalate	20 ug/Kg	20U ug/Kg
JA90	LDW-SC42-1-2**	Butylbenzylphthalate	36 ug/Kg	36U ug/Kg
JA90	LDW-SC42-2-4**	Butylbenzylphthalate	22 ug/Kg	22U ug/Kg
JB82	LDW-SC36-0-1	Benzoic acid	170 ug/Kg	170U ug/Kg
JB82	LDW-SC36-1-2	Benzoic acid	180 ug/Kg	180U ug/Kg
JB82	LDW-SC36-2-4	Benzoic acid	120 ug/Kg	120U ug/Kg
JB82	LDW-SC202-0-1	Benzoic acid	150 ug/Kg	150U ug/Kg
JB82	LDW-SC202-1-2	Benzoic acid	170 ug/Kg	170U ug/Kg
JB82	LDW-SC39-0-1	Benzoic acid	170 ug/Kg	170U ug/Kg
JB82	LDW-SC39-1-2	Benzoic acid	140 ug/Kg	140U ug/Kg
JB82	LDW-SC12-0-2	Benzoic acid	120 ug/Kg	120U ug/Kg
JB01	LDW-SC4-2-4	Benzoic acid	280 ug/Kg	280U ug/Kg
JB01	LDW-SC2-0-2	Benzoic acid	290 ug/Kg	290U ug/Kg
JB22	LDW-SC33-0-2	Benzoic acid	230 ug/Kg	230U ug/Kg
JB22	LDW-SC33-0-2DL (10x)	Benzoic acid	310 ug/Kg	310U ug/Kg
JB22	LDW-SC33-2-4	Benzoic acid	170 ug/Kg	170U ug/Kg
JB22	LDW-SC201-0-1.5	Benzoic acid	170 ug/Kg	170U ug/Kg
JB22	LDW-SC201-1.5-4	Benzoic acid	160 ug/Kg	160U ug/Kg
JB96	LDW-SC34-0-1	Benzoic acid	160 ug/Kg	160U ug/Kg

Associated SDG	Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
JB96	LDW-SC34-1-2	Benzoic acid	140 ug/Kg	140U ug/Kg
JB96	LDW-SC34-2-4	Benzoic acid	110 ug/Kg	110U ug/Kg
JB96	LDW-SC203-1-2	Benzoic acid	140 ug/Kg	140U ug/Kg
JB96	LDW-SC203-2-4DL (10x)	Benzoic acid	430 ug/Kg	430U ug/Kg
JB96	LDW-SC25-0-1	Benzoic acid	75 ug/Kg	75U ug/Kg
JB96	LDW-SC25-2-4	Benzoic acid	77 ug/Kg	77U ug/Kg
JB46	LDW-SC16-0-2	Benzoic acid	63 ug/Kg	63U ug/Kg
JB46	LDW-SC16-2-4	Benzoic acid	86 ug/Kg	86U ug/Kg
JB46	LDW-SC27-0-2	Benzoic acid	79 ug/Kg	79U ug/Kg
JC05	LDW-SC5-0-1	Benzoic acid	82 ug/Kg	82U ug/Kg
JC05	LDW-SC5-1-2.2	Benzoic acid	150 ug/Kg	150U ug/Kg
JC42	LDW-SC40-0-1.3**	Benzoic acid	80 ug/Kg	80U ug/Kg
JC42	LDW-SC40-1.3-2**	Benzoic acid	71 ug/Kg	71U ug/Kg
JC42	LDW-SC40-2-4**	Benzoic acid	67 ug/Kg	67U ug/Kg
JC42	LDW-SC17-1-2DL (10x)**	Benzoic acid	380 ug/Kg	380U ug/Kg
JC42	LDW-SC50-1-2**	Benzoic acid	130 ug/Kg	130U ug/Kg
JC42	LDW-SC50-2-2.8**	Benzoic acid	100 ug/Kg	100U ug/Kg
JC42	LDW-SC50-2.8-4**	Benzoic acid	64 ug/Kg	64U ug/Kg

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits except for several samples in SDGs JB30, JB90, JB82, JB22, JB96, JB46, JC10, JC21, JC42, JC48 and JC95. Since these samples were diluted out, no data were qualified.

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
JA90	LDW-SC42-2-4MS/MSD (LDW-SC42-2-4**)	Pentachlorophenol	-	-	59.1 (≤50)	J (all detects) UJ (all non-detects)	A
JB96	LDW-SC25-2-4MS/MSD (LDW-SC25-2-4)	Pentachlorophenol	36.6 (40-130)	-	-	J (all detects) UJ (all non-detects)	A

Percent recoveries (%R) and relative percent differences (RPD) were not within QC limits in SDGs JB30, JB31, JB82, JB22, JC10, JC42 and JC48. Since the MS/MSD samples were diluted out, no data were qualified.

VIII. Laboratory Control Samples (LCS)

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

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JB30	LCS-022206	1,2,4-Trichlorobenzene Benzoic acid	166 (40-130) 137 (40-130)	LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4	J (all detects) J (all detects)	P
JB30	LCS-022206	2,4-Dimethylphenol	2.2 (40-130)	LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4	N/A*	-
JB31 JB91	LCS-022406	2,4-Dimethylphenol	33.6 (40-130)	LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC23-0-2 LDW-SC23-2-4	J (all detects) UJ (all non-detects)	P

*Indicates change as the result of report review.

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JB82	LCS-022806	1,2,4-Trichlorobenzene Benzoic acid	176 (40-130) 446 (40-130)	LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4	J (all detects) J (all detects)	P
JB01 JB22	LCS-022106	Benzoic acid	220 (40-130)	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC33-0-2 LDW-SC33-0-2DL LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4	J (all detects)	P
JB01	LCS-022106	2,4-Dimethylphenol	7.4 (40-130)	LDW-SC2-2-4	J (all detects)	P
JB01 JB22	LCS-022106	2,4-Dimethylphenol	7.4 (40-130)	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC33-0-2 LDW-SC33-0-2DL LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4	N/A*	-
JB20	LCS-022206	2,4-Dimethylphenol	1.2 (40-130)	LDW-SC6-0-2 LDW-SC6-2-4.5 LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC7-0-1 LDW-SC7-1-1.7 LDW-SC7-1.7-4 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4	N/A*	-
JB96	LCS-030406	2-Methylphenol	154 (40-130)	LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-0-1DL LDW-SC203-1-2 LDW-SC203-1-2DL LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4	J (all detects)	P

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JB46 JC05	LCS-022406	2,4-Dimethylphenol	5.8 (40-130)	LDW-SC22-0-1.1 LDW-SC22-0-1.1DL LDW-SC22-1.1-2 LDW-SC22-1.1-2DL LDW-SC22-2-4 LDW-SC22-2-4DL LDW-SC16-0-2 LDW-SC16-0-2DL LDW-SC16-2-4 LDW-SC16-2-4DL LDW-SC27-0-2 LDW-SC27-0-2DL LDW-SC27-2-4.5 LDW-SC27-2-4.5DL LDW-SC5-0-1 LDW-SC5-1-2.2 LDW-SC5-2.2-4	N/A*	-
JC05	LCS-022406	2,4-Dimethylphenol	5.8 (40-130)	LDW-SC5-1-2.2	J (all detects)	P
JB46 JC05	LCS-022406	N-Nitroso-di-n-propylamine	29.0 (40-130)	LDW-SC22-0-1.1 LDW-SC22-0-1.1DL LDW-SC22-1.1-2 LDW-SC22-1.1-2DL LDW-SC22-2-4 LDW-SC22-2-4DL LDW-SC16-0-2 LDW-SC16-0-2DL LDW-SC16-2-4 LDW-SC16-2-4DL LDW-SC27-0-2 LDW-SC27-0-2DL LDW-SC27-2-4.5 LDW-SC27-2-4.5DL LDW-SC5-0-1 LDW-SC5-1-2.2 LDW-SC5-2.2-4	J (all detects) UJ (all non-detects)	P
JB98 JC10	LCS-030206	1,2,4-Trichlorobenzene Benzoic acid 2,4-Dimethylphenol	132 (40-130) 168 (40-130) 138 (40-130)	LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-0-1DL LDW-SC45-1-2 LDW-SC45-1-2DL LDW-SC45-2-4 LDW-SC45-2-4DL LDW-SC38-0-1 LDW-SC38-0-1DL LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3	J (all detects) J (all detects) J (all detects)	P

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JC21	LCS-030706	2,4-Dimethylphenol	38.6 (40-130)	LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-0-1DL LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-0-1DL LDW-SC26-1-2 LDW-SC26-1-2DL LDW-SC26-2-4 LDW-SC26-2-4DL	J (all detects) UJ (all non-detects)	P
JC32 JC95	LCS-030706	N-Nitrosodiphenylamine	14.3 (40-130)	LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	J (all detects) UJ (all non-detects)	P
JC42	LCS-030906	1,2,4-Trichlorobenzene Benzoic acid	169 (40-130) 220 (40-130)	LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-0-1DL** LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC17-2-4** LDW-SC17-2-4DL** LDW-SC50-0-1** LDW-SC50-0-1DL** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4**	J (all detects) J (all detects)	P
JC48	LCS-031406	2-Methylphenol N-Nitroso-di-n-propylamine	258 (40-130) 193 (40-130)	LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4**	J (all detects) J (all detects)	P
JC48	LCS-031406	2,4-Dimethylphenol	31.8 (40-130)	LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4**	J (all detects) UJ (all non-detects)	P

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JB01 JB20 JB22 JB46 JC05	LCS-051906	2,4-Dimethylphenol	25.5 (40-130)	LDW-SC33-0-2RE LDW-SC33-2-4RE LDW-SC201-0-1.5RE LDW-SC201-1.5-4RE LDW-SC7-1.7-4RE LDW-SC10-0-1RE LDW-SC10-1-2RE LDW-SC10-2-4RE LDW-SC22-0-1.1RE LDW-SC22-1.1-2RE LDW-SC22-2-4RE LDW-SC16-0-2RE LDW-SC16-2-4RE LDW-SC27-0-2RE LDW-SC27-2-4.5RE LDW-SC5-0-1RE LDW-SC5-1-2.2RE LDW-SC5-2.2-4RE	J (all detects) UJ (all non-detects)	P

N/A = Not applicable

For the results above flagged "Not applicable", the affected compound results in the associated samples were deemed unusable and did not warrant qualification of the data.

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 with the following exceptions:

Associated SDG	Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
JB46	LDW-SC22-0-1.1	Chrysene-d12	1326678 (274093-1096372)	Butylbenzylphthalate	J (all detects)	A
JB46	LDW-SC22-1.1-2	Chrysene-d12	1336499 (274093-1096372)	Butylbenzylphthalate	J (all detects)	A
JB46	LDW-SC22-2-4	Chrysene-d12	1231471 (274093-1096372)	Butylbenzylphthalate	J (all detects)	A
JB46	LDW-SC16-0-2	Chrysene-d12	1456659 (274093-1096372)	Butylbenzylphthalate	J (all detects)	A
JB46	LDW-SC16-2-4	Chrysene-d12	1679183 (274093-1096372)	Butylbenzylphthalate	J (all detects)	A
JB46	LDW-SC27-0-2	Chrysene-d12	1666156 (274093-1096372)	Butylbenzylphthalate	J (all detects)	A
JB46	LDW-SC27-2-4.5	Chrysene-d12	1358111 (274093-1096372)	Butylbenzylphthalate	J (all detects)	A

Associated SDG	Sample	Internal Standards	Area (Limits)	Compound	Flag	A or P
JC10	LDW-SC45-2-4	Naphthalene-d8	750122 (805178-3220712)	2,4-Dimethylphenol 1,2,4-Trichlorobenzene Hexachlorobutadiene Benzoic acid	J (all detects) UJ (all non-detects)	A
JC10	LDW-SC45-0-1	Chrysene-d12	535311 (133442-533770)	Butylbenzylphthalate	J (all detects)	A
JC21	LDW-SC37-0-1	Chrysene-d12	1446418 (349495-1397980)	Butylbenzylphthalate	J (all detects)	A
JC42	LDW-SC17-2-4**	Naphthalene-d8	1297565 (1298106-5192422)	2,4-Dimethylphenol 1,2,4-Trichlorobenzene Hexachlorobutadiene Benzoic acid	J (all detects) UJ (all non-detects)	A
JC42	LDW-SC50-0-1**	Naphthalene-d8	1261499 (1298106-5192422)	2,4-Dimethylphenol 1,2,4-Trichlorobenzene Hexachlorobutadiene Benzoic acid	J (all detects) UJ (all non-detects)	A
JC42	LDW-SC17-1-2**	Phenanthrene-d10	821065 (908181-3632724)	Hexachlorobenzene Pentachlorophenol N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects)	A

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which an 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 with the following exceptions:

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
JA90	LDW-SC52-0-1	Butylbenzylphthalate	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JB22	LDW-SC33-0-2	Pentachlorophenol	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-

N/A = Not applicable

For the results above flagged "Not applicable", the affected compound results in the associated samples were deemed unusable and did not warrant qualification of the data.

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.

XIV. System Performance

The system performance was acceptable for samples on which an 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
JB01 JB20 JB22 JB30 JB46 JC05	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4 LDW-SC6-0-2 LDW-SC6-2-4.5 LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC7-0-1 LDW-SC7-1-1.7 LDW-SC7-1.7-4 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4 LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4 LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC5-0-1 LDW-SC5-1-2.2RE LDW-SC5-2.2-4	2,4-Dimethylphenol	R	A
JA90	LDW-SC52-0-1**	Butylbenzylphthalate	R	A
JA90	LDW-SC52-0-1DL**	All TCL compounds except Butylbenzylphthalate	R	A

Associated SDG	Sample	Compound	Flag	A or P
JB46 JB64 JB80 JB90 JB96 JC10 JC21 JC42	LDW-SC22-0-1.1DL LDW-SC22-1.1-2DL LDW-SC22-2-4DL LDW-SC16-0-2DL LDW-SC16-2-4DL LDW-SC27-0-2DL LDW-SC27-2-4.5DL LDW-SC21-0-1DL LDW-SC21-1-2DL LDW-SC21-2-4DL LDW-SC35-2-4DL LDW-SC20-2-4DL LDW-SC1-2-4DL LDW-SC203-0-1DL LDW-SC203-1-2DL LDW-SC203-2-4DL LDW-SC45-0-1DL LDW-SC45-1-2DL LDW-SC45-2-4DL LDW-SC38-0-1DL LDW-SC37-0-1DL LDW-SC26-0-1DL LDW-SC26-1-2DL LDW-SC26-2-4DL LDW-SC17-0-1DL** LDW-SC17-1-2DL** LDW-SC17-2-4DL** LDW-SC50-0-1DL**	All TCL compounds	R	A
JB22	LDW-SC33-0-2	2,4-Dimethylphenol Pentachlorophenol	R	A
JB22	LDW-SC33-0-2DL	All TCL compounds except 2,4-Dimethylphenol Pentachlorophenol	R	A

XVI. Field Replicates

Samples LDW-SC36-0-1 and LDW-SC202-0-1, samples LDW-SC36-1-2 and LDW-SC202-1-2, and samples LDW-SC36-2-4 and LDW-SC202-2-4 (SDG JB82), samples LDW-SC33-0-2 and LDW-SC201-0-1.5, samples LDW-SC33-0-2DL and LDW-SC201-0-1.5, and samples LDW-SC33-2-4 and LDW-SC201-1.5-4 (SDG JB22), and samples LDW-SC34-0-1 and LDW-SC203-0-1, samples LDW-SC34-0-1 and LDW-SC203-0-1DL, samples LDW-SC34-1-2 and LDW-SC203-1-2, samples LDW-SC34-1-2 and LDW-SC203-1-2DL, samples LDW-SC34-2-4 and LDW-SC203-2-4, and samples LDW-SC34-2-4 and LDW-SC203-2-4DL (SDG JB96) were identified as field replicates. No semivolatiles were detected in any of the samples with the following exceptions:

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1	
JB82	Benzoic acid	170	150	12 (≤50)
JB82	Butylbenzylphthalate	12U	9.5	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-1-2	LDW-SC202-1-2	
JB82	Benzoic acid	180	170	6 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-2-4	LDW-SC202-2-4	
JB82	Benzoic acid	120	120U	Not calculable
JB82	Butylbenzylphthalate	5.8	12U	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC33-0-2	LDW-SC201-0-1.5	
JB22	1,2,4-Trichlorobenzene	6.5	6.0	8 (≤50)
JB22	Benzoic acid	230	170	30 (≤50)
JB22	Butylbenzylphthalate	11	29	93 (≤50)
JB22	Pentachlorophenol	820	30U	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC33-0-2DL	LDW-SC201-0-1.5	
JB22	Benzoic acid	310	170	58 (≤50)
JB22	Pentachlorophenol	790	30U	Not calculable
JB22	1,2,4-Trichlorobenzene	20U	6.0	Not calculable
JB22	Butylbenzylphthalate	20U	29	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC33-2-4	LDW-SC201-1.5-4	
JB22	Benzoic acid	170	160	6 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-0-1	LDW-SC203-0-1	
JB96	1,4-Dichlorobenzene	4.0	5.6	33 (≤50)
JB96	Benzoic acid	160	420	90 (≤50)
JB96	Butylbenzylphthalate	440	380	15 (≤50)
JB96	2-Methylphenol	6.7	20	100 (≤50)
JB96	Benzyl alcohol	34	66	64 (≤50)
JB96	Pentachlorophenol	76	47U	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-0-1	LDW-SC203-0-1DL	
JB96	1,4-Dichlorobenzene	4.0	31U	Not calculable
JB96	Benzoic acid	160	310U	Not calculable
JB96	Butylbenzylphthalate	440	320	32 (≤50)
JB96	2-Methylphenol	6.7	31U	Not calculable
JB96	Benzyl alcohol	34	160U	Not calculable
JB96	Pentachlorophenol	76	160U	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-1-2	LDW-SC203-1-2	
JB96	1,4-Dichlorobenzene	7.0	6.5	7 (≤50)
JB96	Benzoic acid	140	140	0 (≤50)
JB96	Butylbenzylphthalate	400	400	0 (≤50)
JB96	2-Methylphenol	9.3	11U	Not calculable
JB96	Benzyl alcohol	210	41U	Not calculable
JB96	1,2-Dichlorobenzene	4.6	11U	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-1-2	LDW-SC203-1-2DL	
JB96	1,4-Dichlorobenzene	7.0	36U	Not calculable
JB96	Benzoic acid	140	360U	Not calculable
JB96	Butylbenzylphthalate	400	310	25 (≤50)
JB96	2-Methylphenol	9.3	36U	Not calculable
JB96	Benzyl alcohol	210	180U	Not calculable
JB96	1,2-Dichlorobenzene	4.6	36U	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-2-4	LDW-SC203-2-4	
JB96	Benzoic acid	110	570	135 (≤50)
JB96	Butylbenzylphthalate	44	140	104 (≤50)
JB96	Benzyl alcohol	20	35U	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-2-4	LDW-SC203-2-4DL	
JB96	Benzoic acid	110	430	119 (≤50)
JB96	Butylbenzylphthalate	44	110	86 (≤50)
JB96	Benzyl alcohol	20	120U	Not calculable

XVII. Field Blanks

Samples LDW-SC-RB1 (SDG JA90), LDW-SC-RB2 (SDG JB46), and LDW-SC-RB3 (SDG JC21) were identified as rinsate blanks. No semivolatile contaminants were found in these blanks.

Lower Duwamish Waterway Group
Semivolatiles (SIM) - Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC21, JC32, JC42, JC48 and JC95

SDG	Sample	Compound	Flag	A or P	Reason
JC32 JC48 JC95	LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC28-0-1** LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	Benzoic acid	J (all detects) UJ (all non-detects)	A	Initial calibration (%RSD)
JA36	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-1-2**	Benzoic acid Pentachlorophenol	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JB30	LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4	Benzyl alcohol Benzoic acid 1,2,4-Trichlorobenzene 2,4-Dimethylphenol	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB31 JB64 JB80 JB90	LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC21-0-1DL LDW-SC21-1-2DL LDW-SC21-2-4DL LDW-SC35-2-4DL LDW-SC20-2-4DL LDW-SC1-2-4DL	2,4-Dimethylphenol	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB82 JC42	LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-1-2 LDW-SC17-0-1DL** LDW-SC17-1-2DL** LDW-SC50-0-1DL** LDW-SC46-0-1** LDW-SC46-1-2**	Benzyl alcohol Benzoic acid 1,2,4-Trichlorobenzene N-Nitrosodimethylamine	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

SDG	Sample	Compound	Flag	A or P	Reason
JB82 JC32 JC42	LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC17-2-4DL** LDW-SC46-2-4**	Benzoic acid 1,2,4-Trichlorobenzene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB01 JB22	LDW-SC2-2-4 LDW-SC33-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4	Benzyl alcohol 2,4-Dimethylphenol Benzoic acid 1,2,4-Trichlorobenzene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB01 JC42	LDW-SC4-2-4 LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-1-2** LDW-SC17-2-4** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4**	2,4-Dimethylphenol 1,2,4-Trichlorobenzene Benzoic acid	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB20	LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC7-1.7-4	Benzyl alcohol 2-Methylphenol Benzoic acid Butylbenzylphthalate N-Nitrosodimethylamine	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB20 JB46	LDW-SC8-2-4 LDW-SC7-0-1 LDW-SC7-1-1.7 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4 LDW-SC22-0-1.1DL LDW-SC22-1.1-2DL LDW-SC22-2-4DL LDW-SC16-0-2DL LDW-SC16-2-4DL LDW-SC27-0-2DL	N-Nitroso-di-n-propylamine 2,4-Dimethylphenol Benzoic acid 1,2,4-Trichlorobenzene	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JB96 JC21	LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC25-2-4 LDW-SC26-0-1DL LDW-SC26-1-2DL LDW-SC26-2-4DL	1,2,4-Trichlorobenzene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

SDG	Sample	Compound	Flag	A or P	Reason
JB96 JC48	LDW-SC203-0-1DL LDW-SC203-1-2DL LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC28-1-2** LDW-SC28-2-4**	2-Methylphenol N-Nitroso-di-n-propylamine 2,4-Dimethylphenol Benzoic acid 1,2,4-Trichlorobenzene	J (all detects) UJ (all non-detects)	P	Continuing calibration (%D)
JB46	LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5	Benzyl alcohol 2-Methylphenol Benzoic acid Butylbenzylphthalate N-Nitrosodimethylamine	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JC05 JC21	LDW-SC5-1-2.2 LDW-SC37-0-1DL	2-Methylphenol 2,4-Dimethylphenol 1,2,4-Trichlorobenzene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB98 JC10	LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4 LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3	N-Nitroso-di-n-propylamine 1,2,4-Trichlorobenzene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JC21	LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4	2-Methylphenol N-Nitroso-di-n-propylamine	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JA90 JB96	LDW-SC42-2-4** LDW-SC25-2-4	Pentachlorophenol	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)

SDG	Sample	Compound	Flag	A or P	Reason
JB30 JB82 JC42	LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4 LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-0-1DL** LDW-SC17-1-2** LDW-SC17-1-2DL** LDW-SC17-2-4** LDW-SC17-2-4DL** LDW-SC50-0-1** LDW-SC50-0-1DL** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4**	1,2,4-Trichlorobenzene Benzoic acid	J (all detects) J (all detects)	P	Laboratory control samples (%R)
JB01 JC05	LDW-SC2-2-4 LDW-SC5-1-2.2	2,4-Dimethylphenol	J (all detects)	P	Laboratory control samples (%R)

SDG	Sample	Compound	Flag	A or P	Reason
JB31 JB91 JC21 JC48 JB01 JB20 JB22 JB46 JC05	LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC23-0-2 LDW-SC23-2-4 LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-0-1DL LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-0-1DL LDW-SC26-1-2 LDW-SC26-1-2DL LDW-SC26-2-4 LDW-SC26-2-4DL LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC33-0-2RE LDW-SC33-2-4RE LDW-SC201-0-1.5RE LDW-SC201-1.5-4RE LDW-SC7-1.7-4RE LDW-SC10-0-1RE LDW-SC10-1-2RE LDW-SC10-2-4RE LDW-SC22-0-1.1RE LDW-SC22-1.1-2RE LDW-SC22-2-4RE LDW-SC16-0-2RE LDW-SC16-2-4RE LDW-SC27-0-2RE LDW-SC27-2-4.5RE LDW-SC5-0-1RE LDW-SC5-1-2.2RE LDW-SC5-2.2-4RE	2,4-Dimethylphenol	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JB01 JB22	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC33-0-2 LDW-SC33-0-2DL LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4	Benzoic acid	J (all detects)	P	Laboratory control samples (%R)
JB96	LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-0-1DL LDW-SC203-1-2 LDW-SC203-1-2DL LDW-SC203-2-4 LDW-SC203-2-4DL LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4	2-Methylphenol	J (all detects)	P	Laboratory control samples (%R)

SDG	Sample	Compound	Flag	A or P	Reason
JB46 JC05	LDW-SC22-0-1.1 LDW-SC22-0-1.1DL LDW-SC22-1.1-2 LDW-SC22-1.1-2DL LDW-SC22-2-4 LDW-SC22-2-4DL LDW-SC16-0-2 LDW-SC16-0-2DL LDW-SC16-2-4 LDW-SC16-2-4DL LDW-SC27-0-2 LDW-SC27-0-2DL LDW-SC27-2-4.5 LDW-SC27-2-4.5DL LDW-SC5-0-1 LDW-SC5-1-2.2 LDW-SC5-2.2-4	N-Nitroso-di-n-propylamine	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JB98 JC10	LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC45-0-1 LDW-SC45-0-1DL LDW-SC45-1-2 LDW-SC45-1-2DL LDW-SC45-2-4 LDW-SC45-2-4DL LDW-SC38-0-1 LDW-SC38-0-1DL LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3	1,2,4-Trichlorobenzene Benzoic acid 2,4-Dimethylphenol	J (all detects) J (all detects) J (all detects)	P	Laboratory control samples (%R)
JC32 JC95	LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4	N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JC48	LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4**	2-Methylphenol N-Nitroso-di-n-propylamine	J (all detects) J (all detects)	P	Laboratory control samples (%R)

SDG	Sample	Compound	Flag	A or P	Reason
JB46 JC10 JC21	LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC45-0-1 LDW-SC37-0-1	Butylbenzylphthalate	J (all detects)	A	Internal standards (area)
JC10 JC42	LDW-SC45-2-4 LDW-SC17-2-4** LDW-SC50-0-1**	2,4-Dimethylphenol 1,2,4-Trichlorobenzene Hexachlorobutadiene Benzoic acid	J (all detects) UJ (all non-detects)	A	Internal standards (area)
JC42	LDW-SC17-1-2**	Hexachlorobenzene Pentachlorophenol N-Nitrosodiphenylamine	J (all detects) UJ (all non-detects)	A	Internal standards (area)
JB01 JB20 JB22 JB30 JB46 JC05	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4 LDW-SC6-0-2 LDW-SC6-2-4.5 LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC7-0-1 LDW-SC7-1-1.7 LDW-SC7-1.7-4 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4 LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4 LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC5-0-1 LDW-SC5-1-2.2RE LDW-SC5-2.2-4	2,4-Dimethylphenol	R	A	Overall assessment of data
JA90	LDW-SC52-0-1**	Butylbenzylphthalate	R	A	Overall assessment of data
JA90	LDW-SC52-0-1DL**	All TCL compounds except Butylbenzylphthalate	R	A	Overall assessment of data

SDG	Sample	Compound	Flag	A or P	Reason
JB46 JB64 JB80 JB90 JB96 JC10 JC21 JC42	LDW-SC22-0-1.1DL LDW-SC22-1.1-2DL LDW-SC22-2-4DL LDW-SC16-0-2DL LDW-SC16-2-4DL LDW-SC27-0-2DL LDW-SC27-2-4.5DL LDW-SC21-0-1DL LDW-SC21-1-2DL LDW-SC21-2-4DL LDW-SC35-2-4DL LDW-SC20-2-4DL LDW-SC1-2-4DL LDW-SC203-0-1DL LDW-SC203-1-2DL LDW-SC203-2-4DL LDW-SC45-0-1DL LDW-SC45-1-2DL LDW-SC45-2-4DL LDW-SC38-0-1DL LDW-SC37-0-1DL LDW-SC26-0-1DL LDW-SC26-1-2DL LDW-SC26-2-4DL LDW-SC17-0-1DL** LDW-SC17-1-2DL** LDW-SC17-2-4DL** LDW-SC50-0-1DL**	All TCL compounds	R	A	Overall assessment of data
JB22	LDW-SC33-0-2	2,4-Dimethylphenol Pentachlorophenol	R	A	Overall assessment of data
JB22	LDW-SC33-0-2DL	All TCL compounds except 2,4-Dimethylphenol Pentachlorophenol	R	A	Overall assessment of data

Lower Duwamish Waterway Group
Semivolatiles (SIM) - Laboratory Blank Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC21, JC32, JC42, JC48 and JC95

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JA36	LDW-SC49-1-2**	Butylbenzylphthalate	24U ug/Kg	A
JA36	LDW-SC49-2-4**	Butylbenzylphthalate	28U ug/Kg	A
JA64	LDW-SC53-0-2**	Butylbenzylphthalate	38U ug/Kg	A
JA90	LDW-SC52-1-2**	Butylbenzylphthalate	12U ug/Kg	A
JA90	LDW-SC42-0-1**	Butylbenzylphthalate	20U ug/Kg	A
JA90	LDW-SC42-1-2**	Butylbenzylphthalate	36U ug/Kg	A

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JA90	LDW-SC42-2-4**	Butylbenzylphthalate	22U ug/Kg	A
JB82	LDW-SC36-0-1	Benzoic acid	170U ug/Kg	A
JB82	LDW-SC36-1-2	Benzoic acid	180U ug/Kg	A
JB82	LDW-SC36-2-4	Benzoic acid	120U ug/Kg	A
JB82	LDW-SC202-0-1	Benzoic acid	150U ug/Kg	A
JB82	LDW-SC202-1-2	Benzoic acid	170U ug/Kg	A
JB82	LDW-SC39-0-1	Benzoic acid	170U ug/Kg	A
JB82	LDW-SC39-1-2	Benzoic acid	140U ug/Kg	A
JB82	LDW-SC12-0-2	Benzoic acid	120U ug/Kg	A
JB01	LDW-SC4-2-4	Benzoic acid	280U ug/Kg	A
JB01	LDW-SC2-0-2	Benzoic acid	290U ug/Kg	A
JB22	LDW-SC33-0-2	Benzoic acid	230U ug/Kg	A
JB22	LDW-SC33-0-2DL (10x)	Benzoic acid	310U ug/Kg	A
JB22	LDW-SC33-2-4	Benzoic acid	170U ug/Kg	A
JB22	LDW-SC201-0-1.5	Benzoic acid	170U ug/Kg	A
JB22	LDW-SC201-1.5-4	Benzoic acid	160U ug/Kg	A
JB96	LDW-SC34-0-1	Benzoic acid	160U ug/Kg	A
JB96	LDW-SC34-1-2	Benzoic acid	140U ug/Kg	A
JB96	LDW-SC34-2-4	Benzoic acid	110U ug/Kg	A
JB96	LDW-SC203-1-2	Benzoic acid	140U ug/Kg	A
JB96	LDW-SC203-2-4DL (10x)	Benzoic acid	430U ug/Kg	A
JB96	LDW-SC25-0-1	Benzoic acid	75U ug/Kg	A
JB96	LDW-SC25-2-4	Benzoic acid	77U ug/Kg	A

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
JB46	LDW-SC16-0-2	Benzoic acid	63U ug/Kg	A
JB46	LDW-SC16-2-4	Benzoic acid	86U ug/Kg	A
JB46	LDW-SC27-0-2	Benzoic acid	79U ug/Kg	A
JC05	LDW-SC5-0-1	Benzoic acid	82U ug/Kg	A
JC05	LDW-SC5-1-2.2	Benzoic acid	150U ug/Kg	A
JC42	LDW-SC40-0-1.3**	Benzoic acid	80U ug/Kg	A
JC42	LDW-SC40-1.3-2**	Benzoic acid	71U ug/Kg	A
JC42	LDW-SC40-2-4**	Benzoic acid	67U ug/Kg	A
JC42	LDW-SC17-1-2DL (10x)**	Benzoic acid	380U ug/Kg	A
JC42	LDW-SC50-1-2	Benzoic acid	130U ug/Kg	A
JC42	LDW-SC50-2-2.8**	Benzoic acid	100U ug/Kg	A
JC42	LDW-SC50-2.8-4**	Benzoic acid	64U ug/Kg	A

GC Chlorinated Pesticides by EPA SW 846 Method 8081A

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/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention time windows were evaluated and considered technically acceptable for samples on which an EPA Level IV review was performed. Raw data were not evaluated for the samples on which a Level III review was performed.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits with the following exceptions:

Associated SDG	Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
JA64	2/22/06 (15:26)	CCV	RTX-440	Endrin ketone	17.5	LDW-SC53-0-2** LDW-SC53-2-4**	J (all detects) UJ (all non-detects)	A
JA64	2/22/06 (16:51)	CCV	RTX-440	2,4'-DDT	25	LDW-SC53-0-2** LDW-SC53-2-4**	J (all detects) UJ (all non-detects)	A
JA64	2/22/06 (16:51)	CCV	STX-CLP2	2,4'-DDT cis-Nonachlor	22.5 17.5	LDW-SC53-0-2** LDW-SC53-2-4**	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JB80	2/27/06 (21:31)	CCV	STX-CLP2	Dieldrin	17.5	LDW-SC20-0-2 LDW-SC20-2-4	J (all detects) UJ (all non-detects)	A

Associated SDG	Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
JB80	2/27/06 (21:31)	CCV	RTX-440	Methoxychlor Endrin ketone Endrin aldehyde	20.0 17.5 20.0	LDW-SC20-0-2 LDW-SC20-2-4	J (all detects) UJ (all non-detects)	A
JB30 JB31 JB91	2/28/06 (11:46)	CCV	RTX-440	4,4'-DDD	20.0	LDW-SC9-1-2.6 LDW-SC14-1.4-2** LDW-SC14-2-4.1 LDW-SC23-0-2DL	J (all detects) UJ (all non-detects)	A
JB30 JB31 JB91	2/28/06 (11:46)	CCV	STX-CLP2	4,4'-DDD	17.5	LDW-SC9-1-2.6 LDW-SC14-1.4-2** LDW-SC14-2-4.1 LDW-SC23-0-2DL	J (all detects) UJ (all non-detects)	A
JB31 JB91	2/28/06 (11:21)	CCV	RTX-440	2,4'-DDT	17.5	LDW-SC14-1.4-2** LDW-SC14-2-4.1 LDW-SC23-0-2DL	J (all detects) UJ (all non-detects)	A

Retention times (RT) of all compounds in the calibration standards were within QC limits for samples on which an EPA Level IV review was performed. Raw data were not evaluated for the samples on which a Level III review was performed.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No chlorinated pesticide contaminants were found in the method blanks.

VI. Surrogate Spikes and Internal Standards

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits except for several samples in SDGs JB91 and JB96. Since these samples were diluted out, no data were qualified.

All internal standard areas and retention times 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.

VIII. Laboratory Control Samples (LCS)

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

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
JE74	LCS-032906	Endrin aldehyde	45.2 (50-150)	LDW-SC2-0-2 LDW-SC2-2-4	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. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Although sulfur cleanup was not required by the method, it was performed by the laboratory.

Florisil cleanup was not required and therefore not performed.

b. GPC Calibration

GPC cleanup was not required and therefore not performed.

XI. Target Compound Identification

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

XII. Compound Quantitation and Reported CRQLs

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

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
JB91	LDW-SC23-0-2	delta-BHC	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-

N/A = Not applicable

For the result above flagged "Not applicable", the affected compound result in the associated sample was deemed unusable and did not warrant qualification of the data.

Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Overall Assessment of Data

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
JB91	LDW-SC23-0-2	delta-BHC	R	A
JB91	LDW-SC23-0-2DL	All TCL compounds except delta-BHC	R	A

XIV. Field Replicates

Samples LDW-SC34-0-1 and LDW-SC203-0-1, samples LDW-SC34-1-2 and LDW-SC203-1-2, and samples LDW-SC34-2-4 and LDW-SC203-2-4 (SDG JB96) were identified as field replicates. No chlorinated pesticides were detected in any of the samples with the following exceptions:

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-0-1	LDW-SC203-0-1	
JB96	delta-BHC	7.0	23	107 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-1-2	LDW-SC203-1-2	
JB96	delta-BHC	19	60	104 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-2-4	LDW-SC203-2-4	
JB96	delta-BHC	0.96U	29	Not calculable

XV. Field Blanks

Samples LDW-SC-RB1 (SDG JA90), LDW-SC-RB2 (SDG JB46), and LDW-SC-RB3 (SDG JC21) were identified as rinsates. No chlorinated pesticide contaminants were found in these blanks.

Lower Duwamish Waterway Group
Chlorinated Pesticides - Data Qualification Summary - SDGs JA64, JA90, JB20, JB30, JB31, JB46, JB80, JB82, JB91, JB96, JB98, JC21, JC32, JC42 and JE74

SDG	Sample	Compound	Flag	A or P	Reason
JA64	LDW-SC53-0-2** LDW-SC53-2-4**	Endrin ketone 2,4'-DDT cis-Nonachlor	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB80	LDW-SC20-0-2 LDW-SC20-2-4	Dieldrin Methoxychlor Endrin ketone Endrin aldehyde	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB30 JB31 JB91	LDW-SC9-1-2.6 LDW-SC14-1.4-2** LDW-SC14-2-4.1 LDW-SC23-0-2DL	4,4'-DDD	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JB31 JB91	LDW-SC14-1.4-2** LDW-SC14-2-4.1 LDW-SC23-0-2DL	2,4'-DDT	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JE74	LDW-SC2-0-2 LDW-SC2-2-4	Endrin aldehyde	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JB91	LDW-SC23-0-2	delta-BHC	R	A	Overall assessment of data
JB91	LDW-SC23-0-2DL	All TCL compounds except delta-BHC	R	A	Overall assessment of data

Lower Duwamish Waterway Group
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDGs JA64, JA90, JB20, JB30, JB31, JB46, JB80, JB82, JB91, JB96, JB98, JC21, JC32, JC42 and JE74

No Sample Data Qualified in this SDG

Polychlorinated Biphenyls by EPA SW 846 Method 8082

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/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

Retention time windows were evaluated and considered technically acceptable for samples on which an EPA Level IV review was performed. Raw data were not evaluated for the samples on which a Level III review was performed.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits with the following exceptions:

Associated SDG	Date	Standard	Column	Compound	%D	Associated Samples	Affected Compound	Flag	A or P
JB82	3/8/06	CCV	ZB-5	Aroclor-1016	15.5	LDW-SC39-2-4 LDW-SC12-0-2	Aroclor-1016 Aroclor-1221 Aroclor-1232	J (all detects) UJ (all non-detects)	A
JC32 JC95	3/14/06 (00:00)	CCV	ZB-35	Aroclor-1260	16.3	LDW-SC47-2-3 LDW-SC41-0-1	Aroclor-1248 Aroclor-1254 Aroclor-1260	J (all detects) UJ (all non-detects)	A
JC32	3/14/06 (05:00)	CCV	ZB-35	Aroclor-1260	15.9	LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC47-0-1 LDW-SC47-3-4	Aroclor-1242 Aroclor-1254 Aroclor-1260	J (all detects) UJ (all non-detects)	A

Retention times (RT) of all compounds in the calibration standards were within QC limits

for samples on which an EPA Level IV review was performed. Raw data were not evaluated for the samples on which a Level III review was performed.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks.

VI. Surrogate Spikes and Internal Standards

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

Associated SDG	Sample	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
JA90	LDW-SC42-2-4**	ZB-35	Tetrachloro-m-xylene	46.2 (50-150)	All TCL compounds	J (all detects) UJ (all non-detects)	A
JB82	LDW-SC202-1-2	Not specified	Tetrachloro-m-xylene	44.0 (50-150)	All TCL compounds	J (all detects) UJ (all non-detects)	P
JB82	LDW-SC202-2-4	Not specified	Tetrachloro-m-xylene	47.8 (50-150)	All TCL compounds	J (all detects) UJ (all non-detects)	P
JB46	LDW-SC22-1.1-2	Not specified	Tetrachloro-m-xylene	46.2 (50-150)	All TCL compounds	J (all detects) UJ (all non-detects)	P
JB46	LDW-SC16-0-2	Not specified	Tetrachloro-m-xylene	42.8 (50-150)	All TCL compounds	J (all detects) UJ (all non-detects)	P
JB46	LDW-SC16-2-4	Not specified	Decachlorobiphenyl	220 (50-150)	All TCL compounds	J (all detects)	P
JB46	LDW-SC27-0-2	Not specified	Tetrachloro-m-xylene	42.2 (50-150)	All TCL compounds	J (all detects) UJ (all non-detects)	P
JB46	LDW-SC27-2-4.5	Not specified	Tetrachloro-m-xylene	42.1 (50-150)	All TCL compounds	J (all detects) UJ (all non-detects)	P
JC42	LDW-SC40-2-4**	Not specified	Tetrachloro-m-xylene	48.2 (50-150)	All TCL compounds	J (all detects) UJ (all non-detects)	P
JC95	LDW-SC29-1-2	Not specified	Tetrachloro-m-xylene	45.5 (50-150)	All TCL compounds	J (all detects) UJ (all non-detects)	P

Surrogate recoveries (%R) were not within QC limits for several samples from SDGs JB30, JB31, JB01, JB20, JB98, JC21 and JC95. Since these samples were diluted out, no data were qualified.

All internal standard areas and retention times 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)	Affected Compounds	Flag	A or P
JB22	LDW-SC201-1.5-4MS/MSD (LDW-SC201-1.5-4)	Aroclor-1260	175 (50-150)	-	-	Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	J (all detects) J (all detects) J (all detects) J (all detects)	A

Percent recoveries (%R) and relative percent differences (RPD) were not within QC limits for SDGs JA90, JB64, JB01, JB20, and JC21. Since the MS/MSD samples were either diluted out or the sample concentration was greater than the spiked concentration, no data were qualified.

VIII. Laboratory Control Samples (LCS)

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

Associated SDG	LCS ID	Compound	%R (Limits)	Associated Samples	Affected Compound	Flag	A or P
JC42	LCS-031006	Aroclor-1016	43.1 (50-150)	LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4**	Aroclor-1016 Aroclor-1221 Aroclor-1232	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. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Although sulfur and acid cleanup were not required by the method, sulfur and acid cleanup were performed by the laboratory.

Florisil cleanup was not required and therefore not performed.

b. GPC Calibration

GPC cleanup was not required and therefore not performed.

XI. Target Compound Identification

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

*XII. Compound Quantitation and Reported CRQLs

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

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
JA36 JA90 JC21	LDW-SC49-1-2** LDW-SC42-2-4 LDW-SC37-0-1 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4	Aroclor-1254 Aroclor-1260	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JA36	LDW-SC49-2-4**	Aroclor-1242 Aroclor-1254 Aroclor-1260	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JB30	LDW-SC13-2-4	Aroclor-1260	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JB30	LDW-SC9-0-1	Aroclor-1248	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JB90 JB20 JC21	LDW-SC48-0-1 LDW-SC6-2-4.5 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC51-0-2 LDW-SC37-1-2	Aroclor-1254	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JB20	LDW-SC7-1-1.7	Aroclor-1242	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-
JB46	LDW-SC16-2-4 LDW-SC27-0-2	Aroclor-1248 Aroclor-1254 Aroclor-1260	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-

*N/A = Not applicable

For the results above flagged "Not applicable", the affected compound results in the associated samples were deemed unusable and did not warrant qualification of the data.

The sample results for detected compounds from the two columns were within 40.0% relative percent differences (RPD) with the following exceptions:

Associated SDG	Sample	Compound	RPD	Flag	A or P
JA90	LDW-SC42-1-2**	Aroclor-1260	43	J (all detects)	A
JB64	LDW-SC21-2-4	Aroclor-1260	42	J (all detects)	A
JB22 JB20	LDW-SC201-1.5-4 LDW-SC10-0-1	Aroclor-1242	41 43	J (all detects) J (all detects)	A
JB46	LDW-SC16-2-4	Aroclor-1260	78	J (all detects)	A
JB98	LDW-SC15-1-2	Aroclor-1260	46	J (all detects)	A
JC21	LDW-SC37-1-2	Aroclor-1260	61	J (all detects)	A
JC21	LDW-SC37-2-4 LDW-SC26-2-4	Aroclor-1260	41	J (all detects)	A
JC42	LDW-SC40-0-1.3**	Aroclor-1254	52	J (all detects)	A
JC42	LDW-SC50-2-2.8**	Aroclor-1248	46	J (all detects)	A
JB46	LDW-SC22-2-4	Aroclor-1260	63	J (all detects)	A
JB64	LDW-SC35-2-4	Aroclor-1260	46	J (all detects)	A
JC95	LDW-SC29-0-1	Aroclor-1248 Aroclor-1260	50 52	J (all detects) J (all detects)	A

*Deleted CRQL RPD results for sample LDW-SC46-1-2** (SDG JC42).

The pattern of peaks on detected samples for SDGs JA36, JA64, JA90, JB00, JC42 and JC48 were possibly weathered aroclors. The results were reported by the laboratory on the best possible match.

Raw data were not evaluated for the samples reviewed by Level III criteria.

XIII. Overall Assessment of Data

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
JA36 JA90 JC21	LDW-SC49-1-2** LDW-SC42-2-4 LDW-SC37-0-1 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4	Aroclor-1254 Aroclor-1260	R R	A
JA36 JA90 JC21	LDW-SC49-1-2DL** LDW-SC42-2-4DL LDW-SC37-0-1DL LDW-SC37-2-4DL LDW-SC26-0-1DL LDW-SC26-1-2DL LDW-SC26-2-4DL	All TCL compounds except Aroclor-1254 Aroclor-1260	R	A
JA36	LDW-SC49-2-4**	Aroclor-1242 Aroclor-1254 Aroclor-1260	R R R	A
JA36	LDW-SC49-2-4DL	All TCL compounds except Aroclor-1242 Aroclor-1254 Aroclor-1260	R	A
JB30	LDW-SC13-2-4	Aroclor-1260	R	A
JB30	LDW-SC13-2-4DL	All TCL compounds except Aroclor-1260	R	A
JB30	LDW-SC9-0-1	Aroclor-1248	R	A
JB30	LDW-SC9-0-1DL	All TCL compounds except Aroclor-1248	R	A
JB20 JB90 JC21	LDW-SC6-2-4.5 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC48-0-1 LDW-SC51-0-2 LDW-SC37-1-2	Aroclor-1254	R	A
JB20 JB90 JC21	LDW-SC6-2-4.5DL LDW-SC8-1-2DL LDW-SC8-2-4DL LDW-SC48-0-1DL LDW-SC51-0-2DL LDW-SC37-1-2DL	All TCL compounds except Aroclor-1254	R	A
JB20	LDW-SC7-1-1.7	Aroclor-1242	R	A
JB20	LDW-SC7-1-1.7DL	All TCL compounds except Aroclor-1242	R	A
JB46	LDW-SC16-2-4 LDW-SC27-0-2	Aroclor-1248 Aroclor-1254 Aroclor-1260	R R R	A

Associated SDG	Sample	Compound	Flag	A or P
JB46	LDW-SC16-2-4DL LDW-SC27-0-2DL	All TCL compounds except Aroclor-1248 Aroclor-1254 Aroclor-1260	R	A

XIV. Field Replicates

Samples LDW-SC36-0-1 and LDW-SC202-0-1, samples LDW-SC36-1-2 and LDW-SC202-1-2, samples LDW-SC36-2-4 and LDW-SC202-2-4 (SDG JB82), samples LDW-SC33-0-2 and LDW-SC201-0-1.5, samples LDW-SC33-2-4 and LDW-SC201-1.5-4 (SDG JB22), samples LDW-SC34-0-1 and LDW-SC203-0-1, samples LDW-SC34-1-2 and LDW-SC203-1-2, and samples LDW-SC34-2-4 and LDW-SC203-2-4 (from SDG JB96) were identified as field replicates. No polychlorinated biphenyls were detected in any of the samples with the following exceptions:

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1	
JB82	Aroclor-1248	18	21U	Not calculable
JB82	Aroclor-1254	32	30	6 (≤50)
JB82	Aroclor-1260	25	31U	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC33-0-2	LDW-SC201-0-1.5	
JB22	Aroclor-1242	1500	330	128 **(≤50)**
JB22	Aroclor-1254	860	510	51 (≤50)
JB22	Aroclor-1260	760	610	22 (≤50)

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC33-2-4	LDW-SC201-1.5-4	
JB22	Aroclor-1254	240	220	9 (≤50)
JB22	Aroclor-1260	180	240	29 (≤50)
JB22	Aroclor-1242	32U	74	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-0-1	LDW-SC203-0-1	
JB96	Aroclor-1254	110	110	0 (≤50)
JB96	Aroclor-1260	100	84	17 (≤50)
JB96	Aroclor-1248	99U	60	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-1-2	LDW-SC203-1-2	
JB96	Aroclor-1248	82	330U	Not calculable
JB96	Aroclor-1254	120	110	9 (≤50)
JB96	Aroclor-1260	77	140U	Not calculable

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC34-2-4	LDW-SC203-2-4	
JB96	Aroclor-1248	58	38	42 (≤50)
JB96	Aroclor-1254	110	81	30 (≤50)
JB96	Aroclor-1260	81	55	38 (≤50)

XV. Field Blanks

Samples LDW-SC-RB1 (SDG JA90), LDW-SC-RB2 (SDG JB46), and LDW-SC-RB3 (SDG JC21) were identified as rinsate blanks. No polychlorinated biphenyl contaminants were found in these blanks.

***Lower Duwamish Waterway Group**
Polychlorinated Biphenyls - Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC21, JC32, JC42, JC48 and JC95

SDG	Sample	Compound	Flag	A or P	Reason
JB82	LDW-SC39-2-4 LDW-SC12-0-2	Aroclor-1016 Aroclor-1221 Aroclor-1232	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JC32 JC95	LDW-SC47-2-3 LDW-SC41-0-1	Aroclor-1248 Aroclor-1254 Aroclor-1260	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JC32	LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC47-0-1 LDW-SC47-3-4	Aroclor-1242 Aroclor-1254 Aroclor-1260	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
JA90	LDW-SC42-2-4**	All TCL compounds	J (all detects) UJ (all non-detects)	A	Surrogate recovery (%R)
JB82 JB46 JC42 JC95	LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC22-1.1-2 LDW-SC16-0-2 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC40-2-4** LDW-SC29-1-2	All TCL compounds	J (all detects) UJ (all non-detects)	P	Surrogate recovery (%R)
JB46	LDW-SC16-2-4	All TCL compounds	J (all detects)	P	Surrogate recovery (%R)
JB22	LDW-SC201-1.5-4	Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	J (all detects) J (all detects) J (all detects) J (all detects)	P	Matrix spike/Matrix spike duplicates (%R)
JC42	LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4**	Aroclor-1016 Aroclor-1221 Aroclor-1232	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
JA90 JB64 JB46 JB98 JC21 JB46 JB64	LDW-SC42-1-2** LDW-SC21-2-4 LDW-SC16-2-4 LDW-SC15-1-2 LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-2-4 LDW-SC22-2-4 LDW-SC35-2-4	Aroclor-1260	J (all detects)	A	Compound quantitation and CRQLs (RPD)
JB22 JB20	LDW-SC201-1.5-4 LDW-SC10-0-1	Aroclor-1242	J (all detects)	A	Compound quantitation and CRQLs (RPD)

SDG	Sample	Compound	Flag	A or P	Reason
JC42	LDW-SC40-0-1.3**	Aroclor-1254	J (all detects)	A	Compound quantitation and CRQLs (RPD)
JC42	LDW-SC50-2-2.8**	Aroclor-1248	J (all detects)	A	Compound quantitation and CRQLs (RPD)
JC95	LDW-SC29-0-1	Aroclor-1248 Aroclor-1260	J (all detects) J (all detects)	A	Compound quantitation and CRQLs (RPD)
JA36 JA90 JC21	LDW-SC49-1-2** LDW-SC42-2-4 LDW-SC37-0-1 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4	Aroclor-1254 Aroclor-1260	R R	A	Overall assessment of data
JA36 JA90 JC21	LDW-SC49-1-2DL** LDW-SC42-2-4DL LDW-SC37-0-1DL LDW-SC37-2-4DL LDW-SC26-0-1DL LDW-SC26-1-2DL LDW-SC26-2-4DL	All TCL compounds except Aroclor-1254 Aroclor-1260	R	A	Overall assessment of data
JA36	LDW-SC49-2-4**	Aroclor-1242 Aroclor-1254 Aroclor-1260	R R R	A	Overall assessment of data
JA36	LDW-SC49-2-4DL	All TCL compounds except Aroclor-1242 Aroclor-1254 Aroclor-1260	R	A	Overall assessment of data
JB30	LDW-SC13-2-4	Aroclor-1260	R	A	Overall assessment of data
JB30	LDW-SC13-2-4DL	All TCL compounds except Aroclor-1260	R	A	Overall assessment of data
JB30	LDW-SC9-0-1	Aroclor-1248	R	A	Overall assessment of data
JB30	LDW-SC9-0-1DL	All TCL compounds except Aroclor-1248	R	A	Overall assessment of data
JB20 JB90 JC21	LDW-SC6-2-4.5 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC48-0-1 LDW-SC51-0-2 LDW-SC37-1-2	Aroclor-1254	R	A	Overall assessment of data

SDG	Sample	Compound	Flag	A or P	Reason
JB20 JB90 JC21	LDW-SC6-2-4.5DL LDW-SC8-1-2DL LDW-SC8-2-4DL LDW-SC48-0-1DL LDW-SC51-0-2DL LDW-SC37-1-2DL	All TCL compounds except Aroclor-1254	R	A	Overall assessment of data
JB20	LDW-SC7-1-1.7	Aroclor-1242	R	A	Overall assessment of data
JB20	LDW-SC7-1-1.7DL	All TCL compounds except Aroclor-1242	R	A	Overall assessment of data
JB46	LDW-SC16-2-4 LDW-SC27-0-2	Aroclor-1248 Aroclor-1254 Aroclor-1260	R R R	A	Overall assessment of data
JB46	LDW-SC16-2-4DL LDW-SC27-0-2DL	All TCL compounds except Aroclor-1248 Aroclor-1254 Aroclor-1260	R	A	Overall assessment of data

*Added CRQL RPD results for samples LDW-SC22-2-4 (SDG JB46) and LDW-SC35-2-4 (SDG JB64).

Lower Duwamish Waterway Group
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC21, JC32, JC42, JC48 and JC95

No Sample Data Qualified in this SDG

Butyltins By EPA SW 846 Method 8270D using Selected Ion Monitoring (SIM) & Krone Method

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.

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 all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No butyltin contaminants were found in the method blanks.

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
JB80	LDW-SC20-2-4MS/MSD (LDW-SC20-2-4**)	Butyltin ion	16.7 (20-130)	-	51.1 (≤50)	J (all detects) UJ (all non-detects)	A
JC48	LDW-SC28-0-1MS/MSD (LDW-SC28-0-1**)	Dibutyltin ion	281 (20-130)	-	65.3 (≤50)	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) were within QC limits.

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 for samples.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which an 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 with the following exceptions:

Associated SDG	Sample	Compound	Finding	Criteria	Flag	A or P
JB96 JC21	LDW-SC25-1-2 LDW-SC25-2-4 LDW-SC26-2-4	Tributyltin ion	Sample result exceeded calibration range.	Reported result should be within calibration range.	N/A*	-

N/A = Not applicable

For the results above flagged "Not applicable", the affected compound results in the associated samples were deemed unusable and did not warrant qualification of the data.

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 an EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XV. Overall Assessment of Data

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
JB96 JC21	LDW-SC25-1-2 LDW-SC25-2-4 LDW-SC26-2-4	Tributyltin ion	R	A
JB96 JC21	LDW-SC25-1-2DL LDW-SC25-2-4DL LDW-SC26-2-4DL	All TCL compounds except Tributyltin ion	R	A

XVI. Field Replicates

Samples LDW-SC36-0-1 and LDW-SC202-0-1, samples LDW-SC36-1-2 and LDW-SC202-1-2, and samples LDW-SC36-2-4 and LDW-SC202-2-4 (SDG JB82) were identified as field replicates. No butyltins were detected in any of the samples with the following exceptions:

Associated SDG	Compound	Concentration (ug/Kg)		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1	
JB82	Tributyltin ion	28	5.5	134 (≤50)

XVII. Field Blanks

Samples LDW-SC-RB1 (SDG JA90), LDW-SC-RB2 (SDG JB46) and LDW-SC-RB3 (SDG JC21) were identified as rinsate blanks. No butyltin contaminants were found in these blanks.

Lower Duwamish Waterway Group
Butyltins - Data Qualification Summary - SDGs JA90, JB00, JB01, JB20, JB31, JB46, JB80, JB82, JB90, JB91, JB96, JB98, JC21 and JC48

SDG	Sample	Compound	Flag	A or P	Reason
JB80	LDW-SC20-2-4**	Butyltin ion	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)
JC48	LDW-SC28-0-1**	Dibutyltin ion	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)
JB96 JC21	LDW-SC25-1-2 LDW-SC25-2-4 LDW-SC26-2-4	Tributyltin ion	R	A	Overall assessment of data
JB96 JC21	LDW-SC25-1-2DL LDW-SC25-2-4DL LDW-SC26-2-4DL	All TCL compounds except Tributyltin ion	R	A	Overall assessment of data

Lower Duwamish Waterway Group
Butyltins - Laboratory Blank Data Qualification Summary - SDGs JA90, JB00, JB01, JB20, JB31, JB46, JB80, JB82, JB90, JB91, JB96, JB98, JC21 and JC48

No Sample Data Qualified in this SDG

Metals by EPA SW 846 Methods 6010B/7000

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. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Associated SDG	Method Blank ID	Analyte	Maximum Concentration	Associated Samples
JA36	PB (prep blank)	Zinc	1.3 mg/Kg	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC55-0-1DUP**
JA64	PB (prep blank)	Zinc	0.8 mg/Kg	LDW-SC53-0-2** LDW-SC53-2-4** LDW-SC53-0-2DUP**
JB96	ICB/CCB	Copper	2.2 ug/L	LDW-SC34-1-2 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4
JB98	ICB/CCB	Copper	2.1 ug/L	LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

*V. Matrix Spike Analysis

Matrix spike (MS) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

Associated SDG	Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JA36	LDW-SC55-0-1MS (LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC55-0-1DUP**)	Antimony	20.2 (70-130)	J (all detects) UJ (all non-detects)	A
JA64	LDW-SC53-0-2MS (LDW-SC53-0-2** LDW-SC53-2-4** LDW-SC53-0-2DUP**)	Antimony	16.5 (70-130)	J (all detects) UJ (all non-detects)	A
JA90	LDW-SC42-2-4MS (LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC42-2-4DUP**)	Antimony	15.9 (70-130)	J (all detects) UJ (all non-detects)	A
JB00	LDW-SC3-0-2MS (LDW-SC3-0-2** LDW-SC3-2-4** LDW-SC3-0-2DUP**)	Antimony	30.9 (70-130)	J (all detects) UJ (all non-detects)	A
JB30	LDW-SC13-0-2MS (LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4 LDW-SC13-0-2DUP)	Antimony	19.4 (70-130)	J (all detects) UJ (all non-detects)	A
JB31	LDW-SC32-0-1MS (LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC32-0-1DUP)	Antimony	18.2 (70-130)	J (all detects) UJ (all non-detects)	A

Associated SDG	Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JB47	LDW-SC22-0-1.1MS (LDW-SC30-0-2.5 LDW-SC30-2.5-4)	Antimony	35.3 (70-130)	J (all detects) UJ (all non-detects)	A
JB64	LDW-SC21-0-1MS (LDW-SC21-0-1 LDW-SC21-1-2 LDW-SC21-2-4 LDW-SC35-0-2 LDW-SC35-2-4 LDW-SC21-0-1DUP)	Antimony	17.1 (70-130)	J (all detects) UJ (all non-detects)	A
JB80	LDW-SC20-2-4MS (LDW-SC20-0-2 LDW-SC20-2-4 LDW-SC20-2-4DUP)	Antimony	17.0 (70-130)	J (all detects) UJ (all non-detects)	A
JB90 JB91	LDW-SC56-0-2MS (LDW-SC56-0-2 LDW-SC56-2-4 LDW-SC48-0-1 LDW-SC48-1-2 LDW-SC48-2-4 LDW-SC1-0-2 LDW-SC1-2-4 LDW-SC56-0-2DUP LDW-SC23-0-2 LDW-SC23-2-4)	Antimony Zinc	34.9 (70-130) 55.5 (70-130)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JB90 JB91	LDW-SC56-0-2MS (LDW-SC56-0-2 LDW-SC56-2-4 LDW-SC48-0-1 LDW-SC48-1-2 LDW-SC48-2-4 LDW-SC1-0-2 LDW-SC1-2-4 LDW-SC56-0-2DUP LDW-SC23-0-2 LDW-SC23-2-4)	Lead	354 (70-130)	J (all detects)	A
JB82	LDW-SC36-0-1MS (LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC36-0-1DUP)	Antimony	17.3 (70-130)	J (all detects) UJ (all non-detects)	A

Associated SDG	Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JB01 JB22	LDW-SC4-0-1MS (LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC33-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4 LDW-SC4-0-1DUP)	Copper Antimony	63.7 (70-130) 17.8 (70-130)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
*JB20	LDW-SC6-0-2MS (LDW-SC6-0-2 LDW-SC6-2-4.5 LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC7-0-1 LDW-SC7-1-1.7 LDW-SC7-1.7-4 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4 LDW-SC6-0-2DUP)	Antimony	18.5 (70-130)	J (all detects) UJ (all non-detects)	A
JB96	LDW-SC34-0-1MS (LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4 LDW-SC34-0-1DUP)	Antimony	18.4 (70-130)	J (all detects) UJ (all non-detects)	A
JB46	LDW-SC22-0-1.1MS (LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC22-0-1.1DUP)	Antimony	36.3 (70-130)	J (all detects) UJ (all non-detects)	A
JC05	LDW-SC5-0-1MS (LDW-SC5-0-1 LDW-SC5-1-2.2 LDW-SC5-2.2-4 LDW-SC5-0-1DUP)	Antimony	16.8 (70-130)	J (all detects) UJ (all non-detects)	A

Associated SDG	Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JB98	LDW-SC31-2.8-4MS (LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC31-2.8-4DUP)	Antimony	35.3 (70-130)	J (all detects) UJ (all non-detects)	A
JC10	LDW-SC45-0-1MS (LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4 LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3 LDW-SC45-0-1DUP)	Antimony	18.0 (70-130)	J (all detects) UJ (all non-detects)	A
JC21	LDW-SC37-1-2MS (LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4 LDW-SC37-1-2DUP)	Antimony	22.2 (70-130)	J (all detects) UJ (all non-detects)	A
JC21	LDW-SC37-1-2MS (LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4 LDW-SC37-1-2DUP)	Lead	194 (70-130)	J (all detects)	A
JC32	LDW-SC43-0-2MS (LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC43-0-2DUP)	Antimony	22.3 (70-130)	J (all detects) UJ (all non-detects)	A

Associated SDG	Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JC42	LDW-SC40-2-4MS (LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-1-2** LDW-SC17-2-4** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4** LDW-SC40-2-4DUP**)	Antimony	48.7 (70-130)	J (all detects) UJ (all non-detects)	A
JC48	LDW-SC28-0-1MS (LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC28-0-1DUP**)	Antimony	13.1 (70-130)	J (all detects) UJ (all non-detects)	A
JC95	LDW-SC41-0-1MS (LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4 LDW-SC41-0-1DUP)	Antimony	19.8 (70-130)	J (all detects) UJ (all non-detects)	A

*Deleted Zinc results for LDW-SC6-0-2MS (SDG JB20).

Although the percent recoveries of antimony were severely low (<30%) in a number of MS samples above, the results in all the associated samples were qualified as estimated (J/UJ) since the post spike recoveries for antimony were greater then 75%.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

Associated SDG	DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
JA90	LDW-SC42-2-4DUP** (LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC42-2-4DUP**)	Lead	52.3 (≤30)	-	J (all detects) UJ (all non-detects)	A

Associated SDG	DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
JB30	LDW-SC13-0-2DUP (LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4 LDW-SC13-0-2DUP)	Lead	47.9 (≤30)	-	J (all detects) UJ (all non-detects)	A
JB47 JB46	LDW-SC22-0-1.1DUP (LDW-SC30-0-2.5 LDW-SC30-2.5-4 LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC22-0-1.1DUP)	Copper Nickel	67.2 (≤30) 47.1 (≤30)	- -	J (all detects) UJ (all non-detects)	A
JB01 JB22	LDW-SC4-0-1DUP (LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC33-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4 LDW-SC4-0-1DUP)	Copper Mercury	35.2 (≤30) 74.3 (≤30)	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JC21	LDW-SC37-1-2DUP (LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4 LDW-SC37-1-2DUP)	Lead Mercury	45.3 (≤30) 44.4 (≤30)	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
JC48	LDW-SC28-0-1DUP** (LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC28-0-1DUP**)	Molybdenum	39.6 (≤30)	-	J (all detects) UJ (all non-detects)	A

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

Standard reference material was performed at the required frequencies.

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized.

X. ICP Serial Dilution

ICP serial dilution was not performed by the laboratory.

XI. Sample Result Verification

All sample result verifications met validation criteria for samples on which an EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

XII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Replicates

Samples LDW-SC36-0-1 and LDW-SC202-0-1, samples LDW-SC36-1-2 and LDW-SC202-1-2, and samples LDW-SC36-2-4 and LDW-SC202-2-4 (SDG JB82), samples LDW-SC33-0-2 and LDW-SC201-0-1.5, and samples LDW-SC33-2-4 and LDW-SC201-1.5-4 (SDG JB22), samples LDW-SC34-0-1 and LDW-SC203-0-1, samples LDW-SC34-1-2 and LDW-SC203-1-2, and samples LDW-SC34-2-4 and LDW-SC203-2-4 (SDG JB96) were identified as field replicates. No metals were detected in any of the samples with the following exceptions:

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1	
JB82	Arsenic	12	13	8 (≤30)
JB82	Cadmium	0.3	0.3U	Not calculable
JB82	Chromium	23.5	24.8	5 (≤30)
JB82	Cobalt	7.3	8.1	10 (≤30)
JB82	Copper	44.4	56.3	24 (≤30)
JB82	Lead	29	19	42 (≤30)
JB82	Mercury	0.23	0.14	49 (≤30)
JB82	Nickel	18	21	15 (≤30)
JB82	Vanadium	61.5	65.2	6 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1	
JB82	Zinc	77.8	74	5 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC36-1-2	LDW-SC202-1-2	
JB82	Arsenic	11	12	9 (≤30)
JB82	Chromium	25.2	23.3	8 (≤30)
JB82	Cobalt	7.8	8.0	3 (≤30)
JB82	Copper	36.9	37.6	2 (≤30)
JB82	Lead	16	16	0 (≤30)
JB82	Mercury	0.33	0.21	44 (≤30)
JB82	Nickel	22	18	20 (≤30)
JB82	Vanadium	63.4	64.0	1 (≤30)
JB82	Zinc	67.1	65.2	3 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC36-2-4	LDW-SC202-2-4	
JB82	Arsenic	10	9	11 (≤30)
JB82	Chromium	17.3	17.7	2 (≤30)
JB82	Cobalt	6.2	6.5	5 (≤30)
JB82	Copper	24.5	25.6	4 (≤30)
JB82	Lead	7	6	15 (≤30)
JB82	Mercury	0.13	0.11	17 (≤30)
JB82	Nickel	13	14	7 (≤30)
JB82	Vanadium	56.5	58.2	3 (≤30)
JB82	Zinc	40.6	42.0	3 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC33-0-2	LDW-SC201-0-1.5	
JB22	Antimony	13	8U	Not calculable
JB22	Arsenic	56	19	99 (≤30)
JB22	Cadmium	1.2	0.7	53 (≤30)
JB22	Chromium	49.9	37.9	27 (≤30)
JB22	Cobalt	12.2	9.6	24 (≤30)
JB22	Copper	190	88.0	73 (≤30)
JB22	Lead	108	772	151 (≤30)
JB22	Mercury	0.39	0.28	33 (≤30)
JB22	Molybdenum	9.1	2.0	128 (≤30)
JB22	Nickel	32	24	29 (≤30)
JB22	Silver	2.6	1.1	81 (≤30)
JB22	Vanadium	71.6	72.6	1 (≤30)
JB22	Zinc	236	143	49 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC33-2-4	LDW-SC201-1.5-4	
JB22	Arsenic	13	13	0 (≤30)
JB22	Cadmium	0.8	0.8	0 (≤30)
JB22	Chromium	37.7	34.1	10 (≤30)
JB22	Cobalt	9.3	9.0	3 (≤30)
JB22	Copper	51.0	48.4	5 (≤30)
JB22	Lead	33	42	24 (≤30)
JB22	Mercury	0.30	0.30	0 (≤30)
JB22	Molybdenum	1.2	1.2	0 (≤30)
JB22	Nickel	19	18	5 (≤30)
JB22	Silver	2.2	1.7	26 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC33-2-4	LDW-SC201-1.5-4	
JB22	Vanadium	69.5	70.3	1 (≤30)
JB22	Zinc	94	98	4 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC34-0-1	LDW-SC203-0-1	
JB96	Arsenic	20	20	0 (≤30)
JB96	Cadmium	0.4U	0.6	Not calculable
JB96	Chromium	35	39.5	12 (≤30)
JB96	Cobalt	10.5	8.9	16 (≤30)
JB96	Copper	79.9	102	24 (≤30)
JB96	Lead	55	78	35 (≤30)
JB96	Mercury	0.28	0.23	20 (≤30)
JB96	Molybdenum	1	2.8	95 (≤30)
JB96	Nickel	27	29	7 (≤30)
JB96	Vanadium	69.4	67.1	3 (≤30)
JB96	Zinc	188	204	8 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC34-1-2	LDW-SC203-1-2	
JB96	Arsenic	20	20	0 (≤30)
JB96	Cadmium	0.9	0.7	25 (≤30)
JB96	Chromium	50	41	20 (≤30)
JB96	Cobalt	8.9	9.8	10 (≤30)
JB96	Copper	91.4	88.1	4 (≤30)
JB96	Lead	87	68	25 (≤30)
JB96	Mercury	0.25	0.2	22 (≤30)
JB96	Molybdenum	4	3	29 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC34-1-2	LDW-SC203-1-2	
JB96	Nickel	29	28	4 (≤30)
JB96	Vanadium	65.7	73.1	11 (≤30)
JB96	Zinc	253	225	12 (≤30)

Associated SDG	Analyte	Concentration (mg/Kg)		RPD (Limits)
		LDW-SC34-2-4	LDW-SC203-2-4	
JB96	Arsenic	15	15	0 (≤30)
JB96	Chromium	30.9	32.0	3 (≤30)
JB96	Cobalt	8.6	8.9	3 (≤30)
JB96	Copper	51.3	66.9	26 (≤30)
JB96	Lead	78	58	29 (≤30)
JB96	Mercury	0.12	0.17	34 (≤30)
JB96	Molybdenum	1.3	1.3	0 (≤30)
JB96	Nickel	33	27	20 (≤30)
JB96	Vanadium	60.4	61.8	2 (≤30)
JB96	Zinc	136	137	1 (≤30)

XIV. Field Blanks

Samples LDW-SC-RB1 (SDG JA90), LDW-SC-RB2 (SDG JB46), and LDW-SC-RB3 (SDG JC21) were identified as rinsate blanks. No metal contaminants were found in these blanks with the following exceptions:

Associated SDG	Rinsate ID	Analyte	Concentration (mg/L)
JA90	LDW-SC-RB1	Zinc	0.007
JB46	LDW-SC-RB2	Copper Zinc	0.004 0.012
JC21	LDW-SC-RB3 (SDG JB46/JC05)	Copper Zinc	0.003 0.010

Lower Duwamish Waterway Group
Metals - Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC21, JC32, JC42, JC48 and JC95

SDG	Sample	Analyte	Flag	A or P	Reason
JA36 JA64 JA90 JB00 JB30 JB31 JB47 JB64 JB80	LDW-SC55-0-1** LDW-SC55-1-2** LDW-SC55-2-3** LDW-SC49-0-1** LDW-SC49-1-2** LDW-SC49-2-4** LDW-SC55-0-1DUP** LDW-SC53-0-2** LDW-SC53-2-4** LDW-SC53-0-2DUP** LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC42-2-4DUP** LDW-SC3-0-2** LDW-SC3-2-4** LDW-SC3-0-2DUP** LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4 LDW-SC13-0-2DUP LDW-SC32-0-1 LDW-SC32-1-2 LDW-SC32-2-4 LDW-SC14-0-1.4 LDW-SC14-1.4-2 LDW-SC14-2-4.1 LDW-SC11-0-0.8 LDW-SC11-0.8-2 LDW-SC11-2-3.4 LDW-SC11-3.4-4.1 LDW-SC32-0-1DUP LDW-SC30-0-2.5 LDW-SC30-2.5-4 LDW-SC21-0-1 LDW-SC21-1-2 LDW-SC21-2-4 LDW-SC35-0-2 LDW-SC35-2-4 LDW-SC21-0-1DUP LDW-SC20-0-2 LDW-SC20-2-4 LDW-SC20-2-4DUP	Antimony	J (all detects) UJ (all non-detects)	A	Matrix spike analysis (%R)

SDG	Sample	Analyte	Flag	A or P	Reason
JB82 JB96 JB46 JC05 JB98 JC10	LDW-SC36-0-1 LDW-SC36-1-2 LDW-SC36-2-4 LDW-SC202-0-1 LDW-SC202-1-2 LDW-SC202-2-4 LDW-SC39-0-1 LDW-SC39-1-2 LDW-SC39-2-4 LDW-SC12-0-2 LDW-SC12-2-4 LDW-SC36-0-1DUP LDW-SC34-0-1 LDW-SC34-1-2 LDW-SC34-2-4 LDW-SC203-0-1 LDW-SC203-1-2 LDW-SC203-2-4 LDW-SC25-0-1 LDW-SC25-1-2 LDW-SC25-2-4 LDW-SC34-0-1DUP LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC22-0-1.1DUP LDW-SC5-0-1 LDW-SC5-1-2.2 LDW-SC5-2.2-4 LDW-SC5-0-1DUP LDW-SC15-0-1 LDW-SC15-1-2 LDW-SC15-2-4 LDW-SC18-0-1 LDW-SC18-1-2 LDW-SC18-2-4 LDW-SC31-0-1 LDW-SC31-1-2.8 LDW-SC31-2.8-4 LDW-SC24-0-1 LDW-SC24-1-2 LDW-SC24-2-4 LDW-SC31-2.8-4DUP LDW-SC45-0-1 LDW-SC45-1-2 LDW-SC45-2-4 LDW-SC38-0-1 LDW-SC38-1-2 LDW-SC38-2-3 LDW-SC38-3-3.3 LDW-SC45-0-1DUP	Antimony	J (all detects) UJ (all non-detects)	A	Matrix spike analysis (%R)

SDG	Sample	Analyte	Flag	A or P	Reason
JC21 JC32 JC42 JC48 JC95 *JB20	LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4 LDW-SC37-1-2DUP LDW-SC26-2-4 LDW-SC37-1-2DUP LDW-SC43-0-2 LDW-SC43-2-4 LDW-SC54-0-2 LDW-SC54-2-4 LDW-SC47-0-1 LDW-SC47-1-2 LDW-SC47-2-3 LDW-SC47-3-4 LDW-SC43-0-2DUP LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC17-0-1** LDW-SC17-1-2** LDW-SC17-2-4** LDW-SC50-0-1** LDW-SC50-1-2** LDW-SC50-2-2.8** LDW-SC50-2.8-4** LDW-SC46-0-1** LDW-SC46-1-2** LDW-SC46-2-4** LDW-SC40-2-4DUP** LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC28-0-1DUP** LDW-SC41-0-1 LDW-SC41-1-2 LDW-SC41-2-4 LDW-SC44-0-2 LDW-SC44-2-3.2 LDW-SC44-3.2-4 LDW-SC29-0-1 LDW-SC29-1-2 LDW-SC29-2-3.6 LDW-SC19-0-1 LDW-SC19-1-2 LDW-SC19-2-4 LDW-SC41-0-1DUP LDW-SC6-0-2 LDW-SC6-2-4.5 LDW-SC8-0-1 LDW-SC8-1-2 LDW-SC8-2-4 LDW-SC7-0-1 LDW-SC7-1-1.7 LDW-SC7-1.7-4 LDW-SC10-0-1 LDW-SC10-1-2 LDW-SC10-2-4 LDW-SC6-0-2DUP	Antimony	J (all detects) UJ (all non-detects)	A	Matrix spike analysis (%R)

SDG	Sample	Analyte	Flag	A or P	Reason
JB90 JB91	LDW-SC56-0-2 LDW-SC56-2-4 LDW-SC48-0-1 LDW-SC48-1-2 LDW-SC48-2-4 LDW-SC1-0-2 LDW-SC1-2-4 LDW-SC56-0-2DUP LDW-SC23-0-2 LDW-SC23-2-4	Antimony Zinc	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike analysis (%R)
JB90 JB91 JC21	LDW-SC56-0-2 LDW-SC56-2-4 LDW-SC48-0-1 LDW-SC48-1-2 LDW-SC48-2-4 LDW-SC1-0-2 LDW-SC1-2-4 LDW-SC56-0-2DUP LDW-SC23-0-2 LDW-SC23-2-4 LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4 LDW-SC37-1-2DUP	Lead	J (all detects)	A	Matrix spike analysis (%R)
JB01 JB22	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC33-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4 LDW-SC4-0-1DUP	Copper Antimony	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike analysis (%R)
JA90 JB30	LDW-SC52-0-1** LDW-SC52-1-2** LDW-SC52-2-4** LDW-SC42-0-1** LDW-SC42-1-2** LDW-SC42-2-4** LDW-SC42-2-4DUP** LDW-SC13-0-2 LDW-SC13-2-4 LDW-SC9-0-1 LDW-SC9-1-2.6 LDW-SC9-2.6-4 LDW-SC13-0-2DUP	Lead	J (all detects) UJ (all non-detects)	A	Duplicate analysis (RPD)
JB47 JB46	LDW-SC30-0-2.5 LDW-SC30-2.5-4 LDW-SC22-0-1.1 LDW-SC22-1.1-2 LDW-SC22-2-4 LDW-SC16-0-2 LDW-SC16-2-4 LDW-SC27-0-2 LDW-SC27-2-4.5 LDW-SC22-0-1.1DUP	Copper Nickel	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Duplicate analysis (RPD)

SDG	Sample	Analyte	Flag	A or P	Reason
JB01 JB22	LDW-SC4-0-1 LDW-SC4-1-2 LDW-SC4-2-4 LDW-SC2-0-2 LDW-SC2-2-4 LDW-SC33-0-2 LDW-SC33-2-4 LDW-SC201-0-1.5 LDW-SC201-1.5-4 LDW-SC4-0-1DUP	Copper Mercury	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Duplicate analysis (RPD)
JC21	LDW-SC51-0-2 LDW-SC51-2-3.8 LDW-SC37-0-1 LDW-SC37-1-2 LDW-SC37-2-4 LDW-SC26-0-1 LDW-SC26-1-2 LDW-SC26-2-4 LDW-SC37-1-2DUP	Lead Mercury	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Duplicate analysis (RPD)
JC48	LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC28-0-1DUP**	Molybdenum	J (all detects) UJ (all non-detects)	A	Duplicate analysis (RPD)

Lower Duwamish Waterway Group
Metals - Laboratory Blank Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC21, JC32, JC42, JC48 and JC95

No Sample Data Qualified in this SDG

Salinity by Standard Method 2520B ,Total Solids by EPA Method 160.3, Grain Size by PSEP Method, Porosity by CalcPor Method, Dry Density by CalcDD Method, Specific Gravity by ASTM Method D854, Moisture Content by ASTM Method D2216, Wet Density by ASTM Method D2937, Atterberg Limits by ASTM Method D4318, and Total Organic Carbon by Plumb Method

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. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Duplicates/Triplicates

Duplicate (DUP) and triplicate (TRP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) and relative standard deviation (RSD) were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

Standard reference material was performed at the required frequencies.

VII. Sample Result Verification

All sample result verifications met validation criteria for samples on which an EPA Level IV review was performed. Raw data were not evaluated for the samples reviewed by Level III criteria.

VIII. Overall Assessment of Data

The overall assessment of data was acceptable.

IX. Field Replicates

Samples LDW-SC36-0-1 and LDW-SC202-0-1, samples LDW-SC36-1-2 and LDW-SC202-1-2, samples LDW-SC36-2-4 and LDW-SC202-2-4 (SDG JB82), and samples LDW-SC34-0-1 and LDW-SC203-0-1, samples LDW-SC34-1-2 and LDW-SC203-1-2, samples LDW-SC34-2-4 and LDW-SC203-2-4 (SDG JB96) were identified as field replicates. No concentrations were detected in any of the samples with the following exceptions:

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1	
JB82	Total solids	61.30 %	56.70 %	8 (≤20)
JB82	Total organic carbon	1.42 %	1.27 %	11 (≤30)
JB82	Phi size -1	99.9 % Finer	100 % Finer	0 (≤30)
JB82	Phi size 0	99.5 % Finer	99.9 % Finer	0 (≤30)
JB82	Phi size 1	98.4 % Finer	99.0 % Finer	1 (≤30)
JB82	Phi size 2	96.9 % Finer	97.9 % Finer	1 (≤30)
JB82	Phi size 3	94.6 % Finer	95.2 % Finer	1 (≤30)
JB82	Phi size 4	83.9 % Finer	77.9 % Finer	7 (≤30)
JB82	Phi size 5	67.4 % Finer	56.2 % Finer	18 (≤30)
JB82	Phi size 6	45.8 % Finer	39.5 % Finer	15 (≤30)
JB82	Phi size 7	28.1 % Finer	23.2 % Finer	19 (≤30)
JB82	Phi size 8	17.7 % Finer	15.0 % Finer	17 (≤30)
JB82	Phi size 9	11.9 % Finer	12.2 % Finer	2 (≤30)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC36-0-1	LDW-SC202-0-1	
JB82	Phi size 10	8.2 % Finer	7.3 % Finer	12 (≤30)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC36-1-2	LDW-SC202-1-2	
JB82	Total solids	64.40 %	61.30 %	5 (≤20)
JB82	Total organic carbon	1.46 %	1.75 %	18 (≤30)
JB82	Phi size -2	96.4 % Finer	100 % Finer	4 (≤30)
JB82	Phi size -1	95.8 % Finer	99.9 % Finer	4 (≤30)
JB82	Phi size 0	95.0 % Finer	99.6 % Finer	5 (≤30)
JB82	Phi size 1	92.8 % Finer	98.8 % Finer	6 (≤30)
JB82	Phi size 2	92.7 % Finer	97.8 % Finer	5 (≤30)
JB82	Phi size 3	85.5 % Finer	96.1 % Finer	12 (≤30)
JB82	Phi size 4	76.8 % Finer	84.2 % Finer	9 (≤30)
JB82	Phi size 5	60.7 % Finer	65.3 % Finer	7 (≤30)
JB82	Phi size 6	40.3 % Finer	43.2 % Finer	7 (≤30)
JB82	Phi size 7	25.7 % Finer	24.2 % Finer	6 (≤30)
JB82	Phi size 8	16.6 % Finer	15.4 % Finer	8 (≤30)
JB82	Phi size 9	11.3 % Finer	10.7 % Finer	5 (≤30)
JB82	Phi size 10	7.7 % Finer	7.5 % Finer	3 (≤30)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC36-2-4	LDW-SC202-2-4	
JB82	Total solids	66.30 %	68.30 %	3 (≤20)
JB82	Total organic carbon	1.32 %	1.24 %	6 (≤30)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC36-2-4	LDW-SC202-2-4	
JB82	Phi size -1	100 % Finer	99.9 % Finer	0 (≤30)
JB82	Phi size 0	99.9 % Finer	99.6 % Finer	0 (≤30)
JB82	Phi size 1	99.4 % Finer	97.9 % Finer	2 (≤30)
JB82	Phi size 2	97.9 % Finer	95.1 % Finer	3 (≤30)
JB82	Phi size 3	79.9 % Finer	81.3 % Finer	2 (≤30)
JB82	Phi size 4	49.0 % Finer	53.4 % Finer	9 (≤30)
JB82	Phi size 5	33.1 % Finer	35.0 % Finer	6 (≤30)
JB82	Phi size 6	21.4 % Finer	22.8 % Finer	6 (≤30)
JB82	Phi size 7	12.8 % Finer	14.1 % Finer	10 (≤30)
JB82	Phi size 8	8.1 % Finer	8.9 % Finer	9 (≤30)
JB82	Phi size 9	5.6 % Finer	5.9 % Finer	5 (≤30)
JB82	Phi size 10	4.0 % Finer	4.2 % Finer	5 (≤30)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC34-0-1	LDW-SC203-0-1	
JB96	Total solids	46.10 %	45.50 %	1 (≤20)
JB96	Total organic carbon	2.90 %	3.27 %	12 (≤30)
JB96	Phi size -2	100 % Finer	99.2 % Finer	1 (≤30)
JB96	Phi size -1	98.6 % Finer	97.0 % Finer	2 (≤30)
JB96	Phi size 0	97.0 % Finer	95.4 % Finer	2 (≤30)
JB96	Phi size 1	93.4 % Finer	92.4 % Finer	1 (≤30)
JB96	Phi size 2	87.1 % Finer	87.9 % Finer	1 (≤30)
JB96	Phi size 3	79.4 % Finer	85.5 % Finer	7 (≤30)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC34-0-1	LDW-SC203-0-1	
JB96	Phi size 4	71.7 % Finer	71.7 % Finer	0 (≤30)
JB96	Phi size 5	61.8 % Finer	61.2 % Finer	1 (≤30)
JB96	Phi size 6	46.1 % Finer	44.6 % Finer	3 (≤30)
JB96	Phi size 7	30.4 % Finer	25.8 % Finer	16 (≤30)
JB96	Phi size 8	20.8 % Finer	18.0 % Finer	14 (≤30)
JB96	Phi size 9	14.2 % Finer	12.9 % Finer	10 (≤30)
JB96	Phi size 10	10.5 % Finer	9.0 % Finer	15 (≤30)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC34-1-2	LDW-SC203-1-2	
JB96	Total solids	50.00 %	47.30 %	6 (≤20)
JB96	Total organic carbon	3.02 %	2.91 %	4 (≤30)
JB96	Phi size -2	99.5 % Finer	99.1 % Finer	0 (≤30)
JB96	Phi size -1	97.6 % Finer	97.3 % Finer	0 (≤30)
JB96	Phi size 0	95.0 % Finer	94.7 % Finer	0 (≤30)
JB96	Phi size 1	92.3 % Finer	92.0 % Finer	0 (≤30)
JB96	Phi size 2	89.2 % Finer	88.8 % Finer	0 (≤30)
JB96	Phi size 3	84.5 % Finer	84.2 % Finer	0 (≤30)
JB96	Phi size 4	75.8 % Finer	74.0 % Finer	2 (≤30)
JB96	Phi size 5	65.7 % Finer	59.6 % Finer	10 (≤30)
JB96	Phi size 6	43.7 % Finer	37.5 % Finer	15 (≤30)
JB96	Phi size 7	19.8 % Finer	18.1 % Finer	9 (≤30)
JB96	Phi size 8	13.7 % Finer	12.7 % Finer	8 (≤30)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC34-1-2	LDW-SC203-1-2	
JB96	Phi size 9	10.0 % Finer	9.3 % Finer	7 (≤30)
JB96	Phi size 10	7.7 % Finer	7.0 % Finer	10 (≤30)

Associated SDG	Analyte	Concentration		RPD (Limits)
		LDW-SC34-2-4	LDW-SC203-2-4	
JB96	Total solids	59.90 %	52.90 %	12 (≤20)
JB96	Total organic carbon	2.05 %	2.59 %	23 (≤30)
JB96	Phi size -2	97.4 % Finer	97.0 % Finer	0 (≤30)
JB96	Phi size -1	94.2 % Finer	95.7 % Finer	2 (≤30)
JB96	Phi size 0	90.1 % Finer	92.7 % Finer	3 (≤30)
JB96	Phi size 1	78.7 % Finer	84.0 % Finer	7 (≤30)
JB96	Phi size 2	61.7 % Finer	71.1 % Finer	14 (≤30)
JB96	Phi size 3	55.4 % Finer	64.6 % Finer	15 (≤30)
JB96	Phi size 4	50.2 % Finer	59.1 % Finer	16 (≤30)
JB96	Phi size 5	43.6 % Finer	52.5 % Finer	19 (≤30)
JB96	Phi size 6	31.7 % Finer	36.9 % Finer	15 (≤30)
JB96	Phi size 7	15.4 % Finer	17.4 % Finer	12 (≤30)
JB96	Phi size 8	10.2 % Finer	11.6 % Finer	13 (≤30)
JB96	Phi size 9	7.5 % Finer	8.6 % Finer	14 (≤30)
JB96	Phi size 10	5.2 % Finer	5.9 % Finer	13 (≤30)

X. Field Blanks

No field blanks were identified in these SDGs.

Lower Duwamish Waterway Group
Wet Chemistry - Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC17, JC21, JC32, JC42, JC48 and JC95

No Sample Data Qualified in this SDG

Lower Duwamish Waterway Group
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDGs JA36, JA64, JA90, JB00, JB01, JB20, JB22, JB30, JB31, JB46, JB47, JB64, JB80, JB82, JB90, JB91, JB96, JB98, JC05, JC10, JC17, JC21, JC32, JC42, JC48 and JC95

No Sample Data Qualified in this SDG

HRGC/HRMS Dioxins/Dibenzofurans By EPA Method 1613B

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 the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between ^{13}C-2,3,7,8-TCDD and ^{13}C-1,2,3,4-TCDD was less than or equal to 25%.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for all calibration check compounds and less than or equal to 35.0% for all other compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

The minimum S/N ratio was technically acceptable.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration concentrations were within the QC limits.

The ion abundance ratios for all PCDDs and PCDFs were within method criteria.

V. Blanks

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

Associated SDG	Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
DPWG18883/ WG18543	WG18543-101	3/17/06	1,2,3,4,6,7,8-HpCDD OCDD 2,3,4,7,8-PeCDF	0.074 ug/Kg 0.152 ug/Kg 0.058 ug/Kg	LDW-SC26-1-2** LDW-SC26-2-4** LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC19-0-1** LDW-SC19-1-2** LDW-SC19-2-4** LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC40-2-4DUP**
DPWG18912/ WG18542	WG18542-101	3/15/06	1,2,3,4,6,7,8-HpCDD OCDD OCDF	0.078 ug/Kg 0.193 ug/Kg 0.084 ug/Kg	LDW-SC20-0-2** LDW-SC20-2-4** LDW-SC39-0-1** LDW-SC39-1-2** LDW-SC39-2-4** LDW-SC29-0-1** LDW-SC29-1-2** LDW-SC29-2-3.6** LDW-SC41-0-1** LDW-SC41-1-2** LDW-SC41-2-4** LDW-SC26-0-1** LDW-SC29-2-3.6DUP**

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

Associated SDG	Sample	Compound	Reported Concentration	Modified Final Concentration
DPWG18883/ WG18543	LDW-SC40-2-4**	1,2,3,4,6,7,8-HpCDD	0.309 ug/Kg	0.309U ug/Kg
DPWG18883/ WG18543	LDW-SC40-2-4DUP**	1,2,3,4,6,7,8-HpCDD	0.307 ug/Kg	0.307U ug/Kg

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within QC limits.

Standard reference material were within QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

All target compound identifications were within validation criteria.

*XI. Compound Quantitation and CRQLs

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

Sample	Compound	Flag	A or P
All samples in SDGS DPWG18883/WG18543 DPWG18912/WG18542	All compounds reported by the lab as estimated (K) maximum possible concentration (EMPC)	U	A

XII. System Performance

The system performance was acceptable.

XIII. Overall Assessment of Data

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
DPWG18883/ WG15843	LDW-SC26-1-2** LDW-SC26-2-4** LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC19-0-1** LDW-SC19-1-2** LDW-SC19-2-4** LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC40-2-4DUP**	2,3,7,8-TCDF (DB-5)	R	A
DPWG18912/ WG18542	LDW-SC20-0-2** LDW-SC20-2-4** LDW-SC39-0-1** LDW-SC39-1-2** LDW-SC39-2-4** LDW-SC29-0-1** LDW-SC29-1-2** LDW-SC29-2-3.6** LDW-SC41-0-1** LDW-SC41-1-2** LDW-SC41-2-4** LDW-SC26-0-1** LDW-SC29-2-3.6DUP**	2,3,7,8-TCDF (DB-5)	R	A

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Replicates

No field replicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

*Lower Duwamish Waterway Group
HRGC/HRMS Dioxins/Dibenzofurans - Data Qualification Summary - SDG DPWG18883/WG18543 and DPWG18912/WG18542

SDG	Sample	Compound	Flag	A or P	Reason
DPWG18883/ WG18543 DPWG18912/ WG18542	LDW-SC26-1-2** LDW-SC26-2-4** LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC19-0-1** LDW-SC19-1-2** LDW-SC19-2-4** LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC40-2-4DUP** LDW-SC20-0-2** LDW-SC20-2-4** LDW-SC39-0-1** LDW-SC39-1-2** LDW-SC39-2-4** LDW-SC29-0-1** LDW-SC29-1-2** LDW-SC29-2-3.6** LDW-SC41-0-1** LDW-SC41-1-2** LDW-SC41-2-4** LDW-SC26-0-1** LDW-SC29-2-3.6DUP**	All compounds reported by the lab as estimated (K) maximum possible concentration (EMPC)	U	A	Compound quantitation and CRQLs (EMPC)
DPWG18883/ WG15843 DPWG18912/ WG18542	LDW-SC26-1-2** LDW-SC26-2-4** LDW-SC40-0-1.3** LDW-SC40-1.3-2** LDW-SC40-2-4** LDW-SC19-0-1** LDW-SC19-1-2** LDW-SC19-2-4** LDW-SC28-0-1** LDW-SC28-1-2** LDW-SC28-2-4** LDW-SC40-2-4DUP** LDW-SC20-0-2** LDW-SC20-2-4** LDW-SC39-0-1** LDW-SC39-1-2** LDW-SC39-2-4** LDW-SC29-0-1** LDW-SC29-1-2** LDW-SC29-2-3.6** LDW-SC41-0-1** LDW-SC41-1-2** LDW-SC41-2-4** LDW-SC26-0-1** LDW-SC29-2-3.6DUP**	2,3,7,8-TCDF (DB-5)	R	A	Overall assessment of data

*Added CRQL (EMCP) finding.

Lower Duwamish Waterway Group
HRGC/HRMS Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG DPWG18883/WG18543 and DPWG18912/WG18542

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
DPWG18883/ WG18543	LDW-SC40-2-4**	1,2,3,4,6,7,8-HpCDD	0.309 ug/Kg	0.309U ug/Kg
DPWG18883/ WG18543	LDW-SC40-2-4DUP**	1,2,3,4,6,7,8-HpCDD	0.307 ug/Kg	0.307U ug/Kg

GC/MS Volatiles
Worksheets

LDC #: 14876A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/24/06
SDG #: JC21 Level III / 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: 2/22/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%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	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	SW	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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:
All soils

1 1	LDW-SC49V-0-1	11 1	LDW-SC49V-9-10	21 1	MB-030106	31	
2 1	LDW-SC49V-1-2	12 3	LDW-SC49V-9-10RE	22 2	MB-030206	32	
3 1	LDW-SC49V-2-3	13 1	LDW-SC49V-10-11	23 3	MB-030606	33	
4 1	LDW-SC49V-3-4	14 4	LDW-SC49V-10-11RE	24 4	MB-030706	34	
5 1	LDW-SC49V-4-5	15 1	LDW-SC49V-11-12	25		35	
6 1	LDW-SC49V-5-6	16 4	LDW-SC49V-11-12RE	26		36	
7 1	LDW-SC49V-6-7	17 1	LDW-SC49V-11-12MS	27		37	
8 1	LDW-SC49V-7-8	18 1	LDW-SC49V-11-12MSD	28		38	
9 1	LDW-SC49V-8-9	19		29		39	
10 2	LDW-SC49V-8-9RE	20		30		40	

LDC #: 48768A1
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 2 of 2
Reviewer: 9
2nd Reviewer: M

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		15	C. QQQ, M. CC. X	15	R/A
		16	all except above	16	↓
		9	BB, MM, VV-NNN, LLLL		
		10	All except above		↓

Comments:

LDC #: 48T60A1
SDG #: VC21

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

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 (60 std)	Recalculated RRF (60 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/28/06	~~Methylene chloride~~ H (1st internal standard)	0.56192	0.56192	0.58792	0.58792	7.90303	7.90280
			Trichlorethene (2nd internal standard)	0.34180	0.34180	0.34994	0.34994	2.41343	2.41318
			~~Toluene~~ AA (3rd internal standard)	0.39435	0.39435	0.39459	0.39459	4.07821	4.07827
2			~~Methylene chloride~~ BB (1st internal standard)	0.77213	0.77213	0.78745	0.78745	4.80024	4.80006
			Trichlorethene (2nd internal standard)						
			Toluene (3rd internal standard)						
3	ICAL	3/3/06	~~Methylene chloride~~ H (1st internal standard)	0.70763	0.70763	0.66846	0.66846	8.07033	8.07034
			Trichlorethene (2nd internal standard)	0.36548	0.36548	0.33613	0.33613	8.74130	8.7407
			~~Toluene~~ AA (3rd internal standard)	0.37567	0.37567	0.34879	0.34879	5.41790	5.4183
4			Methylene chloride (1st internal standard)	0.80041	0.80041	0.72924	0.72924	7.5358	7.5358
			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 #: 48T64A1
SDG #: VC01

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

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

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC0301	3/1/06	Methylene chloride (1st internal standard)	0.58T92	0.599T1	0.599T1	2.005T6	200515
			Trichlorethene (2nd internal standard)	0.3499[illegible]	0.3T1T4	0.3T1T4	6.22934	6.22863
			AA Toluene (3rd internal standard)	0.39459	0.422T8	0.422T8	T.1428[illegible]	T.14333
			1,1,2,2-Tetrachloroethane (4th internal standard)	0.T8T45	0.T41T2	0.T41T[illegible]	5.80T18	5.80T4T
2	CC0302	3/2/06	Methylene chloride (1st internal standard)	0.58T92	0.620T5	0.620T5	5.58556	5.5844
			Trichlorethene (2nd internal standard)	0.3499[illegible]	0.3T514	0.3T514	T.2013[illegible]	T.2013[illegible]
			AA Toluene (3rd internal standard)	0.39459	0.450T0	0.450T0[illegible]	14.22025	14.2206
			1,1,2,2-Tetrachloroethane (4th internal standard)	0.T8T45	0.T8034	0.T8034	0.90246	0.90358
3	CC0306	3/6/06	Methylene chloride (1st internal standard)	0.66846	0.T1604	0.T1604	T.1186[illegible]	T.118[illegible]
			Trichlorethene (2nd internal standard)	0.33613	0.38942	0.38942	15.85593	15.8546
			AA Toluene (3rd internal standard)	0.348T9	0.42322	0.42322	21.34110	21.3401
			1,1,2,2-Tetrachloroethane (4th internal standard)	0.T2924	0.T8035	0.T8035	T.00936	T.00913
4	CC0307A	3/7/06	Methylene chloride (1st internal standard)	0.66846	0.T1929	0.T1929	T.60489	T.6048[illegible]
			Trichlorethene (2nd internal standard)	0.33613	0.36613	0.36613	8.92560	8.9231
			AA Toluene (3rd internal standard)	0.348T9	0.3924[illegible]	0.3924[illegible]	12.50650	12.5018
			1,1,2,2-Tetrachloroethane (4th internal standard)	0.T2924	0.T2T53	0.T2T53	0.23426	0.23455

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 #: 14876A1
SDG #: K21

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer:
2nd reviewer:

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	50	51.010	102		
Bromofluorobenzene	|	46.049	92.1		
~~1,2-Dichloroethane-d4~~ DCB	|	~~52.142~~	104		
Dibromofluoromethane	↓	50.996	89.7		

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Toluene-d8	50	51.010	102	102	0
Bromofluorobenzene	|	46.049	92.1	92.1	|
1,2-Dichloroethane-d4	|	52.142	104	104	|
~~Dibromofluoromethane~~ DCB-d4	↓	44.8326	89.7	89.7	↓

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 #: 48764A1
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

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

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = | MSC - MSDC | * 2/(MSC + MSDC) MSC = Matrix spike percent recovery MSDC = Matrix spike duplicate percent recovery

MS/MSD sample: 17/18

Compound	Spike Added (µg/L)		Sample Concentration (µg/L)	Spiked Sample Concentration (µg/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-----	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	76.9	77.2	115	182	185	87.1	87.1	90.7	90.7	1.6	1.6
Trichloroethene			65	73.6	72.1	87.3	87.3	85.0	85.0	2.1	2.1
Benzene			37.6	108	109	91.5	91.3	92.5	92.5	0.9	0.9
Toluene			366	400	401	44.2	44.2	45.3	45.3	0.2	0.2
Chlorobenzene			ND	63.5	61.9	82.6	82.6	80.2	80.2	2.6	2.9

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

LDC #: 48768A1
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

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

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

LCS ID: LCS-030106/D

Compound	Spike Added (MS)		Spiked Sample Concentration (MS)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	50	50	52.2	50.1	104	104	100	100	4.1	3.9
Trichloroethene			51.4	49.1	103	103	98.2	98.2	4.6	4.6
Benzene			50.0	47.8	100	100	95.6	95.6	4.5	4.5
Toluene			49.5	48.7	99.0	99.0	97.4	97.4	1.6	1.6
Chlorobenzene			51.5	50.0	103	103	100	100	3.0	3.0

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 #: 48766A1
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: n

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. 2 , F :

Conc. = $\frac{(5384)(0.50)(5)(1)}{(103923)(0.1070)(3.00)(\quad)}$

= 40.34 µg/Kg

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

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. trans-1,4-Dichloro-2-butene
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM.
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
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 #: 14876A1
SDG #: JC21

VALIDATION FINDINGS CHECKLIST

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

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 #: 48T6A1
SDG #: JC21

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.			✓	

LDC #: 14876A1
SDG #: VC21

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

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
	3/1/06	CC0301	~~A~~	~~25.77778~~		1-9.11.13.15	V/UN/A
			B	29.31809		17.18, MB-030106	
			D	26.1469			
	3/2/06	CC0302	KK	25.7147		10. MB-030206	V/UN/A
			III	26.13321			
	3/6/06	CC0306	KK	28.58680		12. MB030606	V/UN/A

CONCAL1S

LDC #: 14876A1
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Blanks

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 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: 3/7/06
Conc. units: ug/Kg
Associated Samples: 14, 16

Compound	Blank ID	Sample Identification								
MB-030706		16 (1000)								
Methylene chloride										
Acetone										
M	5.1	12000/U								
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 #: 14876A1
SDG #: VC21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

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
		17/18	A	148 (30-139)	( )	( )	15	J det's/A
			FFFF	2.82 (22-168)	2.80 (22-168)	( )		J/UJ/A
			I	69.8 (75-127)	69.6 (75-127)	( )		
			M	71.5 (60-138)	( )	120 (≤ 50)		
			HH	6.03 (32-115)	6.14 (32-115)	( )		
			OO	40.4 (80-133)	39.2 (80-133)	( )		
			O	61.0 (78-135)	61.1 (78-135)	( )		
			P	67.2 (82-125)	77.2 ( )	( )		
			R	48.8 (73-127)	47.7 (73-127)	( )		
			T	63.2 (77-134)	57.9 (77-134)	( )		
			W	52.4 (82-128)	50.4 (82-128)	( )		
			X	70.0 (75-134)	61.1 (75-135)	( )		
			DD	82.6 (86-118)	80.2 (86-118)	( )		
			ZZ	( )	86.7 (87-125)	( )		no qual
			FF	64.1 (88-122)	62.8 (88-122)	( )		J/UJ/A
			RRR	~~86~~ ( )	83.5 (86-122)	( )		
			WW	70.4 (85-120)	66.3 (85-120)	( )		
			FFF	75.9 (86-124)	70.5 (86-124)	( )		

	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 #: 48764A1
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: 9
2nd Reviewer: 0

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
		17/18	HHH	69.4 (84-123)	64.9 (84-123)	( )	15	J/UJ/A
			UU	61.5 (80-129)	55.7 (80-129)	( )		
			MM	( )	62.8 (63-130)	( )		no qual
			LLL	38.2 (50-118)	34.2 (50-118)	( )		J/UJ/A
			LL	64.6 (79-142)	56.7 (79-142)	( )		
			TT	70.1 (73-136)	69.6 (73-136)	( )		
			III	83.2 (87-135)	74.5 (87-135)	( )		
			KK	35.9 (83-132)	33.2 (83-132)	( )		
			MMM	33.2 (73-136)	32.1 (73-136)	( )		
			NNN	31.6 (82-128)	30.1 (82-128)	( )		
No	Analyte	to R	out	some	spk	conc	due	conc ≥ 12x SA
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	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 #: 48764 1
SDG #: VC21

VALIDATION FINDINGS WORKSHEET
Internal Standards

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 Were all internal standard area counts within -50 to +100% of the associated calibration standard?

Y (N) N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		9	4DCB	38871 (39211-15710 8)		Y/N/A
		13	4DCB	38359 (↓)		
		10	4DCB	41889 (42181-17124)		↓

(BCM) = Bromochloromethane
(DFB) = 1,4-Difluorobenzene
(CBZ) = Chlorobenzene-d5
(PFB) = Pentafluorobenzene
(4DCB) = 1,4-Dichlorobenzene-d4
(2DCB) = 1,2-Dichlorobenzene-d4
(FBZ) = Fluorobenzene

LDC #: 14876A1
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and CRQLs

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 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	Sample ID	Finding	Associated Samples	Qualifications
		11	C, CC, RRR. SSS	1	N ~~dets~~/D
			DDD. AAA > calib		
			range		
		13	C. ~~PPP~~. QQQ, CC	13	~~J dets~~/A
			~~EE~~. RRR. ~~SSS~~.		
			~~AAA~~ ~~DDD~~ > calib		
			range		
		15	C. * ~~PPP~~. QQQ.	15	
			CC > calib range		
		13	PPP, EE, SSS,		J dets/A
			~~AAA~~, DDD > calib range		
		15	PPP		

Comments: See sample calculation verification worksheet for recalculations

LDC #: 48768J1
SDG #: VC2

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		9	C, QQQ, M, CC, RRR SSS, AAA, GGG	9	R/A
		10	M except above	10	
		11	C, CC, RRR, SSS, AAA, DDD, EE	11	R/A
		12	M except above	12	
		13	C, RRR, QQQ, CC, RRR, SSS, AAA, DDD	13	
		14	M except C, RRR QQQ, CC	14	

Comments: _____

OVR.1SB

GC/MS Semivolatiles
Worksheets

LDC #: 14827A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JA36/JA64/JA90/JB00 Level ~~III/IV~~ IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: a
2nd Reviewer: IC

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/6 - 9/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD. r^2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	A	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	RB = LDW-SC-RB1

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 ~~** Indicates sample underwent Level IV validation~~
All soils

1	LDW-SC55-0-1**	11	~~LDW-SC-RB1~~	21	LDW-SC42-2-4MSD	31	MB-021506
2	LDW-SC55-1-2**	12	LDW-SC52-0-1	22		32	
3	LDW-SC55-2-3**	13	LDW-SC52-1-2**	23		33	
4	LDW-SC49-0-1**	14	LDW-SC52-2-4**	24		34	
5	LDW-SC49-0-1RE**	15	LDW-SC42-0-1**	25		35	
6	LDW-SC49-1-2**	16	LDW-SC42-1-2**	26		36	
7	LDW-SC49-2-4**	17	LDW-SC42-2-4**	27		37	
8	LDW-SC53-0-2	18	LDW-SC3-0-2**	28		38	
9	LDW-SC53-0-2RE	19	LDW-SC3-2-4**	29		39	
10	LDW-SC53-2-4	20	LDW-SC42-2-4MS	30		40	

LDC #: 48379A29
SDG #: 480436, 480444, 480490, 480502

VALIDATION FINDINGS CHECKLIST

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

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 $\geq$ 0.990?	✓			
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 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) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed 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 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	✓			
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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 #: 14873A9
SDG #: 14364, 14390, 14400

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: 9
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction 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 from 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.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

Acids

LDC #: 14827A29

SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: 9

2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A Did the laboratory conduct an acceptable 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
	2/15/06	ICAL	HH	39.0		All + Blk	J/UJ/A

LDC #: 48TA29
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	2/17/06	CC0217	HH	42.3610T		1-4. 6-8. 10 BK	J/UJ/A
	2/20/06	CC0220	11	30.2663		5. 9. 12-21	J/UJ/A

CONCAL.2S

LDC #: 14857B29
SDG #: A35, A64, A90, B00

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/15/06 **Blank analysis date:** 2/17/06
Conc. units: ug/Kg Associated Samples: All Soils

Compound	Blank ID	Sample Identification								
MB	021906	1	4	5	6	7	8	9	10	12
I	13	~~24~~ 25 U								
LL	11		260							
XX	17		~~48~~ 55 U	52 U		~~24~~ 27 U			2100	200
YY	11	~~46~~ 54 U	260	250	260	~~200~~ 200	2600	2600	~~13000~~	460
ZZ	10	35 U	270	280	~~540~~ 540	220	~~1700~~ 1700	1900	~~1400~~ 1400	410
CCC	13		~~83~~ 93	95	160	64 ~~58~~ U	530	600	~~650~~ 600	120
ZLC	63	~~27~~ 24 U	~~190~~ U 220	230 U	~~190~~ U 210	~~180~~ U 210	~~160~~ U 520	530 U	880	660

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								
			4	5	6	7	8	9	10	12
DDD	11		120	120	~~240~~ 260	~~83~~ 100 ~~78~~	820	900	~~660~~ 710	170
FFF	13		•	0	~~310~~ 340	85				
GGG	11		170	200	~~290~~ 310 ~~240~~	~~100~~ 110	~~1400~~ 1400	1400	~~940~~ 940	120
HHH	13		160	180	~~280~~ 300	100	~~440~~ 440	1100	~~820~~ 820	160
III	11		~~440~~ 490	110	180	86 ~~84~~	~~840~~ 750	800	~~670~~ 670	100
~~WW~~	~~12~~									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 48-TA29
SDG #: JA36/JA64/JA90/JB00

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 2 of 2
Reviewer: 4
2nd Reviewer: AC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 2/15/06 **Blank analysis date:** 2/17/06
Conc. units: ug/kg Associated Samples: 11

Compound	Blank ID	Sample Identification								
MB 021506	13	13	15	16	17	18				
I	13									
LL	11									
XX	17									
YY	11	91	250	530	1400					
ZZ	10	61	240	950	830					
CCC	13		87	240	360					
~~EEE~~	63		180/U	400/U	210/U	42/U				

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								
			15	16	17					
DDD	11		130	420	470					
FFF	13									
~~GGG~~	11		140	660	430					
HHH	13		150	480	420					
III	11		100	390	300					

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 40214

SDG #: JA25/JA64/JA90/JB00

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		6	DCB	~~38.5~~ 39.9 (40-130)	No qual.
				( )	
		13	PHL	36.6 (40-130)	J/UJ/P (acids only)
			2FP	36.8 ( )	↓ (see table)
			DCB	33.8 ( )	No qual
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP) = 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48-TA29
SDG #: 436/466/490/800

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		20/21	22	( )	35 (40-130)	( )	17	Idets/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: ~~1480~~ A29
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-021506	T	12.2 (40-130)	( )	( )	All + Blk	J/UJ/P
			BBB	24.8 (↓)	( )	( )		↓
			NNN	5.0 (↓)	( )	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		

LDC #: 14857A29
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Internal Standards

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		4	PRY	310168 (323390 - 1293562)		J/UJ/A
		8	PRY	315796 (↓)		#/A
		5	PRY	1T2684 (248155 - 992620)		#/A
		9	PRY	230042 (↓)		J/UJ/A
						(GGG → LLL)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 14807A29
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: a
2nd Reviewer: AS

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		~~5~~ 4	~~All~~ except A	5	~~R~~/A
		~~6~~ 5	~~A~~	~~6~~	
		8	~~All~~ except NN	8	
		9	~~All~~ NN	9	

Comments: _____

OVR.2S

LDC #: 48278A29
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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,

A_{is} = Area of associated internal standard
C_{is} = Concentration of Internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (25 std)	Recalculated RRF (25 std)	Reported Average RRF (Initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/15/06	Phenol (1st internal standard)	1.108	1.1708	1.631	1.631	6.9	6.9
			Naphthalene (2nd internal standard)	0.948	0.948	0.921	0.921	5.6	5.6
			Fluorene (3rd internal standard)	1.188	1.188	1.091	1.091	7.1	7.1
			~~Pentachlorophenol~~ NV (4th internal standard)	1.089	1.089	1.027	1.027	7.2	7.2
			Bis(2-ethylhexyl)phthalate (5th internal standard)	0.528	0.528	0.474	0.474	11.9	11.8
			Benzo(a)pyrene (6th internal standard)	1.100	1.100	0.988	0.988	12.7	12.7
2			~~Phenol~~ CCC (1st internal standard)	1.174	1.174	1.107	1.107	7.7	7.7
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th 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 #: 14857A29
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC021T	2/17/06	Phenol (1st internal standard)	1.631	1.75076	1.75076	7.34763	7.343
			Naphthalene (2nd internal standard)	0.921	0.99843	0.99843	8.43167	8.407
			Fluorene (3rd internal standard)	1.091	1.21550	1.21550	11.43864	11.412
			UU Pentachlorophenol (4th internal standard)	1.027	1.11808	1.11808	8.84157	8.869
			Bis(2-ethylhexyl)phthalate (5th internal standard)	0.4744	0.53713	0.53713	13.32127	13.318
			Benzo(a)pyrene (6th internal standard)	0.988	1.10494	1.10494	11.82104	11.836
2	CC0220	2/20/06	Phenol (1st internal standard)	1.631	1.67082	1.67082	2.44582	2.441
			Naphthalene (2nd internal standard)	0.921	0.98406	0.98406	6.87136	6.847
			Fluorene (3rd internal standard)	1.091	1.27063	1.27063	16.49279	16.465
			UU Pentachlorophenol (4th internal standard)	1.027	1.10918	1.10918	7.97452	8.002
			Bis(2-ethylhexyl)phthalate (5th internal standard)	0.4744	0.52422	0.52422	10.59759	10.595
			Benzo(a)pyrene (6th internal standard)	0.988	1.09940	1.09940	11.26031	11.275
3	CC021T	2/17/06	CCC 7th Phenol (1st internal standard)	1.107	1.18182	1.18182	6.75416	6.758
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
	CC0220	2/20/06	CCC 7th Pentachlorophenol (4th internal standard)	1.107	1.18461	1.18461	7.00615	7.011
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th 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 #: 14857A29
SDG #: JA36/JA64/JA90/JB00

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer:
2nd reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

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
Nitrobenzene-d5	25	14.8702	55.6	59.5	3.9
2-Fluorobiphenyl	↓	15.0468	57.2	60.2	3
Terphenyl-d14	↓	14.0820	51.6	56.3	4.7
Phenol-d5	37.5	22.6703	57.6	60.5	2.9
2-Fluorophenol	↓	24.3292	64.5	64.9	0.4
2,4,6-Tribromophenol	↓	22.3375	62.9	59.6	3.3
2-Chlorophenol-d4	↓	22.7116	57.1	60.6	3.5
1,2-Dichlorobenzene-d4	25	13.5174	52.0	54.1	2.1

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 14873A29
SDG #: JA36/JA64/JA90/JB00

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 20/21

Compound	Spike Added (MS/MSD)		Sample Concentration (MS/MSD)	Spiked Sample Concentration (MS/MSD)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-----	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	736	742	ND	357	452	48.5	48.5	60.9	60.9	23.5	23.5
2-Chlorophenol	↓	↓	↓	432	554	58.7	58.7	74.7	74.7	24.7	24.7
1,4-Dichlorobenzene											
N-Nitroso-di-n-propylamine											
1,2,4-Trichlorobenzene	↓										
4-Chloro-3-methylphenol	736	742	ND	519	623	70.5	70.5	84.0	84.0	18.2	18.2
Acenaphthene	491	495	191	535	654	70.1	70.1	93.5	93.5	20.0	20.0
4-Nitrophenol	736	742	ND	542	747	73.6	73.6	101	101	31.8	31.8
2,4-Dinitrotoluene	491	495	↓	394	449	80.2	80.2	90.7	90.7	13.0	13.0
Pentachlorophenol											
Pyrene	491	495	830	1190	1500	73.3	73.3	135	135	23.0	23.0

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

LDC #: 148-TA29
SDG #: JA36/JA64/JA90/JB00

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

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

LCS/LCSD samples: LCS-021506

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	500	NA	384	NA	76.8	76.8				
2-Chlorophenol	↓		402		80.4	80.4				
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol	500		478		95.6	95.6				
Acenaphthene			464		92.8	92.8				
4-Nitrophenol			529		106	106				
2,4-Dinitrotoluene	↓		517		103	103				
Pentachlorophenol										
Pyrene	500		474		94.8	94.8				

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

LDC #: 14879A29
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: A
2nd reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

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)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1 . 4U :

Conc. = $\frac{(29350)(20)(500)(1)(\quad)}{(47235)(1.027)(25.4)(\quad)(\quad)}$

= 23.8 µg/Kg

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

LDC #: 14827B2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/19/06
SDG #: JB30 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/13/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD, r^2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	SW	GPC cleaned.
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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
MS, MSDs

1	LDW-SC13-0-2	11	LDW-SC9-0-1MSD	21	MB-022206	31	
2	LDW-SC13-2-4	12		22		32	
3	LDW-SC13-2-4DL	13		23		33	
4	LDW-SC9-0-1	14		24		34	
5	LDW-SC9-0-1DL	15		25		35	
6	LDW-SC9-1-2.6	16		26		36	
7	LDW-SC9-1-2.6DL	17		27		37	
8	LDW-SC9-2.6-4	18		28		38	
9	LDW-SC9-2.6-4DL	19		29		39	
10	LDW-SC9-0-1MS	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14827B29
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/12/06	CC0312	HH	27.31498		3, 5, 7, 9	J/UJ/A
			PP	41.60435			↓
			~~II~~ JJJ	27.15014			

LDC #: 48BT329
SDG #: 13330

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 2/22/06 **Blank analysis date:** 3/9/06
Conc. units: ug/kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB-022206		1	2	4	6	8				
XX	23	180/U	27/U	35/U	38/U	25/U				

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 40791D29

SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1

Reviewer: 9

2nd Reviewer: DC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		3 (5X)	TBP	38.8 (40-130)	No Qual
				( )	
				( )	
		5 (5X)	TBP	36.0 ( )	
			PHL	38.7 ( )	
			TBP	38.3 ( )	
			DCB	36.8 ( )	
			2FP	39.5 ( )	
			2CP	38.8 ( )	
				( )	
		6	NBZ	34.6 ( )	J/UJ/A
			TPH	31.6 ( )	
			PHL	35.2 ( )	
			FBP	39.4 ( )	
			DCB	36.8 ( )	
			2FP	35.2 ( )	
			2CP	38.7 ( )	
				( )	
		7 (~~5X~~ 10X)	TPH	25.2 ( )	No Qual
			PHL	38.9 ( )	
			TBP	32.5 ( )	
			DCB	36.0 ( )	
			2FP	38.4 ( )	
			2CP	38.1 ( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14827B29
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: q
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022206	T	9.5 (40-130)	( )	( )	M+BK	J/UJ/P
			BBB	10.5 (↓)	( )	( )		↓
			NNN	0 (↓)	( )	( )		J/R/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14873B29
SDG #: 1B30

VALIDATION FINDINGS WORKSHEET
Internal Standards

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		10 (MS)	PRY	39754 (423754-1695016)		~~J/UJ~~ No Qual
		11 (MSD)	PRY	304138 ( )		↓
		6	PRY	229681 ( )		J/UJ / A
		8	PRY	418809 ( )		↓
						(GGG → CCC)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 14079B24
SDG #: 1B30

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		2	YY > calib range	2	~~J~~ N/A
		4	ZZZ > calib range	4	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14821529
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		2	YY. ZZ, DDD. HH. KKK. LLL	2	R/A
		3	All except above	3	
		4	ZZZ. HH. LL	4	
		5	All except ZZZ. HH LLL	5	
		6	YY. DDD.	6 R	
		7	All except YY. DDD	7	
		9	All	9	↓

Comments: _____

OVR.2S

LDC #: 14827C2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JB31 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/11-13/06
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	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS. SRM
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	N	

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

MS and MSD

1 1	LDW-SC32-0-1	11 2	LDW-SC11-3.4-4.1MS	21	MB-022406	31	
2 1	LDW-SC32-1-2	12 2	LDW-SC11-3.4-4.1MSD	22		32	
3 1	LDW-SC32-2-4	13		23		33	
4 1	LDW-SC14-0-1.4	14		24		34	
5 1	LDW-SC14-1.4-2	15		25		35	
6 2	LDW-SC14-2-4.1	16		26		36	
7 2	LDW-SC11-0-0.8	17		27		37	
8 2	LDW-SC11-0.8-2	18		28		38	
9 2	LDW-SC11-2-3.4	19		29		39	
10 2	LDW-SC11-3.4-4.1	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48073C2a
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A Did the laboratory conduct an acceptable 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
	3/16/06	ICAL	HH	52.6		MW + ~~BK~~	J/UJ/A

INICAL2S

LDC #: 48276229
SDG #: JB331

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/19/06	CC0319	HH	25.34275		1-5. BK	J/UJ/A
			PP	44.99136			
	3/20/06	CC0320	~~PP~~	~~36.13105~~		~~6-12~~	~~J/UJ~~
			HH	44.17513		6-12	J/UJ/A
			PP	56.98769			

CONCAL2S

LDC #: 48ZTC29
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
(Y) N N/A Was a method blank analyzed for each concentration preparation level?
(Y) N N/A Was a method blank associated with every sample?
(Y) N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/24/06 **Blank analysis date:** 3/19/06
Conc. units: µg/kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB	032406	1 (3X)	2 (3X)	3	4 (3X)	5	6	7 (5X)		
XX	16						23 M			
YY	10	(210)	(2500)	(590)	(360)	(160)	(170)	(8100)		

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 48214-29
SDG #: 1831

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		2	TPH	39.1 (40-130)	No Qual
				( )	
		4	TPH	36.2 ( )	
				( )	
		5	TPH	35.5 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14827C29
SDG #: 1B31

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022406	T	14.4 (40-130)	( )	( )	All + Bk	J/UJ/P
			BBB	20.4 (↓)	( )	( )		↓
			NNN	5.4 (↓)	( )	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		

LDC #: 14827D2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JB47/JB64/JB80/JB90 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: A
2nd Reviewer: N

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/8 - 15/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. r2
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
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	N	

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

MS Sed

1 1	LDW-SC30-0-2.5	11 2	LDW-SC56-2-4	21	MB-022106	31	
2 1	LDW-SC30-2.5-4	12 2	LDW-SC48-0-1	22		32	
3 1	LDW-SC21-0-1	13 2	LDW-SC48-1-2	23		33	
4 3	LDW-SC21-1-2	14 2	LDW-SC48-2-4	24		34	
5 3	LDW-SC21-2-4	15 2	LDW-SC1-0-2	25		35	
6 2	LDW-SC35-0-2	16 2	LDW-SC1-2-4	26		36	
7 2	LDW-SC35-2-4	17 2	LDW-SC21-2-4MS	27		37	
8 1	LDW-SC20-0-2	18 2	LDW-SC21-2-4MSD	28		38	
9 1	LDW-SC20-2-4	19		29		39	
10 2	LDW-SC56-0-2	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT. 1-Methylnaphthalene
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

BNs Acids

LDC #: 48-T029
SDG #: JB4TAB64/JB80 AB90

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/6/06	CC0306	X	35.3772		6-7.10-18	J/UJ/A

CONCAL.2S

LDC #: 14821D24
SDG #: JB47/JB64/JB90

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: a
2nd Reviewer: al

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A — Were percent recoveries (%R) for surrogates within QC limits?
X N (N/A) — If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) — If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		3 (3x)	TPH	35.5 (40-130)	No Qual
				( )	
				( )	
		8	TPH	34.2 (40-130)	no qual
			DCB	(39.7) ( )	J/UJ/P (see table) (BNs)
				( )	
		9	TPH	38.2 ( )	J/UJ/P
			DCB	33.6 ( )	
				( )	
		13	2FP	27.7 ( )	J/UJ/P (Acids)
			2CP	38.7 ( )	
				( )	
				( )	
		15 (3x)	TPH	32.5 ( )	No Qual
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory

	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP) = 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48-[D29
SDG #: JB47\JB64\JB80\JB90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: a
2nd Reviewer: ac

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		17/18 (3x)	UU	0 (40-130)	0 (40-130)	( )	5	No Qual
			ZZ	35.0 ( )	16.0 ( )	( )		
			DDD	0 ( )	0 ( )	( )		
			HHH	0 ( )	0 ( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14827D29
SDG #: 1B47/1B64/1B80/1B90

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022106	T	16.5 (40-130)	( )	( )	All + Bk	J/UJ/P
			BBB	20.6 (↓)	( )	( )		↓
			NNN	8.6 (↓)	( )	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14827E2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JB91 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/17/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC11-3.4-4.1 (MB31)
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	SW N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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-SC23-0-2	11	MB-022406	21		31	
2	LDW-SC23-2-4	12		22		32	
3	LDW-SC23-2-4DL	13		23		33	
4		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	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniiine
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14827E29

SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: 9

2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A	Did the laboratory conduct an acceptable 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
	3/16/06	ICAL	HH	52.6		All + Blk	J/UJ/A

LDC #: 48572-9
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/19/06	CC0319	HH	25.34275		Blk	J/UJ/A
			PP	44.99136			
	3/20/06	CC0320	HH	44.17513		1	J/UJ/A
			PP	56.98769			
	3/21/06	CC0321	X	37.40587		2-3	J/UJ/A
			HH	41.48829			
			11	29.53369			
			PP	43.10035			
			VV	30.46814			

CONCAL.2S

LDC #: 1487E2a
SDG #: ~~JB940~~ JB91

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
(Y) N N/A Was a method blank analyzed for each concentration preparation level?
(Y) N N/A Was a method blank associated with every sample?
(Y) N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/21/06 **Blank analysis date:** 3/29/06
Conc. units: ug/kg Associated Samples: all

Compound	Blank ID	Sample Identification								
MB-022406	MB-022406	1 (3x)	2 (3x)	3 (9x)						
XX	16									
XY	10	(450)	(7200)	(7400)						

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 14821C-4

SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		2 (3x)	TPH	26.9 (40-130)	No qual
			TBP	38.9 (V)	V
		~~3 (9x)~~		( )	
				( )	
		3 (9x)	TPH	33.1 (40-130)	No qual
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14837E29
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022406	T	14.4 (40-130)	( )	( )	All + Bck	J/UJ/P
			BBB	20.4 (↓)	( )	( )		↓
			NNN	5.4 (↓)	( )	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		

LDC #: 48072B9
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: CA
2nd Reviewer: AA

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		2	YY. DDD2 calib range	2	~~detect~~ N/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: ~~48264~~
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		2	~~DD. GG. NN. VV. YY.~~	2	R/A
			~~ZZ. CCC.~~ DDD. ~~HHH.~~		
			~~II. JJJ. KKK. LLL~~		
		3	All except above	3	

Comments: _____

OVR.2S

LDC #: 14827F2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06

SDG #: JB82 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: Q

2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/16/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD. r^2
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
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	SW	
XVI.	Field duplicates	SW	D=14. 15. 26. 37.
XVII.	Field blanks	N	

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

MS soils

1	LDW-SC36-0-1	11	LDW-SC12-0-2	21	MB-022806	31	
2	LDW-SC36-1-2	12	LDW-SC12-2-4	22		32	
3	LDW-SC36-2-4	13	LDW-SC12-2-4DL	23		33	
4	LDW-SC202-0-1	14	LDW-SC202-0-1MS	24		34	
5	LDW-SC202-0-1DL	15	LDW-SC202-0-1MSD	25		35	
6	LDW-SC202-1-2	16		26		36	
7	LDW-SC202-2-4	17		27		37	
8	LDW-SC39-0-1	18		28		38	
9	LDW-SC39-1-2	19		29		39	
10	LDW-SC39-2-4	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-dl-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14827F2a

SDG #: 1B82

VALIDATION FINDINGS WORKSHEET

Initial Calibration

Page: 1 of 1

Reviewer: Q

2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A Did the laboratory conduct an acceptable 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
	3/16/06	ICAL	HH	52.6		All + Blk	J/UJ/A

LDC #: 48575F29
SDG #: 1B82

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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 ?

X (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
	3/20/06	CC0320	HH	44.17513		~~1-4.6-12. BK~~	J / UJ / A
			PP	56.98769			
	3/21/06	CC0321	X	37.40587		1-4.6-12	J / UJ / A
			HH	41.48829			
			II	29.53369			
			PP	43.10033			
			VVJ	30.46814			
	3/22/06	CC03229	T	26.15447		13-15.5	J / UJ / A
			X	54.33771			
			II	28.12615			
			PP	32.38407			

CONCAL.2S

LDC #: 14827F29
SDG #: 1B82

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022806	T	0 (40-130)	( )	( )	All + Bck	J/R UJ/P
			FF	24.2 (↓)	( )	( )		J/UJ/P
			BBB	0 (↓)	( )	( )		J/R UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 48FF29
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: a
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		12	DOP	1343918 (308475-1233900)		Idets A (EEE.FFF)
		4	DOP	1253286 (↓	)	↓

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

IST (DOP) = Di-n-octylphthalate-d4

LDC #: 14827F29
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		~~4~~	~~NN, NN . 2,4~~	~~4 M~~	R/J
		5	M ~~except chrysene~~	5	
		13	~~All~~	13	

Comments: _____

OVR.2S

LDC#: 14827F2a
SDG#: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS SVOAs (EPA SW846 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		RPD	(≤50)
	1	4		
UU	51	37	32	
VV	29	14	70	
XX	24	14	53	
YY	160	110	37	
ZZ	150	93	47	
CCC	81	51	45	
EEE	73	54	30	
DDD	110	72	42	
GGG	92	120	26	
HHH	96	91	5	
III	74	56	28	
JJJ	35	19	59	
LLL	31	16	64	

Compound	Concentration (ug/kg)		RPD	(≤50)
	1	5		
UU	51	38	29	
VV	29	60U	NC ~~200~~	
XX	24	60U	↓ ~~200~~	
YY	160	85	61	
ZZ	150	88	52	
CCC	81	50	47	
EEE	73	50	37	
DDD	110	63	54	
GGG	92	76	19	
HHH	96	60	46	
III	74	45	49	

LDC#: 14827F2a
SDG#: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

METHOD: GC/MS SVOAs (EPA SW846 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/kg) 1	5	RPD	(≤50)
JJJ	35	39	11	
LLL	31	33	6	

Compound	Concentration (ug/kg) 2	6	RPD	(≤50)
UU	24	27	12	
YY	65	69	6	
ZZ	70	78	11	
CCC	30	28	7	
DDD	36	30	18	
GGG	25	29	15	
HHH	28	27	4	
III	20	20	0	

Compound	Concentration (ug/kg) 3	7	RPD	≤50
UU	38U	24	NC ~~200~~	
YY	34	42	21	
ZZ	22	28	24	

LDC #: 14847A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/24/06
SDG #: JB01/JB22 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/9-11/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD . Y2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS . SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	GPC cleanup
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	SW	D = T + 9 . 8 + 10
XVII.	Field blanks	N	

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
MI soils

1 1	LDW-SC4-0-1	11 2	LDW-SC201-1.5-4MS	21 1	MB-022106	31	
2 1	LDW-SC4-1-2	12 2	LDW-SC201-1.5-4MSD	22		32	
3 1	LDW-SC4-2-4	13		23		33	
4 1	LDW-SC2-0-2	14		24		34	
5 1	LDW-SC2-2-4	15		25		35	
6 3	LDW-SC2-2-4DL	16		26		36	
7 2	LDW-SC33-0-2	17		27		37	
8 2	LDW-SC33-2-4	18		28		38	
9 2	LDW-SC201-0-1.5	19		29		39	
10 2	LDW-SC201-1.5-4	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14877A29
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/6/06	CC0306	X	35.37772		1-5. Blk	J/UJ/A
	3/12/06	CC0312	HH	27.31498		6	J/UJ/A
			VV	27.15014			UJ
			PP	41.60435			

CONCAL.2S

LDC #: 14847A29
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/21/06 **Blank analysis date:** 3/6/06
Conc. units: ug/L Associated Samples: 1 2 3 4 5 8 9 10

Compound	Blank ID	Sample Identification								
MB-032106	MB-032106	1	2	3	4	5	8	9	10	
A	16	39/U	43/U	24/U	36/U	26/U	31/U	27/U	30/U	
XX	12		32/U				23/U	40/U	24/U	

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 14041(8)-49

SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1

Reviewer: 9

2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?

Y (N) N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		4	DCB	37.9 (40-130)	No Qual
				( )	
		T(5x)	NBZ	33.8 ( )	
			DCB	33.8 ( )	
			PHL	34.0 ( )	
			2FP	34.3 ( )	
				( )	
		8	NBZ	34.4 ( )	J/UJ/P
			TPH	35.0 ( )	
			DCB	34.8 ( )	
			PHL	38.1 ( )	
			2FP	36.5 ( )	
				( )	
		9	DCB	39.6 ( )	No Qual
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 4847A29
SDG #: 1B01/1B22

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		11/12	A	(39%) (40-130)	( )	( )	* 10 no	J/UJ/A
			22	35.3 ( )	10.2 (40-130)	( )		J/UJ/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 4847A2a
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022106	T	18.9 (40-130)	( )	( )	M + Bk	J/UJ/P
			X	36.0 ( )	( )	( )		
			PP	39.2 ( )	( )	( )		
			BBB	23.8 ( )	( )	( )		
			NNN	4.7 ( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14865A=9
SDG #: JB9/JB22

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: QL
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Y (N) N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		5	PRY	33768=(383464-153385 8)		J/UJ/A (4SS→CCC)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 42847A29
SDG #: JB01, JB22

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		5	I, ~~FF~~, NN, UU, VV	5	R/J
			YY, ZZ, CCC, EEE,		
			~~DDD, GGG~~ HHH, III	R	
		6	All except above	6	↓

Comments: _____

OVR.2S

LDC#: 14847A2a
SDG#: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: 2
2nd Reviewer: 2

METHOD: GC/MS SVOAs (EPA SW846 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		RPD	≤ 50
	7	9		
GG	200	12	177	
NN	170	17	164	
UU	640	120	137	
VV	210	47	127	
YY	1500	320	130	
ZZ	1100	500	75	
CCC	260	140	60	
EEE	400	380	5	
DDD	490	210	80	
GGG	360	310	15	
HHH	240	260	8	
III	230	200	14	
JJJ	57	51	11	
LLL	54	42	25	
A	99U	27	NC ~~200~~	
DD	99U	12	~~200~~	
XX	99U	40	~~200~~	
KKK	99U	14	~~200~~	

Compound	Concentration (ug/kg)		RPD	≤ 50
	8	10		
A	31	30	3	
S	17	27	45	
GG	66	21	103	
JJ	25	20U	NC ~~200~~	
NN	65	17	117	
UU	170	54	104	

LDC#: 14847A2a
SDG#: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

METHOD: GC/MS SVOAs (EPA SW846 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		RPD	
	8	10		
VV	110	32	110	
XX	23	24	4	
YY	850	190	127	
ZZ	470	580	21	
CCC	150	48	103	
EEE	130	100	26	
DDD	170	73	80	
GGG	120	140	15	
HHH	86	120	33	
III	79	90	13	
JJJ	16	20	22	
LLL	14	17	19	

LDC #: 14847B2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06

SDG #: JB20 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: 4

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/10/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. r²
IV.	Continuing calibration	A	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	SW	GPC cleanup
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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

MI seds

1 /	LDW-SC6-0-2	11	~~LDW-SC7-1-1.7DL~~	21 /	MB-022206	31	
2 2	LDW-SC6-0-2DL	12 /	LDW-SC7-1.7-4	22		32	
3 /	LDW-SC6-2-4.5	13 /	LDW-SC10-0-1	23		33	
4 /	LDW-SC8-0-1	14 2	LDW-SC10-1-2	24		34	
5 /	LDW-SC8-1-2	15 2	LDW-SC10-2-4	25		35	
6 /	LDW-SC8-2-4	16 /	LDW-SC6-2-4.5MS	26		36	
7 2	LDW-SC8-2-4DL	17 /	LDW-SC6-2-4.5MSD	27		37	
8 /	LDW-SC7-0-1	18		28		38	
9 2	LDW-SC7-0-1DL	19		29		39	
10 /	LDW-SC7-1-1.7	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48477B29
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/22/06 **Blank analysis date:** 3/26/06
Conc. units: ug/Kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB	022206	1	3	4	5	6	8	10	13	
XX	26	33/U	40/U	32/U	23/U	~~31~~/U	32/U	20/U	31/U	

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 14091B2H

SDG #: JB320

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		14 (3x)	TPH	39.0 (40-130)	No Qual
			DCB	38.2 ( )	
			2FP	39.7 ( )	
				( )	
		15 (3x)	TPH	39.7 ( )	
			DCB	38.9 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48471B29
SDG #: 1B20

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		16/17	UU	7.5 (40-130)	7.7 (40-130)	( )	3	J/UJ/A
			DDD	0 ( )	0 ( )	( )		*
			HHH	12.8 ( )	9.3 ( )	( )		
			A	( )	39.7 ( )	( )		no signal
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		* Matrix interference
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14847B29
SDG #: VB20

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022206	T	27.6 (40-120)	( )	( )	All + Bk	J/UJ/P
			BBB	29.8 ( )	( )	( )		
			NNN	9.4 ( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 484TB29
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9
2nd Reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?
Y N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		IT (MSD)	PRY	387722 (412312-1649248)		No Qual
		6	PRY	381352 ( )		J/UJ (A)
		8	PRY	318980 ( )		
		1	PRY	322930 ( )		(LLL → LLL)

* QC limits are advisory
IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 48473B29
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: CK
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		6	~~RRF~~ > calib range	6	~~detects~~ N/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14847B29
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		All 6	D EE		R/A
					↓
		7	All except EE		
		2, 9	All		

Comments: _____

OVR.2S

LDC #: 14847C2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/2/06
SDG #: JB96 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: A

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/18/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD. r^2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	SW	GPC cleanup
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	SW	D=1+5.2+6.3+6.4+7.4+8.
XVII.	Field blanks	N	

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
All soil

1 1	LDW-SC34-0-1	11 2	LDW-SC25-2-4	21 1	MB-030406	31	
2 3	LDW-SC34-1-2	12 2	LDW-SC25-2-4MS	22		32	
3 3	LDW-SC34-1-2DL	13 2	LDW-SC25-2-4MSD	23		33	
4 1	LDW-SC34-2-4	14		24		34	
5 1	LDW-SC203-0-1	15		25		35	
6 2	LDW-SC203-1-2	16		26		36	
7 2	LDW-SC203-2-4	17		27		37	
8 2	LDW-SC203-2-4DL	18		28		38	
9 2	LDW-SC25-0-1	19		29		39	
10 2	LDW-SC25-1-2	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14847C-9
SDG #: 1B96

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Did the laboratory conduct an acceptable 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
	3/16/06	ICAL	HH	52.6		1,4-13. ~~B4~~	J/UJ/A

INICAL.2S

LDC #: 48470

SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1

Reviewer: G

2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/20/06	CC0320	HH	44.17513		6-13	J/UJ/A
			PP	56.98769			J
	3p						
	4/3/06	CC0403	ZZ	46.53064		2-3	J/UJ/A
			BBB	38.41772			J

CONCAL.2S

LDC #: 484TC29
SDG #: J1396

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/4/06 **Blank analysis date:** 3/16/06
Conc. units: ug/Kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB	030406	2(5x)	10(3x)							
XX	31	180/U	83/U							

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: [illegible]
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y (N) N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)		Qualifications	
		2	TPH	33.4	(40-130)	No Qual (D<>2X)	
					( )		
		3	TPH	28.8	( )		
			DCB	34.8	( )		
			2FP	32.4	( )		
			TBP	32.4	( )		
			2CP	39.2	( )		
					( )		
		4	TPH	28.8	( )		
					( )		
		5	TPH	36.2	( )		
			DCB	39.2	( )		
					( )		
		6	TPH	35.0	( )		
					( )		
		7	TPH	30.4	( )		
					( )		
		8	TPH	34.4	( )		
					( )		
		9	TPH	29.9	( )		
			DCB	39.4	( )		
					( )		
		10	TPH	24.8	( )		
			DCB	38.3	( )		

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP) = 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14841C29
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 2 of 2
Reviewer: 9
2nd Reviewer: 0

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		11	TPH	36.0 (40-130)	No Qual (DL > 3x)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP) = 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48ATc29
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		12/13 (3X)	GG	36.0 (40-130)	( )	( )	11	No Qual
			ZZ	0 ( )	34.1 (40-130)	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 1484TC29
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030406	T	0 (40-130)	( )	( )	All + ~~Bk~~	J/~~R~~UJ/P
			X	36.6 ( )	( )	( )		J/UJ/P
			FF	25.2 ( )	( )	( )		
			OO	39.8 ( )	( )	( )		no qual
			BBB	9.6 ( )	( )	( )		J/UJ/P
			NNN	0 ( )	( )	( )		J/~~R~~UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 48477c29
SDG #: 1B96

Reviewer: QA
2nd Reviewer: QC

VALIDATION FINDINGS WORKSHEET
Internal Standards

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		2	PHN	202093 (353792-1015170)		J (all) A
			↓			
		3	↓	214170 (↓)		↓

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 14847C29
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: CV
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		T	cc>calib mge	T	~~J (all detects)~~ N/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14847C29
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: A
2nd Reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		All 7	D CC		R/A
		8	All except CC		
		3	All		V

Comments: _____

LDC#: 14847C2a
SDG#: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: CL
2nd Reviewer: VC

METHOD: GC/MS SVOAs (EPA SW846 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		RPD	(≤50)
	1	5		
UU	280	180	43	
VV	84	140	50	
YY	810	1100	30	
ZZ	540	800	39	
CCC	260	350	30	
EEE	920	1800	65	
DDD	360	530	38	
GGG	380	540	35	
HHH	280	400	35	
III	230	330	36	
JJJ	75	100	29	
LLL	63	84	29	
CC	110U	1700	NC ~~200~~	

Compound	Concentration (ug/kg)		RPD	(≤50)
	2	6		
UU	340	440	26	
VV	160	170	6	
XX	180	110U	NC ~~200~~	
YY	1300	1300	0	
ZZ	920	910	1	
CCC	430	480	11	
EEE	3900	2600	40	
DDD	720	680	6	
FFF	220	110U	NC ~~200~~	
GGG	530	640	19	
HHH	470	550	16	

LDC#: 14847C2a
SDG#: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

METHOD: GC/MS SVOAs (EPA SW846 8270)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/kg) 2	6	RPD	≤ 50
III	400	450	12	
JJJ	200	160	22	
LLL	200	140	35	

Compound	Concentration (ug/kg) 3	6	RPD	≤ 50
UU	270	440	48	
YY	870	1300	40	
ZZ	780	910	15	
CCC	360	480	29	
EEE	2800	2600	7	
DDD	570	680	18	
GGG	380	640	51	
HHH	330	550	50	
III	340	450	28	
JJJ	190	160	17	
LLL	210	140	40	
VV	390U	170	NC ~~200~~	

Compound	Concentration (ug/kg) 4	7	RPD	≤ 50
UU	110	170	43	
YY	300	700	80	
ZZ	460	630	31	
CCC	130	250	63	
EEE	670	590	13	
DDD	190	370	64	
FFF	64	69U	NC ~~200~~	
GGG	220	280	24	
HHH	210	260	21	

LDC#: 14847C2a
SDG#: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: CV
2nd Reviewer: DL

METHOD: GC/MS SVOAs (EPA SW846 8270)

(Y) N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		RPD	≤50
	4	7		
III	150	190	24	
JJJ	52	71	31	
CC	99U	8400	NC ~~200~~	
VV	99U	160	~~200~~	
LLL	99U	60	~~200~~	

Compound	Concentration (ug/kg)		RPD	≤50
	4	8		
UU	110	190	53	
YY	300	720	82	
ZZ	460	740	47	
CCC	130	280	73	
EEE	670	620	8	
DDD	190	400	71	
FFF	64	230U	NC ~~200~~	
GGG	220	320	37	
HHH	210	270	25	
III	150	200	29	
JJJ	52	230U	NC ~~200~~	
CC	99U	8800	~~200~~	
VV	99U	180	~~200~~	

LDC #: 14865A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB46/JC05 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/10 - 14/06
II.	GC/MS Instrument performance check	SW	
III.	Initial calibration	SW	%RSD. r^2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS . SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	SW N	GPC cleanup
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	SW	RB = LDW-SC-RB2

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
MS only

1	LDW-SC22-0-1.1	11	LDW-SC5-1-2.2	21	LB-022406	31	
2	LDW-SC22-1.1-2	12	LDW-SC5-1-2.2DL	22		32	
3	LDW-SC22-2-4	13	LDW-SC5-2.2-4	23		33	
4	LDW-SC16-0-2	14	LDW-SC5-2.2-4MS	24		34	
5	LDW-SC16-0-2DL	15	LDW-SC5-2.2-4MSD	25		35	
6	LDW-SC16-2-4	16		26		36	
7	~~LDW-SC-RB2~~	17		27		37	
8	LDW-SC27-0-2	18		28		38	
9	LDW-SC27-2-4.5	19		29		39	
10	LDW-SC5-0-1	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniiine
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14865A29
SDG #: 1B46AC05

VALIDATION FINDINGS WORKSHEET
GC/MS Performance Check

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Were the DFTPP performance results reviewed and found to be within the EPA Functional Guideline criteria?

Y N N/A Were all samples analyzed within the 12 hour clock criteria?

#	Laboratory ID	12 Hour Clock (Time/date)	Finding	Associated Samples Client ID	Qualifications
	11	21:41 / 3/13/06	analyzed @ 21:42 (1 min out)	11	None / F text

m/z	ION ABUNDANCE CRITERIA
51	30.0 - 60.0% of m/z 198
68	Less than 2.0% of m/z 69
69	Present
70	Less than 2.0% of 69
127	40.0 - 60.0% of m/z 198
197	Less than 1.0% of m/z 198
198	Base peak, 100% relative abundance

m/z	ION ABUNDANCE CRITERIA
199	5.0 - 9.0% of m/z 198
275	10.0 - 30.0% of m/z 198
365	Greater than 1.0% of m/z 198
441	Present, but less than m/z 443
442	Greater than 40.0% of m/z 198
443	17.0 - 23.0% of m/z 442

LDC #: 4865A29
SDG #: 1B46AC05

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: a
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A Did the laboratory conduct an acceptable 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
	~~3/15/06~~	ICAL	HH	~~39.0~~		1-4, 6-11, 13-15, ~~BK~~ 6, 8	J/UJ/A
	3/16/06	ICAL	HH	52.6		5, 12	J/UJ/A

INICAL.2S

LDC #: 4865A29
SDG #: J1346AC05

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(X) N N/A Was a continuing calibration standard analyzed at least once every 12 hours of sample analysis 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
	3/17/06	CC031T	HH	45.51985		12	Y/HH/A

CONCAL.2S

LDC #: 14865A29
SDG #: JB46, JC05

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/4/06 **Blank analysis date:** 3/13/06
Conc. units: ug/Kg Associated Samples: All

Compound	Blank ID	Sample Identification								
	MB-022406	1	2	9	10	11				
XX	12	29/U	31/U	26/U	30/U	21/U				

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 14865A-29
SDG #: 1846/KC06

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		4	DCB	35.8 (40-130)	No Cert
				( )	
		5	DCB	39.2 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP) = 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14865A29
SDG #: 1B461C05

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022406	T	7.0 (40-130)	( )	( )	All + Blk	J/UJ/P
			EF	33.8 (↓)	( )	( )		↓
			BBB	4.1 (↓)	( )	( )		↓
			NNN	0 (↓)	( )	( )		J/~~R~~ UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14865A29
SDG #: JB46C05

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		4, 11	XX.22 > calib range	4, 11	~~detects~~ N/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14865A2a
SDG #: JB46/JCD5

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		4, 11 All	D YY, ZZ		R/A
		5, 12	All except above		

Comments: _____

OVR.2S

LDC #: 14865A29
SDG #: JB64C05

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: 9
2nd reviewer: AL

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Sample: 40W-SC-RB2 Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units (ug/L)
XX	0.7

Sample: _____ Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units ( )

Sample: _____ Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units ( )

LDC #: 14865B2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB98/JC10 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: T
2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/17 - 21/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD . r2
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS . SRM .
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	N	

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 soils

1 1	LDW-SC15-0-1	11 1	LDW-SC24-1-2	21 2	LDW-SC45-2-4MSD	31 0	HB-030206
2 1	LDW-SC15-1-2	12 1	LDW-SC24-2-4	22	~~LDW-SC45-0-1 DL~~	32	
3 1	LDW-SC15-2-4	13 1	LDW-SC45-0-1	23	~~LDW-SC45-1-2 DL~~	33	
4 1	LDW-SC18-0-1	14 1	LDW-SC45-1-2	24	~~LDW-SC45-2-4 DL~~	34	
5 1	LDW-SC18-1-2	15 1	LDW-SC45-2-4	25	~~LDW-SC38-0-1 DL~~	35	
6 1	LDW-SC18-2-4	16 2	LDW-SC38-0-1	26		36	
7 1	LDW-SC31-0-1	17 2	LDW-SC38-1-2	27		37	
8 1	LDW-SC31-1-2.8	18 2	LDW-SC38-2-3	28		38	
9 1	LDW-SC31-2.8-4	19 2	LDW-SC38-3-3.3	29		39	
10 1	LDW-SC24-0-1	20 2	LDW-SC45-2-4MS	30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48653B29
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Did the laboratory conduct an acceptable 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
	3/16/06	ICAL	HH	52.6		1-15, BK	J/UJ/A
	3/24/06	ICAL	HH	56.5		16-21	J/UJ/A

INICAL.2S

LDC #: 4865B29
SDG #: JB985C10

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/22/06	CC0322	X	41.58651		~~EB~~. BK	J/UJ/A
			HH	25.9513			
			PP	65.27546			
	3/22/06	CC0322A	T	26.15447		1-15	J/UJ/A
			X	54.33771			
			II	28.12615			
			PP	32.38407			
	3/25/06	CC0325A	PP	27.09091		16-21	J/UJ/A

CONCAL.2S

LDC #: 14865329
SDG #: 1398/1C10

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y (N) N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		15	TBP	39.5 (40-130)	No qual
				( )	
		17	NBZ	37.1 ( )	J/UJ/P (all)
			TPH	33.5 ( )	
			DCB	32.0 ( )	
			PHL	36.0 ( )	
			2FP	33.6 ( )	
			TBP	36.5 ( )	
			2CP	35.5 ( )	
				( )	
		18	TPH	38.4 ( )	J/UJ/P (BNs only)
			DCB	37.0 ( )	
			2FP	38.4 ( )	No qual
				( )	
				( )	
				( )	(BN list see 1487)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48653-9
SDG #: JB98X1C10

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		20/2	ZZ	0 (40-130)	0 (40-130)	( )	15	No Qual (conc 22x SA)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14865B29
SDG #: JB98JC10

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030206	T	16.1 (40-130)	( )	( )	All + Bk	J/UJ/P
			BBB	15.3 (↓)	( )	( )		↓
			NNN	2.0 (↓)	( )	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14876A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/24/06
SDG #: JC21 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: V
2nd Reviewer: a

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/22/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	SW N	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	SW	LDW-SC-RB3

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
All Sed's

1	~~LDW-SC-RB3~~	11	LDW-SC26-2-4	21	MB-030706	31	
2	LDW-SC51-0-2	12	LDW-SC37-1-2MS	22		32	
3	LDW-SC51-2-3.8	13	LDW-SC37-1-2MSD	23		33	
4	LDW-SC37-0-1	14		24		34	
5	LDW-SC37-1-2	15		25		35	
6 2	LDW-SC37-1-2DL	16		26		36	
7	LDW-SC37-2-4	17		27		37	
8 2	LDW-SC37-2-4DL	18		28		38	
9	LDW-SC26-0-1	19		29		39	
10	LDW-SC26-1-2	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniiine
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48764A9
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A Did the laboratory conduct an acceptable 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
	3/16/06	ICAL	~~52.~~ HH	52.6		MW+BK	J/UJ/A

INICAL_2S

LDC #: 14876A29
SDG #: JC21
METHOD: GC/MS BNA (EPA SW 846 Method 8270)

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: 9
2nd Reviewer: OC

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 of sample analysis 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
	3/17/06	CC0317	HH	45.51985		6.8	J/UJ/A
			PP	36.23258			↓

CONCAL.2S

LDC #: 14876A2a
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/7/06 **Blank analysis date:** 3/16/06
Conc. units: ug/Kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB	030706	2 (3x)								
XX	20	69/4								

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 48660a9
SDG #: JC3

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		5 (5X)	TPH	34.6 (40-130)	No Qual
				( )	
		11 (5X)	TPH	36.6 (↓)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48768B29
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		12/13	KK	34.5 (40-130)	34.5 (40-130)	( )	5	No Qual
		(5x)	ZZ	0 (↓)	0 (↓)	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14876A29
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030706	T	2.8 (40-130)	( )	( )	All + Bk	J/UJ/P
			FF	30.8 (↓)	( )	( )		↓
			BBB	5.1 ( )	( )	( )		↓
			NNN	0 (↓)	( )	( )		J/R/P UJ
				( )	( )	( )		
				( )	( )	( )		
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LDC #: 40760A29
SDG #: VC21

VALIDATION FINDINGS WORKSHEET
Internal Standards

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		5	DOP	1253465 (705312 - 1221250)		Vdets/ST
		7	DOP	1257463 (↓)	( )	↓

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

DOP = Di-n-octylphthalate-d4

LDC #: 48768A29
SDG #: VC21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		5	zz. ~~ggg~~ > calib	5	~~data~~ N/A
			range		
		7	yy > calib range	7	

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14876A2a
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: a
2nd Reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		~~All~~ 5	D zz, GGG		R/A
		6	All except above		
		7	YY		
		8	All except YY		

Comments: _____

OVR.2S

LDC #: 48768291
SDG #: VC21

VALIDATION FINDINGS WORKSHEET
Field Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Sample: LDW-SC-RB3 Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units (ug/L)
XX	0.7

Sample: _____ Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units ( )

Sample: _____ Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units ( )

LDC #: 14894A2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/28/06
SDG #: JC32 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: Q
2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/23/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	
IV.	Continuing calibration	ASW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
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	N	

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
MI Seds

1 /	LDW-SC43-0-2	11 /	MB-030706	21		31	
2 /	LDW-SC43-2-4	12		22		32	
3 /	LDW-SC54-0-2	13		23		33	
4 /	LDW-SC54-2-4	14		24		34	
5 /	LDW-SC47-0-1	15		25		35	
6 /	LDW-SC47-1-2	16		26		36	
7 2	LDW-SC47-2-3	17		27		37	
8 2	LDW-SC47-3-4	18		28		38	
9 2	LDW-SC47-3-4MS	19		29		39	
10 2	LDW-SC47-3-4MSD	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniiine
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14894A29
SDG #: VC32

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Did the laboratory conduct an acceptable 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
	3/24/06	ICAL	~~N56.5~~ HH	56.5		All + BK	NJ/A

INICAL2S

LDC #: 1484A29
SDG #: VC32

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/25/06	CC03259	PP	27.09091		1-6. BK	J/UJ/A
	3/27/06	CC0327	PP	41.36213		7-10.	J/UJ/A
			ZZ	33.73540			UJ

CONCAL.2S

LDC #: 14894A29
SDG #: K32

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030706	T	0 (40-130)	( )	( )	All + Blk	J/R/P
			FF	0 ( )	( )	( )		
			OO	19.2 ( )	( )	( )		J/UJ/P
			BBB	0 ( )	( )	( )		J/R/P
			kkk	132 ( )	( )	( )		J dets/P
			NNN	3.0 ( )	( )	( )		J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
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LDC #: 14894A29
SDG #: JC32

VALIDATION FINDINGS WORKSHEET
Internal Standards

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Y (N) N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		8	PRY	85039 (96656-386624)		J/UJ/A
						(GGG → LLL)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 14894B2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/28/06
SDG #: JC42 Level III IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: Q
2nd Reviewer: L

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/24/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD, r²
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS. SPK
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	SW	GPC clean up
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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
MS sed

1 1	LDW-SC40-0-1.3	11 2	LDW-SC50-1-2	21 1	MB-030906	31	
2 1	LDW-SC40-1.3-2	12 4	LDW-SC50-2-2.8	22 5	MB-032906	32	
3 1	LDW-SC40-2-4	13 2	LDW-SC50-2.8-4	23		33	
4 5	LDW-SC40-2-4RE	14 2	LDW-SC46-0-1	24		34	
5 1	LDW-SC17-0-1	15 2	LDW-SC46-1-2	25		35	
6 X	LDW-SC17-1-2	16 4	LDW-SC46-2-4	26		36	
7 4	LDW-SC17-1-2DL	17 1	LDW-SC40-2-4MS	27		37	
8 2	LDW-SC17-2-4	18 1	LDW-SC40-2-4MSD	28		38	
9 3	LDW-SC17-2-4DL	19		29		39	
10 2	LDW-SC50-0-1	20		30		40	

LDC #: 14894B29
SDG #: JC42

VALIDATION FINDINGS CHECKLIST

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

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 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 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	✓			
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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 #: 14894B29
SDG #: JC42

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction 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 from 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.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48948=9
SDG #: VC42

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Did the laboratory conduct an acceptable 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
	3/16/06	ICAL	HH	52.6		1-3, 5-18 MB-030906	J/UJ/All

INICAL2S

LDC #: K894B29
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/17/06	CC0317	HH	45.57985		1-3. 5. 17-18	J/UJ/A
			PP	36.23258		MB-030906	↓
	3/19/06	CC0319	HH	25.34275		8.10.11.13.14.15	J/UJ/A
			PP	44.99136			↓
	3/20/06	CC0320	HH	44.17513		9.	J/UJ/A
			PP	56.98769			↓
	3/21/06	CC0321	X	37.40587		6-7. 12. 16	J/UJ/A
			HH	41.48829			↓
			II	29.53369			
			PP	43.10038			
			VV	30.46814			↓

LDC #: 14894B29
SDG #: V042

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/9/06 **Blank analysis date:** 3/17/06
Conc. units: ug/kg Associated Samples: 1-3, 5-16

Compound	Blank ID	Sample Identification								
MB-030906	1	12								
XX	11	26/U	23/U							
FFF	11									

Blank extraction date: 3/29/06 **Blank analysis date:** 3/31/06
Conc. units: ug/kg Associated Samples: 4

Compound	Blank ID	Sample Identification								
MB-032906										
A	30									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 48945a9
SDG #: 1c42

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
(Y) N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)		Qualifications
		3	TBP	22.6	(40-130)	No qual
			2FP	33.1	( )	J/UJ/A (acids only)
			2CP	31.7	( )	
					( )	see table
		5	TPH	37.8	( )	No qual
					( )	
		6 (5x)	TPH	24.0	( )	
			TBP	34.3	( )	
			DCB	32.0	( )	
			2FP	37.3	( )	
			2CP	39.2	( )	
					( )	
		7 (5)	TPH	28.2	( )	
			TBP	30.4	( )	
			DCB	32.4	( )	
			2FP	34.8	( )	
			2CP	37.6	( )	
					( )	
		9	TPH	36.8	( )	
					( )	
		11 (3x)	TPH	34.0	( )	
			DCB	37.7	( )	
					( )	
		15	TPH	39.0	( )	
		16	TPH	35.2		

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48942B29
SDG #: VC42

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030906	T	9.2 (40-130)	( )	( )	1-3, 5-16	J / UJ / P
			BBB	19.7 ( )	( )	( )	MB-030906	
			NNN	3.8 ( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		LCS-03=906	T	0 40-130	( )	( )	4. MB-03=906	J / R UJ / P
			FF	22.8 ( )	( )	( )		J / UJ / P
			BBB	0 ( )	( )	( )		J / R UJ / P
			NNN	0 ( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 48944B2a
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 11

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		6	CRY	665836 (165880 - 663518)		✓ / ~~det~~ A
			DOP	1303891 (308275 - 1233900)		✓
						(22. BBB → FFF)

* QC limits are advisory
IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

DOP = Di-n-octylphthalate-d4

SDC#: 14894 B2A4
SDG: VC42

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

...s BNA (EPA SW 846 Method 8270)

...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	Sample ID	Finding	Associated Samples	Qualifications
		8	uu. > calib range	8	J dets/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 17073V4H
SDG #: VC42

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 8

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		4	All	4	R/UJ
		~~6~~	~~GG. NN. UU. VV, FFF. HHH. III~~	~~6~~	
		7	All except alkanes	7	
		8	UU.	8	
		9	All except UU	9	

Comments: _____

OVR.2S

LDC #: 48944B29
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (40 std)	Recalculated RRF (40 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	3/16/06	Phenol (1st internal standard)	2.574	2.574	2.429	2.429	5.3	5.3
			Naphthalene (2nd internal standard)	1.244	1.244	1.162	1.162	4.8	4.8
			Fluorene (3rd internal standard)	1.501	1.501	1.384	1.384	6.6	6.6
			~~Pentachlorophenol~~ UU (4th internal standard)	1.30T	1.30T	1.253	1.253	4.4	4.4
			~~Bis(2-ethylhexyl)phthalate~~ DDD (5th internal standard)	~~0.650~~ 1.442	1.442	~~0.570~~ 1.414	1.414	* 5.4	5.4
			Benzo(a)pyrene (6th internal standard)	1.36T	1.36T	1.245	1.245	8.1	8.1
2			~~Phenol~~ FFF THH (1st internal standard)	1.070	1.070	1.096	1.096	8.2	8.2
			Naphthalene (2nd internal standard)	~~0.994~~		~~1.098~~		~~7.7~~	
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			~~Benzo(a)pyrene~~ FFF THH (6th internal standard)	0.952	0.952	1.016	1.016	7.4	7.4
3	ICAL	3/31/06	Phenol (1st internal standard)	2.295	2.295	2.539	2.539	7.9	7.9
			Naphthalene (2nd internal standard)	0.994	0.994	1.098	1.098	7.7	7.7
			Fluorene (3rd internal standard)	1.233	1.233	1.31T	1.31T	7.5	7.5
			~~Pentachlorophenol~~ UU (4th internal standard)	1.122	1.122	1.235	1.235	9.9	9.9
			~~Bis(2-ethylhexyl)phthalate~~ DDD (5th internal standard)	1.236	1.236	1.326	1.326	8.1	8.1
			Benzo(a)pyrene (6th internal standard)	1.425	1.425	1.387	1.387	8.1	8.1

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 #: 14944B29
SDG #: 1042

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC031T	3/17/06	Phenol (1st internal standard)	2.429	2.51374	2.51374	3.47587	3.4885
			Naphthalene (2nd internal standard)	1.162	1.1074	1.1074	4.68815	4.6988
			Fluorene (3rd internal standard)	1.384	1.33864	1.33864	3.30547	3.3077
			~~Pentachlorophenol~~ (4th internal standard)	1.253	1.1T148	1.1T148	6.51187	6.5059
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.414	1.34158	1.34158	5.11749	5.1215
			Benzo(a)pyrene (6th internal standard)	1.245	1.20469	1.20469	3.23197	3.2377
2			~~Phenol (1st internal standard)~~	1.096	0.99334	0.99334	9.32978	9.3667
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			~~Benzo(a)pyrene~~ (6th internal standard)	1.096	0.97655	0.97655	10.86219	10.8984
3	CC0319	3/19/06	Phenol (1st internal standard)	2.429	2.55356	2.55356	5.11524	5.12805
			Naphthalene (2nd internal standard)	1.162	1.11980	1.11980	3.62086	3.6317
			Fluorene (3rd internal standard)	1.384	1.31945	1.31945	4.69134	4.6637
			~~Pentachlorophenol~~ (4th internal standard)	1.253	1.1T118	1.1T118	6.53573	6.5298
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.414	1.38664	1.38664	1.93098	1.93518
			Benzo(a)pyrene (6th internal standard)	1.245	1.21410	1.21410	2.47617	2.4819

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 #: 14894B29
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC0320	3/20/06	Phenol (1st internal standard)	2.429	2.65747	2.65747	9.39269	9.40602
			Naphthalene (2nd internal standard)	1.162	1.10664	1.10664	4.75350	4.76419
			Fluorene (3rd internal standard)	1.384	1.29443	1.29443	6.49907	6.47120
			Pentachlorophenol (4th internal standard)	1.253	1.17549	1.17549	6.19220	6.18628
			Bis(2-ethylhexyl)phthalate (5th internal standard)	1.414	1.36929	1.36929	3.15765	3.16188
			Benzo(a)pyrene (6th internal standard)	.245	1.19714	1.19714	3.83884	3.84455
2			Phenol (1st internal standard)	1.096	0.99679	0.99679	9.01534	9.05233
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)	1.096	0.98478	0.98478	10.11138	10.14820
3	CC0321	3/21/06	Phenol (1st internal standard)	2.429	2.79751	2.79751	15.15711	15.18704
			Naphthalene (2nd internal standard)	1.162	1.11237	1.11237	4.26043	4.27117
			Fluorene (3rd internal standard)	1.384	1.26445	1.26445	8.66484	8.63854
			Pentachlorophenol (4th internal standard)	1.253	1.16826	1.16826	6.76886	6.76209
			Bis(2-ethylhexyl)phthalate (5th internal standard)	1.414	1.37805	1.37805	2.53820	2.54224
			Benzo(a)pyrene (6th internal standard)	1.245	1.18082	1.18082	5.14925	5.15548

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 #: 14894B29
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	cc0331	3/31/06	Phenol (1st internal standard)	2.539	2.50785	2.50785	1.24099	1.2266
			Naphthalene (2nd internal standard)	1.098	1.08277	1.08277	1.36604	1.3870
			Fluorene (3rd internal standard)	1.317	1.32965	1.32965	0.93011	0.96097
			~~Pentachlorophenol~~ HH (4th internal standard)	1.235	1.23591	1.23591	0.03282	0.07407
			~~Bis(2-ethylhexyl)phthalate~~ DDD (5th internal standard)	1.336	1.33341	1.33341	0.58902	0.55912
			Benzo(a)pyrene (6th internal standard)	1.387	1.36730	1.36730	1.41157	1.4203
2			~~Phenol (1st~~ FFF internal standard)	1.016	1.03492	1.03492	1.91529	1.8625
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th 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 #: 48948B29
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

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

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

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
Nitrobenzene-d5	25	15.3668	61.6	61.5	0.1
2-Fluorobiphenyl	↓	14.0782	56.4	56.3	↓
Terphenyl-d14	↓	13.0093	52.0	52.0	0
Phenol-d5	37.5	22.6422	60.3	60.4	0.1
2-Fluorophenol	↓	23.0644	61.6	61.5	↓
2,4,6-Tribromophenol	↓	22.5179	60.0	60.0	0
2-Chlorophenol-d4	↓	21.2119	56.5	56.6	0.1
1,2-Dichlorobenzene-d4	25	12.4907	50.0	50.0	0

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 48944B29
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 17/18

Compound	Spike Added (MS)		Sample Concentration (MS)	Spiked Sample Concentration (MSD)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	745	745	ND	432	447	58.0	58.0	60.0	60.0	3.4	3.4
2-Chlorophenol	V	V	V	352	411	47.2	47.2	55.2	55.2	15.5	15.5
1,4-Dichlorobenzene											
N-Nitroso-di-n-propylamine											
1,2,4-Trichlorobenzene											
4-Chloro-3-methylphenol	745	745	ND	405	459	54.4	54.4	61.6	61.6	12.5	12.5
Acenaphthene	497	497		289	275	58.1	58.1	55.3	55.3	5.0	5.0
4-Nitrophenol	745	745		550	524	73.8	73.8	70.3	70.3	4.8	4.8
2,4-Dinitrotoluene	497	497	V	314	303	63.2	63.2	61.0	61.0	3.6	3.6
Pentachlorophenol											
Pyrene	497	497	ND	292	287	58.8	58.8	57.7	57.7	1.7	1.7

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

LDC #: 48942B29
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

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

LCS/LCSD samples: LCS-030906

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	500	NA	364	NA	72.8	72.8				
2-Chlorophenol	↓		311		62.2	62.2				
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol	500		349		69.8	69.8				
Acenaphthene			312		62.4	62.4				
4-Nitrophenol			383		76.6	76.6				
2,4-Dinitrotoluene	↓		358		71.6	71.6				
Pentachlorophenol										
Pyrene	500		321		64.2	64.2				

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

LDC #: 14894B29
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

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)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1 . UU :

Conc. = $\frac{(62372)(20)(1000)(1)(\quad)}{(638966)(1.253)(50.1)(1)(\quad)}$ (268644)

= 133.9 ug/kg

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

LDC #: 14894C2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/29/06
SDG #: JC48 Level III IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: A
2nd Reviewer: K

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/25/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD. r^2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	GPC cleanup
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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-SC28-0-1 sd	11	MB-031406	21		31	
2	LDW-SC28-1-2	12		22		32	
3	LDW-SC28-2-4	13		23		33	
4	LDW-SC28-1-2MS	14		24		34	
5	LDW-SC28-1-2MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 14894C29
SDG #: JC48

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: A

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 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 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?		✓		
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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 #: 1489C2A
SDG #: JC48

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: AL

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction 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 from 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.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48944c2a
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A Did the laboratory conduct an acceptable 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
	3/24/06	## ICAL	2 HH	56.5		2-5, BLK	Y/UJ/A

INICAL2S

LDC #: 1489C29
SDG #: VC48

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/28/06	CC0328	X	34.39424		2-5. Bdk	J/UJ/A
			PP	33.00027			
			ZZ	65.18952			

CONCAL.2S

LDC #: 4894C29
SDG #: VC48

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: ~~3/14/06~~ **Blank analysis date:** 3/28/06
Conc. units: ug/Kg Associated Samples: ALL

Compound	Blank ID	Sample Identification								
MB	032806	1 (3x)	2 (3x)	3 (3x)						
~~ZZZ~~	29	510 U	310 U	280 U						

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 quallfied as not detected, "U".

LDC #: 14894C29
SDG #: JC148

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		3 (3x)	TPH	39.6 (40-130)	No Qual
			2FP	38.2 (↓)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP) = 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14894C2a
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-031406	T	18.5 (40-130)	( )	( )	All + Blk	J/UJ/P
			X	37.4 ( )	( )	( )		
			HH	28.4 ( )	( )	( )		
			BBB	20.6 ( )	( )	( )		
			NNN	7.4 ( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC #: 48949C39
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (40 std)	Recalculated RRF (40 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	3/24/06	Phenol (1st internal standard)	2.634	2.634	2.743	2.743	7.1	7.1
			Naphthalene (2nd internal standard)	1.074	1.074	1.120	1.120	8.5	8.5
			Fluorene (3rd internal standard)	1.410	1.410	1.400	1.400	4.4	4.4
			~~Pentachlorophenol~~ QQ (4th internal standard)	1.260	1.260	1.315	1.315	7.1	7.1
			~~Bis(2-ethylhexyl)phthalate~~ DBP (5th internal standard)	1.358	1.358	1.425	1.425	7.4	7.4
			Benzo(a)pyrene (6th internal standard)	1.250	1.250	1.318	1.318	6.5	6.5
2	1		~~Phenol~~ 2EF (1st internal standard)	0.593	0.593	0.628	0.628	8.8	8.8
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			~~Benzo(a)pyrene~~ FE (6th internal standard)	0.952	0.952	1.016	1.016	7.4	7.4
3	ICAL	3/31/06	Phenol (1st internal standard)	2.295	2.295	2.539	2.539	7.9	7.9
			Naphthalene (2nd internal standard)	0.997	0.997	1.098	1.098	7.7	7.7
			Fluorene (3rd internal standard)	1.233	1.233	1.317	1.317	7.5	7.5
			Pentachlorophenol (4th internal standard)	1.122	1.122	1.235	1.235	9.9	9.9
			Bis(2-ethylhexyl)phthalate (5th internal standard)	1.236	1.236	1.326	1.326	8.1	8.1
			Benzo(a)pyrene (6th internal standard)	1.425	1.425	1.387	1.387	8.1	8.1

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 #: 1489C29
SDG #: VC48

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC0331	3/31/06	Phenol (1st internal standard)	2.539	2.50785	2.50785	1.24099	1.2266
			Naphthalene (2nd internal standard)	1.098	1.08277	1.08277	1.37604	1.3870
			Fluorene (3rd internal standard)	1.317	1.32965	1.32965	0.93011	0.96097
			~~Pentachlorophenol~~ (4th internal standard)	1.235	1.23591	1.23591	0.03282	0.07407
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.336	1.33341	1.33341	0.58902	0.55912
			Benzo(a)pyrene (6th internal standard)	1.387	1.36730	1.36730	1.41157	1.4203
2			~~Phenol (1st internal standard)~~	1.016	1.03492	1.03492	1.91529	1.8625
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
	CC0328	3/28/06	~~Benzo(a)pyrene~~ (6th internal standard)	0.628	0.62427	0.62427	0.69387	0.69445
3			Phenol (1st internal standard)	2.543	2.52331	2.52331	6.72438	6.72282
			Naphthalene (2nd internal standard)	1.120	1.06830	1.06830	4.57950	4.61614
			Fluorene (3rd internal standard)	1.40	1.34943	1.34943	3.64937	3.61231
			~~Pentachlorophenol~~ (4th internal standard)	1.315	1.22379	1.22379	6.94590	6.93596
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard)	1.425	1.26197	1.26197	11.48269	11.44084
			Benzo(a)pyrene (6th internal standard)	1.318	1.22419	1.22419	7.12499	7.11758

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 #: 14894C29
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 4
2nd reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

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: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	25	12.06789	48.2	48.3	0.1
2-Fluorobiphenyl	↓	13.78539	55.2	55.1	↓
Terphenyl-d14	↓	11.28375	45.1	45.1	0
Phenol-d5	37.5	19.55025	52.2	52.1	0.1
2-Fluorophenol	↓	16.08111	42.9	42.9	0
2,4,6-Tribromophenol	↓	18.7902	50.1	50.1	0
2-Chlorophenol-d4	↓	19.76334	52.7	52.7	0
1,2-Dichlorobenzene-d4	25	11.70627	46.8	46.8	0

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 48944C29
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 4/5

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	----	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	*T44	T44	46	469	449	43.4	43.4	40.T	40.T	4.4	4.4
2-Chlorophenol	V		ND	370	358	49.T	49.T	48.1	48.1	3.3	3.3
1,4-Dichlorobenzene											
N-Nitroso-di-n-propylamine											
1,2,4-Trichlorobenzene											
4-Chloro-3-methylphenol	T44	T44	ND	402	381	54.0	54.0	51.2	51.2	5.4	5.4
Acenaphthene	496	496	↓	248	238	50.0	50.0	48.0	48.0	4.1	4.1
4-Nitrophenol	T44	T44		324	313	43.5	43.5	42.1	42.1	3.5	3.5
2,4-Dinitrotoluene	496	496		277	261	55.8	55.8	52.6	52.6	5.9	5.9
Pentachlorophenol											
Pyrene	496	496	360	862	5T2	40.T	40.T	42.T	42.T	1.8	1.8

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

LDC #: 14894c29
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

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

LCS/LCSD samples: LCS-031406

Compound	Spike Added (µg/L)		Spike Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol	500	NA	308	NA	61.6	61.6				
2-Chlorophenol	↓		314		62.8	62.8				
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol	500		336		67.2	67.2				
Acenaphthene	↓		317		63.4	63.4				
4-Nitrophenol			268		53.6	53.6				
2,4-Dinitrotoluene	↓		370		74.0	74.0				
Pentachlorophenol										
Pyrene	500		558		112	112				

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

LDC #: 48947c9
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

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)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1 , A :

Conc. = $\frac{(88192)(20)(1000)(3)(\quad)}{(19434)(2.539)(50.2)(\quad)(\quad)}$

= 213.19 MS/KG

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

LDC #: 14894D2a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/29/06

SDG #: JC95 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: 9

2nd Reviewer: K

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

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: 2/21 - 24/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC4T-3-4 (JC32)
VIII.	Laboratory control samples	SW	LCS. SRM.
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	N	

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

All Sed's

1	LDW-SC41-0-1	11	LDW-SC19-1-2	21	MB-030706	31	
2	LDW-SC41-1-2	12	LDW-SC19-2-4	22		32	
3	LDW-SC41-2-4	13		23		33	
4	LDW-SC44-0-2	14		24		34	
5	LDW-SC44-2-3.2	15		25		35	
6	LDW-SC44-3.2-4	16		26		36	
7	LDW-SC29-0-1	17		27		37	
8	LDW-SC29-1-2	18		28		38	
9	LDW-SC29-2-3.6	19		29		39	
10	LDW-SC19-0-1	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48947D29
SDG #: VC95

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Did the laboratory conduct an acceptable 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
	3/24/06	ICAL	HH	56.5		MW+Blk	J/UJ/A

INICAL.2S

LDC #: A891D29
SDG #: VC95

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/25/06	CC03259	PP	27.09091		BK	V/UV/A
	3/27/06	CC0327	PP	41.36213		M + NB	V/UV/A
			22	33.73540			V

CONCAL.2S

LDC #: 46944D29
SDG #: 1695

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y (N) N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		2	NBZ	35.3 (40-130)	J/UJ/P
			TPH	35.2 ( )	
			DCB	34.9 ( )	
			PHL	37.9 ( )	
			2FP	32.0 ( )	
			TBP	39.5 ( )	
			2CP	38.1 ( )	
				( )	
		4	TPH	39.8 ( )	No qual
				( )	
		5	TPH	39.8 ( )	
			2FP	38.5 ( )	
				( )	
		6	2FP	37.1 ( )	
				( )	
		10	2FP	39.7 ( )	
				( )	
		11 (3X)	NBZ	37.0 ( )	
			TPH	32.9 ( )	
			DCB	37.2 ( )	
			PHL	37.2 ( )	
			2FP	33.3 ( )	
			TBP	36.2 ( )	
			2CP	39.2 ( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14894D29
SDG #: 1095

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030T06	T	0 (40-130)	( )	( )	All + Blk	J / R / P
			FF	0 ( )	( )	( )		↓
			OO	19.2 ( )	( )	( )		J / UJ / P
			BBB	0 ( )	( )	( )		J / R / P
			KKK	132 ( )	( )	( )		J dets / P
			NNN	3.0 ( )	( )	( )		J / UJ / P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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GC/MS Semivolatiles (SIM)
Worksheets

LDC #: 14827A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JA36/JA64/JA90/JB00 Level ~~III~~ IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/6 - 9/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD . r^2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation/CRQLs	SW	Not reviewed for Level III validation.
XIII.	Tentitatively identified compounds (TICs)	N	Not reviewed for Level III validation.
XIV.	System performance	A	Not reviewed for Level III validation.
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	RB = LDW-SC-RB1

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 ** Indicates sample underwent Level IV validation

MS Soil

1	LDW-SC55-0-1**	11	LDW-SC52-0-1DL**	21	~~MB-021006~~	31	
2	LDW-SC55-1-2**	12	LDW-SC52-1-2**	22	MB-021506	32	
3	LDW-SC55-2-3**	13	LDW-SC52-2-4**	23		33	
4	LDW-SC49-0-1**	14	LDW-SC42-0-1**	24		34	
5	LDW-SC49-1-2**	15	LDW-SC42-1-2**	25		35	
6	LDW-SC49-2-4**	16	LDW-SC42-2-4**	26		36	
7	LDW-SC53-0-2**	17	LDW-SC3-0-2**	27		37	
8	LDW-SC53-2-4 **	18	LDW-SC3-2-4**	28		38	
~~9~~	~~LDW-SC-RB1~~	19	LDW-SC42-2-4MS	29		39	
10	LDW-SC52-0-1 **	20	LDW-SC42-2-4MSD	30		40	

LDC #: 14827A2b
SDG #: See Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: A
2nd Reviewer: A

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 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 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?	✓		✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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 #: 48TA2b
SDG #: 22Curie

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction 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 from 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.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniiine
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48TA2b
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	2/17/06	CC0217	PPP	55.17499		1-5. ~~BLK~~	J/UJ/P
			TT **	43.48128			
		** ccc cpd.					

LDC #: 48TA2b
SDG #: See cmen

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/16/06 **Blank analysis date:** 3/17/06
Conc. units: ug/Kg 1ST Associated Samples: M

Compound	Blank ID	Sample Identification								
MB 021006	021006	5	6	7	8	10	11	12	14	15
AAA	6.0	24/U	28/U	38/U	(95)	(600)	(610)	12/U	20/U	36/U
QQ	6.0									

Blank extraction date: Same **Blank analysis date:**
Conc. units: Same Associated Samples: M

Compound	Blank ID	Sample Identification								
MB 021006	021006	16								
AAA	6.0	22/U								
QQ	6.0									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 140-1010

SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1

Reviewer: A

2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		10 (3x)	TBP	158 (40-130)	No Qual
				( )	
		11 (15x)	TBP	151 ( )	
				( )	
		12 (3x)	DCB	37.7 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48-TA-b
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		19/20	TT	( )	( )	59.1 (≤ 50)	16	Y/MV/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14857A7b
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		10	AAA > calib range	10	~~dets~~ N/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 48B2/A2B
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 0

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		10	AAA. χ_R	10	R/A
					✓
		11	M except AAA. χ_R	11	

Comments: _____

LDC #: 14873A26
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (2.5 std)	Recalculated RRF (2.5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/15/06	~~Phenol~~ (1st internal standard) E	1.183	1.183	1.192	1.192	13.8	13.8
			~~Naphthalene~~ (2nd internal standard) U	0.151	0.151	0.146	0.146	12.1	12.0
			Fluorene (3rd internal standard)						
			~~Pentachlorophenol~~ (4th internal standard) SS	0.220	0.220	0.228	0.228	12.5	12.5
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) AAA	0.495	0.495	0.444	0.448	14.4	14.4
			Benzo(a)pyrene (6th internal standard)						
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th 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 #: 14857A2b
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC022	2/21/06	~~Phenol~~ (1st internal standard) E	1.192	1.09992	1.09992	T.T2529	T.T2S
			~~Naphthalene~~ (2nd internal standard) U	0.146	0.11883	0.11883	18.T686	18.606
			Fluorene (3rd internal standard)					
			~~Pentachlorophenol~~ (4th internal standard) SS	0.228	0.21094	0.21094	T.615T9	T.648
			~~Bis(2-ethylhexyl)phthalate~~ AAA (5th internal standard)	0.444	0.53921	0.53921	21.54533	21444
			Benzo(a)pyrene (6th internal standard)					
2	CC024	2/24/06	~~Phenol~~ (1st internal standard) E	1.192	1.21389	1.2389	1.83609	1.83T
			~~Naphthalene~~ (2nd internal standard) U	0.146	0.13623	0.13623	6.8TT12	6.691
			Fluorene (3rd internal standard)					
			~~Pentachlorophenol~~ (4th internal standard) SS	0.228	0.21329	0.21329	6.58640	6.453
			~~Bis(2-ethylhexyl)phthalate~~ AAA (5th internal standard)	0.448	0.50916	0.50916	14.TT269	14.6TT
			Benzo(a)pyrene (6th internal standard)					
3	CC017	2/17/06	~~Phenol~~ (1st internal standard) E	1.192	1.15982	1.15982	2.69989	2.699
			~~Naphthalene~~ (2nd internal standard) U	0.146	0.118T1	0.118T1	18.85304	18.691
			Fluorene (3rd internal standard)					
			~~Pentachlorophenol~~ (4th internal standard) SS	0.228	0.21827	0.21827	4.40166	4.266
			~~Bis(2-ethylhexyl)phthalate~~ AAA (5th internal standard)	0.444	0.43589	0.43589	1.TT439	1.82T
			Benzo(a)pyrene (6th 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 #: 14827A2b
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

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

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

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
Nitrobenzene-d5	8.333	4.49568	54.0	54.0	0
2-Fluorobiphenyl	↓	4.60190	55.2	55.2	↓
Terphenyl-d14	↓	4.13470	49.6	49.6	↓
Phenol-d5	12.5	7.63538	61.1	61.1	↓
2-Fluorophenol	↓	7.29186	58.3	58.3	↓
2,4,6-Tribromophenol	↓	8.76292	70.1	70.1	↓
2-Chlorophenol-d4	↓	7.54010	60.3	60.3	↓
1,2-Dichlorobenzene-d4	8.333	4.52839	54.4	54.4	↓

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 48074b
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 19/20

Compound	Spike Added (µg/kg)		Sample Concentration (µg/kg)	Spiked Sample Concentration (µg/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	----	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol											
2-Chlorophenol											
1,4-Dichlorobenzene	490	494	ND	261	314	53.3	53.3	63.6	63.6	18.4	18.4
N-Nitroso-di-n-propylamine	↓	↓	↓	299	364	61.0	61.0	73.7	73.7	19.6	19.6
1,2,4-Trichlorobenzene	↓	↓	↓	285	320	58.2	58.2	64.8	64.8	11.6	11.6
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol	735	741	ND	329	605	44.8	44.8	81.6	81.6	59.1	59.1
Pyrene											

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

LDC #: 48778-b
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: AC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

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

LCS/LCSD samples: LCS-022006

Compound	Spike Added (ug/kg)		Spike Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol										
2-Chlorophenol										
1,4-Dichlorobenzene	500		331		66.2	66.2				
N-Nitroso-di-n-propylamine	↓		392		78.4	78.4				
1,2,4-Trichlorobenzene			422		84.4	84.4				
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol	500		393		78.6	78.6				
Pyrene										

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

LDC #: 48TA6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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?

$$\text{Concentration} = \frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$$

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)

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

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

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

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 4, AAA:

$$\text{Conc.} = \frac{(2T346)(2)(1000)(3)(\quad)}{(641156)(0.444)(25.3)(\quad)(\quad)}$$

$$= 22.T8\ \mu g/Kg$$

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

LDC #: 14827B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/19/06
SDG #: JB30 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/13/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
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	SW A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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
All soils

1	LDW-SC13-0-2 /RE	11	MB-022206	21		31	
2	LDW-SC13-2-4 /RE	12	MB-021806	22		32	
3	LDW-SC9-0-1 /RE	13		23		33	
4	LDW-SC9-1-2.6 /RE	14		24		34	
5	LDW-SC9-2.6-4 /RE	15		25		35	
6	LDW-SC9-0-1MS	16		26		36	
7	LDW-SC9-0-1MSD	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 1482TB2b
SDG #: JB330

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/23/06	CC0323	QQQ	26.50282		all + Blk	J/UJ/A
			PPP	73.23721			
			R	57.88957			↓
			O	88.64881			

CONCAL2S

LDC #: 14071D4V
SDG #: J3330

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		3	FBP	36.6 (40-130)	No qual (3x)
			TBP	38.5 ( )	↓
			TPH	38.0 ( )	↓
				( )	
		4	FBP	29.6 ( )	No qual
			TBP	31.6 ( )	↓
			TPH	24.5 ( )	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48273B2b
SDG #: 1B30

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: 9
2nd Reviewer: AC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		6/7	R	145 (40-130)	163 (40-130)	( )	3	~~Det~~ No Qual (3x)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14837B2b
SDG #: VB30

VALIDATION FINDINGS WORKSHEET

Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022206	R	166 (40-130)	( )	( )	All + Blk	J dets/P
			PPP	137 (↓)	( )	( )		↓
			O	2.2 (↓)	( )	( )		J/R/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14847B26
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: A
2nd Reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		All	D		R/A

Comments: _____

LDC #: 14827C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JB31 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: Q
2nd Reviewer: A

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 9/11-13/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	70 RSD. r 2
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
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	N	

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
MS soils

1	LDW-SC32-0-1	11	LDW-SC11-3.4-4.1MS	21	MB-022406	31	
2	LDW-SC32-1-2	12	LDW-SC11-3.4-4.1MSD	22		32	
3	LDW-SC32-2-4	13		23		33	
4	LDW-SC14-0-1.4	14		24		34	
5	LDW-SC14-1.4-2	15		25		35	
6	LDW-SC14-2-4.1	16		26		36	
7	LDW-SC11-0-0.8	17		27		37	
8	LDW-SC11-0.8-2	18		28		38	
9	LDW-SC11-2-3.4	19		29		39	
10	LDW-SC11-3.4-4.1	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniiine
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48736

SDG #: 1B31

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/8/06	CC0308	O	38.83397		1-9. BK	J/UJ/BK

CONCAL2S

LDC #: 48071eb
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		11/12 (3x)	R	133 (40-130)	( )	( )	10	~~Idets/A~~
				( )	( )	( )		No anal
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14827C2b
SDG #: 1B31

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022406	O	33.6 (40-139)	( )	( )	All + Bk	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14827D2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/30/06
SDG #: JB47/JB64/JB80/JB90 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/7-15/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
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	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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
11 soils

1	LDW-SC30-0-2.5	11	LDW-SC35-2-4DL	21	LDW-SC1-2-4	31	MB-022106
2	LDW-SC30-2.5-4	12	LDW-SC20-0-2	22	LDW-SC1-2-4DL	32	
3	LDW-SC21-0-1	13	LDW-SC20-2-4	23	LDW-SC21-2-4MS	33	
4	LDW-SC21-0-1DL	14	LDW-SC20-2-4DL	24	LDW-SC21-2-4MSD	34	
5	LDW-SC21-1-2	15	LDW-SC56-0-2	25		35	
6	LDW-SC21-1-2DL	16	LDW-SC56-2-4	26		36	
7	LDW-SC21-2-4	17	LDW-SC48-0-1	27		37	
8	LDW-SC21-2-4DL	18	LDW-SC48-1-2	28		38	
9	LDW-SC35-0-2	19	LDW-SC48-2-4	29		39	
10	LDW-SC35-2-4	20	LDW-SC1-0-2	30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14857D2b
SDG #: ~~1B47~~ ~~1B64~~ ~~1B80~~ 1B90
METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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 of sample analysis 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
	3/8/06	CC0308	O	38.83397		4.6.8.11.14. 22-24	J/UJ/A

LDC #: 14891 D2V

SDG #: JB47/JB64/JB80/JB90

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (LImits)		Qualifications
		7	TBP	134	(40-130)	No Qual (DF>3x)
					( )	
		10	TBP	134	( )	
					( )	
		12	TPH	36.1	( )	
					( )	
		13	TBP	134	( )	
					( )	
		14	DCB	35.3	( )	
					( )	
		18	2FP	33.0	( )	
			2CP	39.8	( )	
					( )	
		20	TPH	34.9	( )	
					( )	
		21	TBP	142	( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48T026
SDG #: JB47/JB64/JB80/JB90

VALIDATION FINDINGS WORKSHEET
Internal Standards

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		13	ANT	187438 (231696-926182)		~~All A~~ No Cmpd
		3	~~ANT~~	215169 ( )		
		5	ANT	218279 ( )		
		7	ANT	222441 ( )		
		10	ANT	202717 ( )		
		21	ANT	188538 ( )		(No cpd assid to this IS)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 48291 (PDV)
SDG #: JB64/JB80/JB90

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		4.	All	4	R/A
		5, 7, 10, 13, 21	AAA	5.7.10.13.21	
		6, 8, 11, 14, 22	all except AAA	6.8.11.14.22	✓

Comments: _____

OVR.2S

LDC #: 14827E2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JB91 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: N

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 3/17/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	70RSD. r2
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
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	N	

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-SC23-0-2 Sed	11	MB-022406	21		31	
2	LDW-SC23-2-4 V	12		22		32	
3		13		23		33	
4		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	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14827E2b
SDG #: VB91

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/8/06	CC0308	O	38.83397		B+	J/UJ/A

CONCAL.2S

LDC #: 48276b
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		LDW-SC11-3.4-4.1 R		133 (40-130)	( )	( )	None	No final
		(JB31)		( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14872b
SDG #: 1B91

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022406	O	33.6 (40-130)	( )	( )	All + Blk	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 48376b
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Internal Standards

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		2	PRY	425879 (484628 - 193852)		No Cmpd assoc to this IS)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 14827F2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JB82 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: a
2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/16/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	70 RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
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	SW	D=1+4. 2+5. 3+6
XVII.	Field blanks	N	

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
All soils

1	LDW-SC36-0-1	11	LDW-SC12-2-4	21	MB-022806	31	
2	LDW-SC36-1-2	12	LDW-SC202-0-1MS	22		32	
3	LDW-SC36-2-4	13	LDW-SC202-0-1MSD	23		33	
4	LDW-SC202-0-1	14		24		34	
5	LDW-SC202-1-2	15		25		35	
6	LDW-SC202-2-4	16		26		36	
7	LDW-SC39-0-1	17		27		37	
8	LDW-SC39-1-2	18		28		38	
9	LDW-SC39-2-4	19		29		39	
10	LDW-SC12-0-2	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48TF2b
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/27/06	CC0327	QQQ	26.34815		1-5	J/UJ/A
			PPP	65.01052			
			R	55.96413			
			000	26.23907			
	3/28/06	CC0328	PPP	55.15318		6-13, Bk	J/UJ/A
			R	28.07924			

CONCAL.2S

LDC #: 1483T52b
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/28/06 **Blank analysis date:** 3/28/06
Conc. units: ug/Kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB	022806	1	2	3	4	5	7	8	10	
PPP	38	170/U	180/U	120/U	150/U	170/U	170/U	140/U	120/U	

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 40215

SDG #: JB7

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		MB-022806	NBZ	252 (40-130)	No Qual.
				( )	
		2 (3X)	FBP	32.4 ( )	
			TBP	31.5 ( )	
				( )	
		3 (3X)	FBP	37.9 ( )	
			TBP	37.4 ( )	
				( )	
		4 (3X)	FBP	37.9 ( )	
			TBP	36.8 ( )	
			NBZ	178 ( )	
				( )	
		5 (3X)	FBP	36.0 ( )	
			TBP	34.4 ( )	
				( )	
		7 (3X)	NBZ	260 ( )	
				( )	
		8 (3X)	NBZ	236 ( )	
				( )	
		10 (3X)	NBZ	227 ( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48272F2b
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		12/13 (58)	R	183 (40-130)	177 (40-130)	( )	4	No Qual (DC)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14827F2b
SDG #: VB82

VALIDATION FINDINGS WORKSHEET

Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022806	R	173 (40-130)	( )	( )	All + Bk	J dets /P
			PPP	146 (↓)	( )	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 48573b
SDG #: 1382

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds identified in the field duplicate pairs?

Compound	Concentration (ug/kg)		RPD (≤ 50)
	1	4	
PPP	170	150	12
AAA	12 U	9.5	~~200~~ NC

Compound	Concentration (ug/kg)		RPD (≤ 50)
	2	5	
PPP	180	170	6

Compound	Concentration (ug/kg)		RPD (≤ 50)
	3	6	
PPP	120	120 U	NC ~~200~~
AAA	5.8	12 U	↓ ↓

Compound	Concentration ( )		RPD

LDC #: 14847A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB01/JB22 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: 8

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/9 - 11/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	SN	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	SN	~~DEFO~~ D=6+9.7+9.8+10.
XVII.	Field blanks	N	

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 1	LDW-SC4-0-1 /RE	11 2	LDW-SC201-1.5-4MS	21 1	MB-022106	31	
2 1	LDW-SC4-1-2 /RE	12 2	LDW-SC201-1.5-4MSD	22	MB-051806	32	
3 1	LDW-SC4-2-4 /RE	13		23	MB-051906	33	
4 1	LDW-SC2-0-2 /RE	14		24		34	
5 2	LDW-SC2-2-4	15		25		35	
6 2	LDW-SC33-0-2 /RE	16		26		36	
7 3	LDW-SC33-0-2DL	17		27		37	
8 2	LDW-SC33-2-4 /RE	18		28		38	
9 2	LDW-SC201-0-1.5 /RE	19		29		39	
10 2	LDW-SC201-1.5-4 /RE	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48TA2b
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 4
2nd Reviewer: a

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/23/06	CC0323	QQQ	26.50282		5-6, 8-12	J/UJ/A
			O	88.64881			
			PPP	73.23721			
			R	57.88957			
	3/24/06	CC0324	O	50.2		3	J/UJ/A
			R	74.1			
			PPP	68.5			

CONCAL.2S

LDC #: 48471A2b
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
(Y) N N/A Was a method blank analyzed for each concentration preparation level?
(Y) N N/A Was a method blank associated with every sample?
(Y) N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/21/06 **Blank analysis date:** 3/22/06
Conc. units: ug/kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB	022106	1	2	3	4	5	6	7 (10)	8	9
PPP	76	(400)	(400)	280/U	290/U	(420)	230/U	310/U	170/U	170/U

Blank extraction date: 5am **Blank analysis date:** _____
Conc. units: _____ Associated Samples: All

Compound	Blank ID	Sample Identification								
MB	022106	10								
PPP	76	160/U								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 14841A2V
SDG #: J1301/J1322

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		4	TPH	36.6 (40-130)	No Qual (DF=3x)
				( )	
		5	NB2	136 ( )	
				( )	
		6	FBP	33.6 ( )	
			TBP	25.9 ( )	
				( )	
		7	TBP	33.3 ( )	
				( )	
		8	TPH	36.2 ( )	
			FBP	36.2 ( )	
				( )	
		9	TPH	37.7 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48472b
SDG #: JBOK3

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: CK
2nd Reviewer: MC

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		11/12	R	( )	139 (40-130)	( )	10	No qual (3x)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14847A-6
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022106	PPP	220 (40-130)	( )	( )	All + Blk	J dets/P
			O	7.4 (↓)	( )	( )		J/UJR/P
				( )	( )	( )		
				( )	( )	( )		
		LCS-051906	O	25.5 (↓)	( )	( )	All RE's	JUJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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LDC #: 484TA2b
SDG #: JB01413 22

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: CT
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		6	TT > calib range		~~data~~ N/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14847A26
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: CV
2nd Reviewer: LR

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		6	TT. PPP R	6	R/A
					↓
		7	MI except above	7	↓
					↓
		All except 5	0		↓

Comments: _____

OVR.2S

LDC #: 48478b
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd reviewer: N

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds identified in the field duplicate pairs?

Compound	Concentration (ug/kg)		RPD (≤50)
	6	9	
R	6.5	6.0	8
PPP	230	170	30
~~AAA~~	11	29	~~90~~
TT	820	304	NC ~~200~~

Compound	Concentration (ug/kg)		RPD (≤50)
	T	9	
PPP	310	170	58
TT	790	304	NC ~~200~~
R	204	6.0	
~~AAA~~	204	29	

Compound	Concentration (ug/kg)		RPD (≤50)
	8	10	
PPP	170	160	6

Compound	Concentration ( )		RPD

LDC #: 14847B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/4/06
SDG #: JB20 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: a
2nd Reviewer: n

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/10/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	70 RSD. Y 2
IV.	Continuing calibration	A/W	
V.	Blanks	A	
VI.	Surrogate spikes	A/W	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A/W	LCS. SRM.
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A/W	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	~~RPC standards~~
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW/A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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
All Soils

1 1	LDW-SC6-0-2 /RE	11 3	LDW-SC10-2-4 /RE	21 3	MB-022206	31	
2 1	LDW-SC6-2-4.5	12 1	LDW-SC6-2-4.5MS	22	MB-051806	32	
3 2	LDW-SC8-0-1	13 1	LDW-SC6-2-4.5MSD	23	MB-051906	33	
4 2	LDW-SC8-1-2	14		24		34	
5 3	LDW-SC8-2-4	15		25		35	
6 3	LDW-SC7-0-1	16		26		36	
7 3	LDW-SC7-1-1.7	17		27		37	
8 2	LDW-SC7-1.7-4	18		28		38	
9 3	LDW-SC10-0-1	19		29		39	
10 3	LDW-SC10-1-2	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: ~~43473b~~

SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/21/06	CC0321	QQQ	28.52349		3,4,8	J/UJ/A
			G	27.64089			
			PPP	32.22979			
			AAA	30.42071			
			QQQ	34.56052			
	3/22/06	CC0322	↓	63.05188		5-7.9-11.	J/UJ/P
			O	31.04829		BK	
			PPP	53.16914			
			R	40.23781			
			TT **	20.52645 (≤20)		w qual ~~No Qual~~ ~~None~~ /R	
			** CCC				

CONCAL.2S

LDC #: K9911B4V

SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		4	FBP	33.0 (40-30)	No Qual (OF 23x)
				( )	
		5	NBZ	146 ( )	
				( )	
		6	NBZ	138 ( )	
				( )	
		7	NBZ	150 ( )	
				( )	
		8	TBP	38.2 ( )	
				( )	
		9	NBZ	141 ( )	
				( )	
		10	FBP	30.4 ( )	
				( )	
		11	FBP	31.6 (V)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14847B2b
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022206	O	1.2 (40-130)	( )	( )	All + Blk	J/R/P
				( )	( )	( )		
				( )	( )	( )		
		LCS-051906	O	25.5 (↓)	( )	( )	8-11 (RE's)	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 48473b
SDG #: JB320

Reviewer: dh
2nd Reviewer: A

VALIDATION FINDINGS WORKSHEET
Internal Standards

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1	PRY	45551 (48628-193851 2)		No qual
		2	PRY	451362 ( )		
		3	PRY	45918 ( )		
						No qual assd to the IS

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 14847B25
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		All	D		R/A

Comments: _____

LDC #: 14847C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/27/08
SDG #: JB96 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 4/18/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. 12
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
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	SW	
XVI.	Field duplicates	SW	D=1+4.1+5,2+6.2+7.3+8.3+9
XVII.	Field blanks	N	

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 1	LDW-SC34-0-1	11 2	LDW-SC25-1-2	21	MB-030406	31	
2 1	LDW-SC34-1-2	12 1	LDW-SC25-2-4	22		32	
3 1	LDW-SC34-2-4	13 1	LDW-SC25-2-4MS	23		33	
4 1	LDW-SC203-0-1	14 1	LDW-SC25-2-4MSD	24		34	
5 2	LDW-SC203-0-1DL	15		25		35	
6 1	LDW-SC203-1-2	16		26		36	
7 2	~~LDW-SC203-1-2DL~~	17		27		37	
8 1	LDW-SC203-2-4	18		28		38	
9 2	LDW-SC203-2-4DL	19		29		39	
10 2	LDW-SC25-0-1	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 1484T (2nd)
SDG #: 1B96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/8/06	CC0328	R	34.64259		1-4.6.8.12-14 BK	J/UJ/A
	3/9/06	CC0329	R	30.34775		5.7.9-11	J/UJ/P
			↓	68.48982			↓
			O	26.00940			
			PPP	28.74877			
			R	72.87242			
			TT**	21.86484			None/P qual

CONCAL.2S

LDC #: 484TC>b
SDG #: 1B96

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/4/06 **Blank analysis date:** 3/28/06
Conc. units: ug/kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB-030406		1	2	3	4	6	8	9 (10x)	10	12
PPP	32	160/U	140/U	110/U	(430)	140/U	(570)	430/U	75/U	77/U

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 14841C24
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)		Qualifications
		1	TBP	150	(40-130)	No Qual (DF=3X)
			NBZ	31.0	( )	
					( )	
		2	NBZ	32.0	( )	
					( )	
		3	TPH	39.7	( )	
					( )	
		5	TBP	189	( )	
			FBP	186	( )	
					( )	
		7	FBP	145	( )	
			TBP	148	( )	
					( )	
		9	FBP	150	( )	
			TBP	~~133~~ 153	( )	
			TPH	35.6	( )	
					( )	
		10	TBP	140	( )	
			NBZ	35.6	( )	
			TPH	27.8	( )	
					( )	
		11	TBP	140	( )	
			NBZ	31.7	( )	
			TPH	22.1	(✓)	✓

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 41071C

SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Reviewer: 9

2nd Reviewer: 2

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y ~~N~~ N/A Were percent recoveries (%R) for surrogates within QC limits?

Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?

Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		12	TBP	42 (40-130)	No qual (OF23X)
			NB2	32.0 (V)	V
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP) = 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 1484TC2b
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: 9
2nd Reviewer: 0

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		13/14	TT	36.6 (40-130)	( )	( )	12	J/UJ/D
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14847C2b
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030406	G	154 (40-130)	( )	( )	All + Bk	J dets/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 48471c2b
SDG #: 13896

VALIDATION FINDINGS WORKSHEET
Internal Standards

page: 1 of 1
Reviewer: QL
2nd Reviewer: dc

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		4	ANT	TT2622 (158446-63378 6)		No qual *
		*6	ANT	T21382 ( )		
		8	ANT	86958T ( )		
					* No cpd assid to this IS	

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 14847c2b
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		5,7,9	M	3,7,9	R/UB

Comments: _____

OVR.2S

LDC #: 48471c2b
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 6 of /
Reviewer: Q
2nd reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds identified in the field duplicate pairs?

Compound	Concentration (ug/kg) 1	4	RPD (≤ 50)
E	4.0	5.6	33
PPP	160	420	90
AAA	440	380	15
G	6.7	20	100
QQQ	34	66	64
TT	T6	4T4	200

Compound	Concentration ( ) 1	5	RPD (≤ 50)
E	4.0	31 U	200
PPP	160	310 U	↓
AAA	440	320	32
G	6.7	31 U	200
QQQ	34	160 U	↓
TT	T6	↓	↓

Compound	Concentration (ug/kg) 2	6	RPD (≤ 50)
E	7.0	6.5	7
PPP	140	140	0
AAA	400	400	0
G	9.3	11 U	200
QQQ	210	41 U	↓
F	4.6	11 U	↓

Compound	Concentration (ug/kg) 2	7	RPD (≤ 50)
E	7.0	36 U	200
PPP	140	360 U	↓
AAA	400	310	25
G	9.3	36 U	200
QQQ	210	180 U	↓
F	4.6	36 U	↓

LDC #: 48476b
SDG #: JB946

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: CF
2nd reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds identified in the field duplicate pairs?

Compound	Concentration (µg/kg)		RPD (≤ 50)
	3	8	
PPP	110	570	135
AAA	44	140	104
RRR	80	354	200

Compound	Concentration (µg/kg)		RPD (≤ 50)
	3	9	
PPP	110	430	119
AAA	44	110	86
RRR	20	~~354~~ 1204	200

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

LDC #: 14865A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/27/06
SDG #: JB46/JC05 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: 9

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/10-14/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD, r^2
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS, SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	~~GPC~~ cleanup.
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	~~A~~ND	RB = LDW-SC-RB2

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
All soils

1 1	LDW-SC22-0-1.1 /RE	11	~~LDW-SC-RB2~~	21 1	MB-022406	31	
2 2	LDW-SC22-0-1.1DL	12 1	LDW-SC27-0-2 /RE	22	MB-051906	32	
3 1	LDW-SC22-1.1-2 /RE	13 2	LDW-SC27-0-2DL	23		33	
4 2	LDW-SC22-1.1-2DL	14 1	LDW-SC27-2-4.5 /RE	24		34	
5 1	LDW-SC22-2-4 /RE	15 3	LDW-SC27-2-4.5DL	25		35	
6 2	LDW-SC22-2-4DL	16 3	LDW-SC5-0-1 /RE	26		36	
7 1	LDW-SC16-0-2 /RE	17 4	LDW-SC5-1-2.2	27		37	
8 2	LDW-SC16-0-2DL	18 3	LDW-SC5-2.2-4	28		38	
9 1	LDW-SC16-2-4 /RE	19 3	LDW-SC5-2.2-4MS	29		39	
10 2	LDW-SC16-2-4DL	20 3	LDW-SC5-2.2-4MSD	30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniiine
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14865A-1b
SDG #: 1B46AC05

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 01

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/21/06	CC0321	QQQ	-28.53350		1.3.5.7.9.12.14	J/UJ/A
			G	37.64067		B4	
			PPP	32.22981			
			AAA	30.42067			
			OOO	34.56033			
	3/22/06	CC0322	J	63.05188		2.4.6.8.10.13.	J/UJ/P
			O	31.04829			
			PPP	53.16914			
			R	40.23781			
			TT **	20.52645 (≤20)		no qual None/A/P	
	3/27/06	CC0327	G	45.21235		11	J/UJ/A
			O	36.37108			
			R	32.61737			
			** CCC				

CONCAL.2S

LDC #: 14865A2b
SDG #: 1B446JC05

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/24/06 **Blank analysis date:** 3/21/06
Conc. units: ug/kg Associated Samples: All

Compound	Blank ID	Sample Identification								
MB	MB-022406	7	9	12	16	17				
PPP	41	63/U	86/U	79/U	82/U	150/U				

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 40057A4

SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: SK
2nd Reviewer: AL

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		2	NBZ	159 (40-130)	No qual (DF=2X)
				( )	
		4	NBZ	140 ( )	
				( )	
		6	NBZ	172 ( )	
				( )	
		7	~~NBZ~~ FBP	34.6 ( )	
				( )	
		8	FBP	34.0 ( )	
				( )	
		9	FBP	24.5 ( )	
				( )	
		10	FBP	36.0 ( )	
			NBZ	139 ( )	
				( )	
		12	FBP	24.7 ( )	
				( )	
		13	NBZ	156 ( )	
				( )	
		14	FBP	31.6 ( )	
				( )	
		17	NBZ	30.1 ( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14865A2b
SDG #: JB~~4~~6/JC05

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-022406	O	5.8 (40-130)	( )	( )	All + Bk	~~J/UR/P~~ J/UJ/P
			V	29.0 (↓)	( )	( )		
				( )	( )	( )		↓
				( )	( )	( )		
		LCS-051906	O	25.5 (↓)	( )	( )	~~16-18~~ All REs	↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		

LDC #: 14865A2b
SDG #: 1B16A COS

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: dr
2nd Reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1	ANT	515173 (128260 - 513040)		~~Idets~~ No Qual *
			CRY	1326678 (274093 - 1096312		Idets/A
		3	CRY	1336499 (	)	
		5	CRY	1234711 (	)	
		7	CRY	1456659 (	)	
		9	~~ANT~~	731278 (	)	No Qual
			CRY	1679183 (	)	Idets/A
		12	ANT	760977 (	)	No Qual
		~~F2~~	CRY	~~1027594~~ (	)	Idets/A
				1666156		
		14	~~ANT~~	628376 (	)	No Qual
			CRY	1358111 (	)	Idets/A

* Nacpd acid & IS.

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 14865A-b
SDG #: JB46/JC005

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		2.4.6.15	All	2.4.6.15	R/A
		7.9.13	~~AAA~~	7.9.13 K	
		8.10.13	~~All except AAA~~ K	8.10.13	
		~~16-18~~ All except 17	O		

Comments: _____

LDC #: 14865B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB98/JC10 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: a
2nd Reviewer: a

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/17-21/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
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	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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
All Sediments.

1	LDW-SC15-0-1	11	LDW-SC24-1-2	21	LDW-SC38-1-2	31	UB-030206
2	LDW-SC15-1-2	12	LDW-SC24-2-4	22	LDW-SC38-2-3	32	
3	LDW-SC15-2-4	13	LDW-SC45-0-1	23	LDW-SC38-3-3.3	33	
4	LDW-SC18-0-1	14	LDW-SC45-0-1DL	24	LDW-SC45-2-4MS	34	
5	LDW-SC18-1-2	15	LDW-SC45-1-2	25	LDW-SC45-2-4MSD	35	
6	LDW-SC18-2-4	16	LDW-SC45-1-2DL	26		36	
7	LDW-SC31-0-1	17	LDW-SC45-2-4	27		37	
8	LDW-SC31-1-2.8	18	LDW-SC45-2-4DL	28		38	
9	LDW-SC31-2.8-4	19	LDW-SC38-0-1	29		39	
10	LDW-SC24-0-1	20	LDW-SC38-0-1DL	30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14865B2b
SDG #: JB98AC10

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/20/06	CC0320	J	25.26880		11-13. 15. 17. 19	J/UJ/A
			R	T3.20858		21-25	

CONCAL2S

LDC #: 14065J54D
SDG #: JB98JC10

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		11	TBP	154 (40-130)	No Qual (<5D<3X)
				( )	
		12	~~TPH~~ TBP	134 ( )	
				( )	
		13	TBP	155 ( )	
				( )	
		~~14~~ 15	TBP	191 ( )	
				( )	
		~~33~~ 16	TPH	39.2 ( )	
				( )	
		~~15~~ 17	TBP	170 ( )	
			TPH	37.0 ( )	
				( )	
		~~24~~ 18	TPH	34.4 ( )	
				( )	
		~~16~~ 19	TBP	186 ( )	
				( )	
		~~17~~ 21	DCB	32.4 ( )	
			PHL	36.8 ( )	
			2CP	33.8 ( )	
			NB2	34.1 ( )	
			TPH	33.1 ( )	
				( )	
		~~18~~ 22 ~~19~~ 23	TPH TBP	39.0 167 ( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP) = 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14865B2b
SDG #: JB98X1C10

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		20/2	R	39.8 (40-130)	( )	( )	15	No Qual (3X)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14865B29
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: q
2nd Reviewer: r

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030206	R	132 (40-130)	( )	( )	All + Bk	J dets/P
			PPP	168 (↓)	( )	( )		↓
			O	138 (↓)	( )	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14865B=b
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: dh
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		FF24 (MS)	ANT	250819 (257008 - 1028030)		No Qual
		15	ANT	200178 ( )		~~J/UJ/A~~ No Qual *
		19	ANT	183276 ( )		
		17	NPT	750122 (805778 - 3220712)		J/UJ/A
			ANT	177347 (257008 - 1028030)		No Qual *
		13	CRY	535311 (133442 - 533770)		~~J/UJ~~/A

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

* No cpd assd to IS.

LDC #: 48653B10
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		~~15, 17~~ 16, 20, 18	All	16, 20, 18	R/A
		~~13~~	~~AAA~~	~~13~~	
		14	all except ~~AAA~~	14	✓

Comments: _____

OVR.2S

LDC #: 14876A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/24/06
SDG #: JC21 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/22/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	%RSD. r²
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
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	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	R LDW-SC-RB3

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
MS and MSD

1 1	LDW-SC51-0-2	11 1	LDW-SC26-2-4	21 1	MB-030706	31	
2 1	LDW-SC51-2-3.8	12 3	LDW-SC26-2-4DL	22		32	
3 1	LDW-SC37-0-1	13 2	LDW-SC37-1-2MS	23		33	
4 2	LDW-SC37-0-1DL	14 2	LDW-SC37-1-2MSD	24		34	
5 1	LDW-SC37-1-2	15		25		35	
6 1	LDW-SC37-2-4	16		26		36	
7 1	LDW-SC26-0-1	17		27		37	
8 2	LDW-SC26-0-1DL	18		28		38	
9 1	LDW-SC26-1-2	19		29		39	
10 3	LDW-SC26-1-2DL	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48768-D
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/24/06	CC0324	CF	48.55131		1-3.5-7.9.11	J/UJ/A
			↓	36.48049		BLK	↓
	3/27/06	CC0327	CF	45.21235		4.13-14	J/UJ/A
			O	36.37108			↓
			R	32.61737			
	3/28/06	CC0328	R	34.64259		8.10.12	J/UJ/A

CONCAL.2S

LDC #: 14876A2b
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N (N/A) If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		1	TBP	33.5 (40-130)	No qual (DF ≥ 3x)
		2	TPH	39.8 ( )	
		~~8~~ 7	TBP	132 ( )	
		~~9~~ 8	FBP	172 ( )	
			NBZ	36.4 ( )	
		~~10~~ 10	FBP	152 ( )	
			NBZ	38.4 ( )	
		~~12~~ 11	TPH	38.4 ( )	
		~~13~~ 12	FBP	142 ( )	
			NBZ	33.6 ( )	

* QC limits are advisory

	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP) = 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14876A2b
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030706	O	38.6 (40-130)	( )	( )	All + Bk	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		

LDC #: 48768-b
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Internal Standards

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		3	CRY	44618 (34995-139980)		Jdets / R(AA)
		7	ANT	28812 (42292-168990)		No Qual *
		9	ANT	32580 ( )		
		11	ANT	35232 ( )		
					* No Qual assd to this RS	

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: 14816A20
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		~~3,7,9,11~~	~~AAAn~~	~~3,7,9,11n~~	~~R/A~~
		4,8,10,12	~~all except AAAn~~	4,8,10,12	R/A

Comments: _____

LDC #: 14894A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/28/06
SDG #: JC32 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/23/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD . r²
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS, SRM
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	N	

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 sed's

1 1	LDW-SC43-0-2	11 2	MB-030706	21		31	
2 1	LDW-SC43-2-4	12		22		32	
3 1	LDW-SC54-0-2	13		23		33	
4 2	LDW-SC54-2-4	14		24		34	
5 2	LDW-SC47-0-1	15		25		35	
6 2	LDW-SC47-1-2	16		26		36	
7 2	LDW-SC47-2-3	17		27		37	
8 2	LDW-SC47-3-4	18		28		38	
9 2	LDW-SC47-3-4MS	19		29		39	
10 2	LDW-SC47-3-4MSD	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14944A2b
SDG #: JC32

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: 9
2nd Reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A Did the laboratory conduct an acceptable 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
	3/29/06	ICAL	~~[illegible]~~ PPP	32.4		4-10, BLK	J/UJ/A

LDC #: 14894A2b
SDG #: 1c32

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: 9
2nd Reviewer: a

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/28/06	CC0328	~~DPP~~ R	55.15318		1-3	J/UJ/R
				28.0T924			

CONCAL2S

LDC #: 14894A36
SDG #: JC32

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: SK
2nd Reviewer: R

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y (N) N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y (N) N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		1	NBZ	162 (40-130)	No qual
				( )	
		2	NBZ	196 ( )	
				( )	
		3	NBZ	160 ( )	
				( )	
		4	~~NBZ~~	( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14894A2b
SDG #: VC32

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030706	QQ	14.3 (40-130)	( )	( )	All + BK	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14894B2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/28/06
SDG #: JC42 Level III IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 4
2nd Reviewer: 1

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 3/24/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW	
V.	Blanks	SW	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS SRM.
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	SW	
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	SW	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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
MS sed 2

1 1	LDW-SC40-0-1.3	11 2	LDW-SC50-0-1DL	21 2	MB-030906	31	
2 1	LDW-SC40-1.3-2	12 1	LDW-SC50-1-2	22		32	
3 1	LDW-SC40-2-4	13 1	LDW-SC50-2-2.8	23		33	
4 1	LDW-SC17-0-1	14 1	LDW-SC50-2.8-4	24		34	
5 2	LDW-SC17-0-1DL	15 2	LDW-SC46-0-1	25		35	
6 1	LDW-SC17-1-2	16 2	LDW-SC46-1-2	26		36	
7 2	LDW-SC17-1-2DL	17 2	LDW-SC46-2-4	27		37	
8 1	LDW-SC17-2-4	18 1	LDW-SC40-2-4MS	28		38	
9 3	LDW-SC17-2-4DL	19 1	LDW-SC40-2-4MSD	29		39	
10 1	LDW-SC50-0-1	20		30		40	

LDC #: 14894B26
SDG #: YC42

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 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 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?		✓		
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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 #: 14894 B26
SDG #: JC42

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: 4

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction 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 from 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.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniiine
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14894B26
SDG #: VC42

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/24/06	CC0324	0	50.2		1-4.6.8.10.12-14	J/UJ/0
			R	74.1		18-19	
			PPP	68.5			
	3/27/06	CC0327	QQQ	26.34815		5.7.11.15-16	J/UJ/A
			PPP	65.01052		BK	
			R	55.96413			
			000	26.23907			
	3/28/06	CC0328	PPP	55.15318		9.17	J/UJ/A
			R	28.07924			

CONCAL.2S

LDC #: 14894B2b
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: Y
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 analyzed for each matrix?
(Y) N N/A Was a method blank analyzed for each concentration preparation level?
(Y) N N/A Was a method blank associated with every sample?
(Y) N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/9/06 **Blank analysis date:** 3/27/06
Conc. units: ug/Kg Associated Samples: MW

Compound	Blank ID	Sample Identification								
MB-030906	030906	1	2	3	4	5 (10X)	6	7 (10)	7 (10)	8
PPP	34	80/U	71/U	67/U	(320)	(580)	(320)	(380)	380/U	(3000)

Blank extraction date: 3/20/06 **Blank analysis date:** _____
Conc. units: ug/Kg Associated Samples: MW

Compound	Blank ID	Sample Identification								
MB-030906	030906	9 10	12	13	14	15	16	17		
PPP	34	(330)	130/U	100/U	64/U	(220)	(450)	(210)		

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above 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 #: 4894B2b
SDG #: [illegible]

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		~~FBP~~	~~37.2~~	( )	
		MB-030906	TBP	32.2 (40-130)	No Qual (0F32X)
				( )	
		1	TBP	33.9 ( )	
				( )	
		2	TBP	28.9 ( )	
				( )	
		3	FBP	35.5 ( )	
			2FP	31.8 ( )	
			TBP	15.1 ( )	
				( )	
		~~5~~ 5	FBP	35.6 ( )	
				( )	
		6	FBP	48.6 ( )	
			TBP	32.2 ( )	
				( )	
		7	FBP	32.0 ( )	
			TBP	26.9 ( )	
				( )	
		11	FBP	30.4 ( )	
			TBP	25.9 ( )	
				( )	
		15	FBP	29.8 ( )	
			TBP	28.3 ( )	

NB2 162

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 4894B26
SDG #: VC42

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Reviewer: 9
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		16	FBP	29.3 (40-130)	No Qual
			TBP	26.9 ( )	
			NBZ	170 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116
S3 (TPH) = Terphenyl-d14	18-137	33-141
S4 (PHL) = Phenol-d5	24-113	10-94
S5 (2FP)= 2-Fluorophenol	25-121	21-100
S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 48948b
SDG #: xc42

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 8
2nd Reviewer: 8

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		18/19 (3x)	R	166 (40-130)	165 (40-130)	( )	3	No Qual
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14894B3b
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030906	R	169 (40-130)	( )	( )	All + Bk	J dets / P
			PPP	220 (↓)	( )	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 14894B2b
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Internal Standards

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were all internal standard area counts within -50 to +100 of the associated calibration standard?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		4	ANT	535728 (50134-228534)		No Qual *
		8	NPT	1297565 (1298106-5192422)		J/UJ/A (R.U.PPP.O)
			ANT	445521 (50134-228534)		No Qual *
		10	NPT	1261499 (↓)		J/UJ/A (R.U.PPP.O)
			ANT	428152 (↓)		No Qual *
		6	PHN	8210650 (9081813632724)		J/UJ/A (SS.TT.QQ)

* QC limits are advisory

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

LDC #: [illegible]
SDG #: JC4F2

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		4	5, PPP, AAA, QQQ.	4	R/A
		5	All except above	5	
		6	FF, APPP QQQ	6	
		7	All except above	7	
		8, 9, 11	All	8, 9, 11	V

Comments: _____

OVR.2S

LDC #: ~~14844B2b~~
SDG #: 1042

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (2.5 std)	Recalculated RRF (2.5 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	3/22/06	~~Phenol~~ (1st internal standard) E	1.25	1.25	1.162		5.3	5.3
			~~Naphthalene~~ (2nd internal standard) F H	~~0.162~~ 0.96	0.106	0.088		15.0	15.0
			Fluorene (3rd internal standard)						
			~~Pentachlorophenol~~ (4th internal standard) SS	0.187	0.187	0.174		5.6	5.7
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) AAA	0.735	0.735		same		
			Benzo(a)pyrene (6th internal standard)						
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th 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 #: 14894B2b
SDG#: JC42

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270-SIM)

Parameter: Buthylbenzylphthalate

Order of regression: Linr

DATE	GCMS ID	COLUMN	(Y) AREA RATIO	(X) CONC RATIO	(X^2) CONC RATIO
03/22/2006	NT2	CAP	0.0169	0.05000	0.00250
			0.0922	0.25000	0.06250
			0.2409	0.50000	0.25000
			0.9191	1.25000	1.56250
			1.7567	2.50000	6.25000
			3.2959	5.00000	25.00000

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0788
R Squared		0.9962178
No. of Observations		6
Degrees of Freedom		5
X Coefficient (s)	0.6691	-0.1302
Std Err of Coef.	0.0137	0.0274
Correlation Coefficient (r) =		0.9981071
Coefficient of Determination (r^2) =		0.9962178

LDC #: 14894B26
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC0324	3/24/06	~~Phenol~~ (1st internal standard) E	1.162	0.950	0.9501	18.2	18.2
			~~Naphthalene~~ (2nd internal standard) U	0.088	0.082	0.0820	7.3	6.8
			Fluorene (3rd internal standard)					
			~~Pentachlorophenol~~ (4th internal standard) SS	0.174	0.144	0.144	17.2	17.0
			~~Bis(2-ethylhexyl)phthalate~~ AAA (5th internal standard)	2.5	2.139	2.139	14.4	14.4
			Benzo(a)pyrene (6th internal standard)					
2	CC032T	3/27/06	~~Phenol~~ (1st internal standard) E	1.162	0.9399	0.9399	19.10	19.11
			~~Naphthalene~~ (2nd internal standard) U	0.088	0.0792	0.0792	10.46	9.98
			Fluorene (3rd internal standard)					
			~~Pentachlorophenol~~ (4th internal standard) SS	0.174	0.1404	0.1404	19.53	19.33
			~~Bis(2-ethylhexyl)phthalate~~ AAA (5th internal standard)	2.5	2.108	2.108	15.664	15.665
			Benzo(a)pyrene (6th internal standard)					
3	CC0328	3/28/06	~~Phenol~~ (1st internal standard) E	1.162	0.93318	0.93318	19.684	19.692
			~~Naphthalene~~ (2nd internal standard) U	0.088	0.09664	0.09664	9.221	9.81
			Fluorene (3rd internal standard)					
			~~Pentachlorophenol~~ (4th internal standard) SS	0.174	0.13834	0.13834	20.694	20.496
			~~Bis(2-ethylhexyl)phthalate~~ AAA (5th internal standard)	2.5	2.0602	2.0601	ITS938	IT.594
			Benzo(a)pyrene (6th 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 #: 14894B2b
SDG #: K42

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 18/19

Compound	Spike Added (MS)		Sample Concentration (MB)	Spiked Sample Concentration (MS)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-----	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol											
2-Chlorophenol											
1,4-Dichlorobenzene	49T	49T	ND	344	339	69.2	69.2	68.2	68.2	1.5	1.5
N-Nitroso-di-n-propylamine	↓	↓	↓	390	401	T8.5	T8.5	80.T	80.T	2.8	2.8
1,2,4-Trichlorobenzene	↓	↓	↓	823	819	166	166	165	165	0.5	0.5
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol	T46	T46	ND	531	585	T1.2	T1.2	T8.4	T8.4	9.T	9.T
Pyrene											

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

LDC #: 48948b
SDG #: 1643

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

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

LCS/LCSD samples: LCS-030906

Compound	Spike Added (MB5)		Spike Concentration (MB)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol										
2-Chlorophenol										
1,4-Dichlorobenzene	500	NA	358	NA	71.6	71.6				
N-Nitroso-di-n-propylamine			55.4		111	111				
1,2,4-Trichlorobenzene	V		845		169	169				
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol	500		452		90.4	90.4				
Pyrene										

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

LDC #: 14894B26
SDG #: 8VC42

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: K

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

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
Nitrobenzene-d5	25	21.50181	86.0	86.0	0
2-Fluorobiphenyl	↓	10.09341	40.3	40.3	
Terphenyl-d14	↓	15.66475	62.6	62.6	
Phenol-d5	37.5	24.45702	65.2	65.2	
2-Fluorophenol	↓	22.19817	59.2	59.2	
2,4,6-Tribromophenol	↓	12.70785	33.9	33.9	
2-Chlorophenol-d4	↓	26.74137	71.3	71.3	
1,2-Dichlorobenzene-d4	25	14.13759	56.5	56.5	

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 14894 Bbb
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

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)

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

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

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

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1 , AAA :

Conc. = $\frac{47682}{81894}\frac{(\quad 2 \quad)(\quad 3000 \quad)(\quad)(\quad)}{(0.6746)(\quad 50.1 \quad)(\quad 1 \quad)(\quad)(\quad)}$

= 10.4 µg/Kg

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

LDC #: 14894C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/29/06
SDG #: JC48 Level III IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: T
2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 2/25/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A/W	%RSD. r^2
IV.	Continuing calibration	A/W	
V.	Blanks	A	
VI.	Surrogate spikes	A/W	
VII.	Matrix spike/Matrix spike duplicates	A/W	
VIII.	Laboratory control samples	A/W	LCS. SRM
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	N	

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-SC28-0-1	11	MB-031406	21		31	
2	LDW-SC28-1-2	12		22		32	
3	LDW-SC28-2-4	13		23		33	
4	LDW-SC28-1-2MS	14		24		34	
5	LDW-SC28-1-2MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 48924c2b
SDG #: JC48

VALIDATION FINDINGS CHECKLIST

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

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 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 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?		✓		
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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 #: 48924C3b
SDG #: VC48

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: al

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction 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 from 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.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 14894C2b
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Page: 1 of 1
Reviewer: CR
2nd Reviewer: CL

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A Did the laboratory conduct an acceptable 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
	3/29/06	ICAL	PPP	32.4		1	J/NJ/A

INICAL2S

LDC #: 14894C3b
SDG #: √C48

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 of sample analysis 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
	3/29/06	CC0329	G	30.34775		2-5. BK	V/M/P
			V	68.48982			
			O	26.00940			
			PPP	28.74877			
			R	72.81242			
			TT **	21.86484			None/P
		** CCC					

CONCAL2S

LDC #: 14894C2b
SDG #: K48

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y (N) N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		MB-031406	FBP	142 (40-130)	No Qual
			TBP	141 (↓)	↓
				( )	
		1	FBP	38.3 (40-130)	No Qual (OF>3x)
				( )	
		2	FBP	131 ( )	
			TBP	146 ( )	
			TPH	38.9 ( )	
				( )	
		3	FBP	138 ( )	
			TBP	150 ( )	
			NB2	33.5 ( )	
			TPH	356 ( )	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 14894C2b
SDG #: JC448

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		4/5	R	28.6 (40-130)	29.0 (40-130)	( )	2	No Qual
		(3x)	J	( )	135 (↓)	( )		↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14894C2b
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-031406	E	258 (40-130)	( )	( )	All + Blk	J dets/P
			O	31.8 ( )	( )	( )		J/UJ/P
			J	193 ( )	( )	( )		J dets/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 4894c2b
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: A

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (2.5 std)	Recalculated RRF (2.5 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAc	3/23/06	~~Phenol~~ (1st internal standard) E	1.021	1.021	0.948	0.948	7.1	7.1
			~~Naphthalene~~ (2nd internal standard) NA	0.119	0.119	0.111	0.111	6.2	6.3
			Fluorene (3rd internal standard)						
			~~Pentachlorophenol~~ (4th internal standard) SS	0.234	0.234	0.219	0.219	4.1	4.2
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) AAA	0.520	0.520	0.445	0.445	9.8	9.8
			Benzo(a)pyrene (6th internal standard)						
2	ICAL	3/29/06	~~Phenol~~ (1st internal standard) E	1.248	1.248	1.148	1.148	5.5	
			~~Naphthalene~~ (2nd internal standard) N	0.110	0.110	0.106	0.106	3.6	4.0
			Fluorene (3rd internal standard)						
			~~Pentachlorophenol~~ (4th internal standard) SS	0.192	0.192	0.178	0.178	4.4	4.4
			~~Bis(2-ethylhexyl)phthalate~~ (5th internal standard) AAA	0.739	0.739	curve			
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th 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 #: 14894c2b
SDG#: JC48

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer:
2nd Reviewer:

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270-SIM)

Parameter: Buthylbenzylphthalate

Order of regression: Linr

DATE	GCMS ID	COLUMN	(Y) AREA RATIO	(X) CONC RATIO	(X^2) CONC RATIO
03/29/2006	NT2	CAP	0.0190	0.05000	0.00250
			0.1182	0.25000	0.06250
			0.2828	0.50000	0.25000
			0.9234	1.25000	1.56250
			1.8101	2.50000	6.25000
			3.5361	5.00000	25.00000

Regression Output:

Constant		0.0000
Std Err of Y Est		0.0484
R Squared		0.9987365
No. of Observations		6
Degrees of Freedom		5
X Coefficient (s)	0.7103	-0.1302
Std Err of Coef.	0.0084	0.0274
Correlation Coefficient (r) =		0.9993680
Coefficient of Determination (r^2) =		0.9987365

LDC #: 14894C2b
SDG #: VC48

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC0329	3/29/06	~~Phenol~~ (1st internal standard) E	0.948	0.79311	0.79311	16.38396	16.3386
			~~Naphthalene~~ (2nd internal standard) U	0.111	0.13145	0.13145	18.1605	18.426
			Fluorene (3rd internal standard)					
			~~Pentachlorophenol~~ (4th internal standard) SS	0.219	0.17737	0.17737	19.09053	19.0075
			~~Bis(2-ethylhexyl)phthalate~~ AAA (5th internal standard)	0.425	0.37384	0.37384	16.03307	15.990
			Benzo(a)pyrene (6th internal standard)					
2	CC0330	3/30/06	~~Phenol~~ (1st internal standard) E	0.148	0.92828	0.92828	19.17193	19.1391
			~~Naphthalene~~ (2nd internal standard) U	0.106	0.10102	0.10102	5.02056	4.7014
			Fluorene (3rd internal standard)					
			~~Pentachlorophenol~~ (4th internal standard) SS	0.178	0.14545	0.14545	18.51120	18.286
			~~Bis(2-ethylhexyl)phthalate~~ AAA (5th internal standard)	2.5	1.91084	1.91083	23.5663	23.5667
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th 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 #: 14894C2b
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 6of1
Reviewer: 4
2nd reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

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
Nitrobenzene-d5	25	13.97721	55.9	55.9	0
2-Fluorobiphenyl	↓	9.55878	38.3	38.2	0.1
Terphenyl-d14	↓	12.4758	49.9	49.9	0
Phenol-d5	37.5	22.70136	60.6	60.5	0.1
2-Fluorophenol	↓	25.91073	69.1	69.1	0
2,4,6-Tribromophenol	↓	18.86991	50.3	50.3	↓
2-Chlorophenol-d4	↓	25.71219	68.6	68.6	↓
1,2-Dichlorobenzene-d4	25	13.99014	55.9	56.0	0.1

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 48946b
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 4/5

Compound	Spike Added (MS/MSD)		Sample Concentration (MS/MSD)	Spiked Sample Concentration (MS/MSD)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol											
2-Chlorophenol											
1,4-Dichlorobenzene	496	496	ND	274	260	55.2	55.2	52.4	52.4	5.2	5.2
N-Nitroso-di-n-propylamine	↓	↓	↓	644	668	130	130	135	135	3.7	3.7
1,2,4-Trichlorobenzene	↓	↓	↓	142	144	28.6	28.6	29.0	29.0	1.4	1.4
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol	744	744	ND	486	465	65.3	65.3	62.5	62.5	4.4	4.4
Pyrene											

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

LDC #: 48943J
SDG #: K48

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration; SA = Spike added

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

LCS/LCSD samples: LCS-031406

Compound	Spike Added (MS)		Spike Concentration (MD)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol										
2-Chlorophenol										
1,4-Dichlorobenzene	500	NA	355	NA	71.0	71.0				
N-Nitroso-di-n-propylamine	↓		96T		193	193				
1,2,4-Trichlorobenzene	↓		206		41.2	41.2				
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol	500		420		84.0	84.0				
Pyrene										

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

LDC #: 14894C26
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

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)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, E:

Conc. = $\frac{(9916)(2)(3000)(\quad)(\quad)}{(283902)(0.948)(50.2)(1)(\quad)}$ (1.148)

= 3.64 µg/kg

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

LDC #: 14894D2b **VALIDATION COMPLETENESS WORKSHEET** Date: 4/29/06
SDG #: JC95 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: a
2nd Reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

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: 3/21-24/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	%RSD. r^2
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDC-SC4T-3-1 (JC32)
VIII.	Laboratory control samples	SW	LCS. SRM
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	N	

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
All soils

1	LDW-SC41-0-1	11	LDW-SC19-1-2	21	MB-030706	31	
2	LDW-SC41-1-2	12	LDW-SC19-2-4	22		32	
3	LDW-SC41-2-4	13		23		33	
4	LDW-SC44-0-2	14		24		34	
5	LDW-SC44-2-3.2	15		25		35	
6	LDW-SC44-3.2-4	16		26		36	
7	LDW-SC29-0-1	17		27		37	
8	LDW-SC29-1-2	18		28		38	
9	LDW-SC29-2-3.6	19		29		39	
10	LDW-SC19-0-1	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU.
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

LDC #: 48944D2b
SDG #: JC95

VALIDATION FINDINGS WORKSHEET
Initial Calibration

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

(Y) N N/A Did the laboratory conduct an acceptable 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
	3/29/06	ICAL	PPP	32.4		All + Blk	J/UJ/All

INICAL2S

LDC #: 14894D29
SDG #: JC95

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

Y (N) N/A Were percent recoveries (%R) for surrogates within QC limits?
Y (N) N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N (N/A) If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)		Qualifications
		2	PHL	155	(40-130)	No qual (1 of ≥3 x)
					( )	
		4	FBP	32.3	( )	
					( )	
		5	FBP	39.0	( )	
			TBP	38.3	( )	
					( )	
		6	FBP	30.5	( )	
			TBP	38.2	( )	
					( )	
		7	FBP	36.6	( )	
					( )	
		8	FBP	37.6	( )	
			TBP	38.1	( )	
					( )	
		10	FBP	32.4	( )	
			TPH	38.8	( )	
					( )	
		11	FBP	26.3	( )	
			TBP	26.2	( )	
			TPH	32.0	( )	
					( )	
					( )	
					( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP)= 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 18941D2b
SDG #: J095

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS-030706	QQ	14.3 (40-130)	( )	( )	All + Blk	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

GC Chlorinated Pesticides
Worksheets

LDC #: 14827A3a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/17/06

SDG #: ~~JA36~~/JA64/JA90/~~JB00~~ Level ~~III~~ IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: F

2nd Reviewer: n

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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

cooler temp = 5.0 → 11.0°C not enough time to cool down. All sediments R

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/7 → 2/8/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC42-2-4
VIII.	Laboratory control samples (SRM	A	LCS ~~FB~~
IX.	Regional quality assurance and quality control	N	Internal std. was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur clean-up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation and reported CRQLs	A	Not reviewed for Level III validation.
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	R = LDW-SC-RB1

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

Validated Samples: sediment ** Indicates sample underwent Level IV validation

1	LDW-SC53-0-2**	11	MB-021606	21		31	
2	LDW-SC53-2-4**	12		22		32	
3	~~LDW-SC-RB1~~	13		23		33	
4		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	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14827A3a
SDG #: JA64, JA90

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: P
2nd Reviewer: JC

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) $\leq$ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ___%D or ___%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓			
Were endrin and 4,4'-DDT breakdowns $\leq$ 15%.0 for individual breakdown in the Evaluation mix standards?	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) $\leq$ 15%.0 or percent recovieries 85-115%?		✓		
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?	✓			
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 18827A39
SDG #: JA64, JA90

VALIDATION FINDINGS CHECKLIST

Reviewer: E
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
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?	✓			
Was an LCS analyzed per extraction 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. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 14827A3a
SDG #: JA64, JA90

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

What type or calibration verification calculation was performed? ___ %D or ___ RPD

Y N N/A Were Evaluation mix standards run before initial calibration and before samples?

Y N N/A Were Endrin & 4,4'-DDT breakdowns acceptable in the Evaluation Mix standard (≤15.0% for individual breakdowns)?

Y N N/A Was at least one standard run daily to verify the working curve?

Y N N/A Did the continuing calibration standards meet the percent difference (%D) / relative percent difference (RPD) criteria of ≤15.0%?

Level IV/D Only

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (Limits)	Associated Samples	Qualifications
	2/16/06	CCV	RTX-440	K	20	( )	All waters +	J/UJ/A
	12:38					( )	MB-021406	
						( )		
						( )		
						( )		
	2/22/06	CCV	RTX-440	Q	17.5	( )	All ~~soils~~ sediments +	J/UJ/A
	15:26					( )	MB-021606	
						( )		
	2/22/06	CCV	RTX-440	2,4-DDT	25	( )	↓	↓
	16:51					( )		
			STX-CLP2	2,4-DDT	22.5	( )		
				ecd-monachlor	17.5	( )	↓	↓
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		

A. alpha-BHC	E. Heptachlor	I. Dieldrin	M. 4,4'-DDD	Q. Endrin ketone	U. Toxaphene	Y. Aroclor-1242	CC. DB 608	GG.	
B. beta-BHC	F. Aldrin	J. 4,4'-DDE	N. Endosulfan sulfate	R. Endrin aldehyde	V. Aroclor-1016	Z. Aroclor-1248	DD. DB 1701	HH.	
C. delta-BHC	G. Heptachlor epoxide	K. Endrin	O. 4,4'-DDT	S. alpha-Chlordane	W. Aroclor-1221	AA. Aroclor-1254	EE.	II.	
D. gamma-BHC	H. Endosulfan I	L. Endosulfan II	P. Methoxychlor	T. gamma-Chlordane	X. Aroclor-1232	BB. Aroclor-1260	FF.	JJ.	

LDC #: 14827A39
SDG #: JA64, JA90

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC / HPLC

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

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (std)	Recalculated CF (std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL RTX-440	2/7/06	endosulfan 1 (20)	0.7250	0.7250	.7027	0.7027	4.1	4.1
			methoxychlor (20)	0.6331	0.6331	0.6119	0.6119	12	12
2	STX-CLP2	↓	↓	1.2080	1.2080	1.1948	1.1948	11.3	11.3
				0.7296	0.7296	0.7185	07185	19.8	19.8
3									
4									

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 #: 14827A3a
SDG #: JA64, JA90

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC / HPLC

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

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	ccv	2/22/06	endosulfan I	20	20	20	0	0
	1526	RTX-440	methoxychlor	200	180	180	10	10
2	ccv	STX-CLP2	↓	↓	19	19	5.0	5.0
	1526				200	200	0	0
3								
4								

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 #: 14827A3a
SDG #: JA64, JA90

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene	RTX ~~CLP1~~ 440	100	64.0	64.0	64	0
Decachlorobiphenyl	↓	↓	77.8	77.8	78	0
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 14827A3a
SDG #: JA64, JA90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = | MS - MSD | * 2/(MS + MSD)

MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: LDW-SC42-2-4

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC	10	10	ND	5.86	5.26	58.6	58.6	52.6	52.6	10.8	10.8
Heptachlor	↓	↓	↓	6.52	6.10	65.2	65.2	61.0	61.0	6.7	6.7
Aldrin	↓	↓	↓	6.20	5.60	62.0	62.0	56.0	56.0	10.2	10.2
Dieldrin	20	20	↓	20.0	16.8	100	100	84.0	84.0	17.4	17.4
Endrin	↓	↓	↓	18.8	15.2	94.0	94.0	76.0	76.0	21.2	21.2
4,4'-DDT	↓	↓	↓	20.2	21.6	101	101	108	108	6.7	6.7

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 14827A3a
SDG #: JA360, -64, -90, JB00

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-021606

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	-	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Gamma-BHC	4.00	NA	0	3.46	NA	86.5	86.5				
Heptachlor	↓			3.50		87.5	87.5				
Aldrin	↓			3.34		83.5	83.5				
Dieldrin	8.00			7.02		87.8	87.8				
Endrin	↓			7.94		99.2	99.2				
4,4'-DDT	↓	↓	↓	6.58	↓	82.2	82.2	NA			

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

LDC #: 14827A3a
SDG #: ~~J4356~~, -64, -90
~~1800~~

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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?

Example:

Sample I.D. _____ _____:

Conc. = (_____)
( )

= all ND

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

Note: _____

LDC #: 14827B3a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/17/06
SDG #: JB30 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/13/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW - SC20-2-4
VIII.	Laboratory control samples / SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std. was reviewed & met criteria
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur clean-up performed on all samples
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: sediment

1	LDW-SC9-0-1 10X DIL	11	MB-022306	21		31	
2	LDW-SC9-1-2.6	12		22		32	
3	LDW-SC9-2.6-4	13		23		33	
4		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	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14827B3a
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

What type or calibration verification calculation was performed? ___ %D or ___ RPD

X N N/A Were Evaluation mix standards run before initial calibration and before samples?

Y N N/A Were Endrin & 4,4'-DDT breakdowns acceptable in the Evaluation Mix standard (≤15.0% for individual breakdowns)?

Y N N/A Was at least one standard run daily to verify the working curve?

Y (N) N/A Did the continuing calibration standards meet the percent difference (%D) / relative percent difference (RPD) criteria of ≤15.0%?

Level IV/D Only

Y N (N/A) Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (Limits)	Associated Samples	Qualifications
	2/27/06 2131	CCV	STX-CLP2	I	17.5	( )	MB-022306	J/UJ/A
			RTX-440	P	20.0	( )		
				Q	17.5	( )		
				R	20.0	( )		
						( )		
						( )		
	2/28/06 1146	CCV	RTX-440	M	20.0	( )	2	J/UJ/A
			STX-CLP2	M	17.5	( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		

A. alpha-BHC	E. Heptachlor	I. Dieldrin	M. 4,4'-DDD	Q. Endrin ketone	U. Toxaphene	Y. Aroclor-1242	CC. DB 608	GG.	
B. beta-BHC	F. Aldrin	J. 4,4'-DDE	N. Endosulfan sulfate	R. Endrin aldehyde	V. Aroclor-1016	Z. Aroclor-1248	DD. DB 1701	HH.	
C. delta-BHC	G. Heptachlor epoxide	K. Endrin	O. 4,4'-DDT	S. alpha-Chlordane	W. Aroclor-1221	AA. Aroclor-1254	EE.	II.	
D. gamma-BHC	H. Endosulfan I	L. Endosulfan II	P. Methoxychlor	T. gamma-Chlordane	X. Aroclor-1232	BB. Aroclor-1260	FF.	JJ.	

LDC #: 14827C3a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/18/06
SDG #: JB31 Level III/IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/13/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC20-2-4
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur clean-up performed on all samples
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation and reported CRQLs	A	Not reviewed for Level III validation.
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: ** Indicates sample underwent Level IV validation

Sediment

1	LDW-SC14-0-1.4**	11	MB-022306	21		31	
2	LDW-SC14-1.4-2** SX	12		22		32	
3	LDW-SC14-2-4.1 SX	13		23		33	
4		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 #: 14827C39
SDG #: JB31

VALIDATION FINDINGS CHECKLIST

Reviewer: MP
2nd Reviewer: JL

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) $\leq$ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or ____%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓			
Were endrin and 4,4'-DDT breakdowns $\leq$ 15%.0 for individual breakdown in the Evaluation mix standards?	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) $\leq$ 15%.0 or percent recovieries 85-115%?		✓		
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?	✓			
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 14827C39
SDG #: JB31

VALIDATION FINDINGS CHECKLIST

Reviewer: MF
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
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?	✓			
Was an LCS analyzed per extraction 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. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14827C3a
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

What type or calibration verification calculation was performed? ___ %D or ___ RPD

Y N N/A Were Evaluation mix standards run before initial calibration and before samples?

Y N N/A Were Endrin & 4,4'-DDT breakdowns acceptable in the Evaluation Mix standard (≤15.0% for individual breakdowns)?

Y N N/A Was at least one standard run daily to verify the working curve?

Y N N/A Did the continuing calibration standards meet the percent difference (%D) / relative percent difference (RPD) criteria of ≤15.0%?

Level IV/D Only

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (Limits)	Associated Samples	Qualifications
	2/27/06	CCV	STX-CLP2	I	17.5	( )	MB-022306	J/UJ/A
	2131					( )		
			RTX-440	P	20.0	( )		
				Q	17.5	( )		
				R	20.0	( )		
						( )		
	2/28/06	CCV	RTX-440	2,4-DDT	17.5	( )	2, 3	
	1121					( )		
						( )		
	2/28/06	CCV	RTX-440	M	20.0	( )		
	1146					( )		
			STX-CLP2	M	17.5	( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		

A. alpha-BHC	E. Heptachlor	I. Dieldrin	M. 4,4'-DDD	Q. Endrin ketone	U. Toxaphene	Y. Aroclor-1242	CC. DB 608	GG.	
B. beta-BHC	F. Aldrin	J. 4,4'-DDE	N. Endosulfan sulfate	R. Endrin aldehyde	V. Aroclor-1016	Z. Aroclor-1248	DD. DB 1701	HH.	
C. delta-BHC	G. Heptachlor epoxide	K. Endrin	O. 4,4'-DDT	S. alpha-Chlordane	W. Aroclor-1221	AA. Aroclor-1254	EE.	II.	
D. gamma-BHC	H. Endosulfan I	L. Endosulfan II	P. Methoxychlor	T. gamma-Chlordane	X. Aroclor-1232	BB. Aroclor-1260	FF.	JJ.	

LDC #: 14827C39
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC ✓ HPLC ____

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

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (std)	Recalculated CF (std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	KAL	2/27/06	endosulfan I (20)	0.7010	0.7010	0.7068	0.7068	4.3	4.3
	RTX-440		methoxychlor (200)	0.5640	0.5640	0.5609	0.5609	1.1	1.1
2	STX-CLP2	2/27/06	↓	1.0904	1.0904	1.0918	1.0918	1.3	1.3
			↓	0.7402	0.7402	0.7251	0.7251	8.0	8.0
3									
4									

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 #: 14827C3a
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC ✓ HPLC ____

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

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV	2/28/06	endosulfan I	20	20	20	0	0
	0451	RTX 440	methoxychlor	200	210	210	5.0	5.0
2	↓	STX-CLP2	↓	20	21	21	5.0	5.0
				200	200	200	0	0
3	CCV	2/28/06	↓	20	19	19	5.0	5.0
	1146	RTX-440	↓	200	180	180	10.0	10.0
4								

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 #: 14827C3a
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene	RTX-440	40	32.0691	80.2	80.2	0
Decachlorobiphenyl	STX CLP2	↓	41.8554	105	105	0
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 14827C3a
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = I MS - MSD I * 2/(MS + MSD)

MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: LDW-SC20-2-4

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC	18.7	18.7	ND	13.2	12.6	70.6	70.6	67.4	67.4	4.7	4.7
Heptachlor				16.5	15.8	88.2	88.2	84.5	84.5	4.3	4.3
Aldrin				15.8	14.7	84.5	84.5	78.6	78.6	7.2	7.2
Dieldrin	37.3	37.3		45.5	45.2	122	122	121	121	0.7	0.7
Endrin				43.7	41.8	117	117	112	112	4.4	4.4
4,4'-DDT				37.3	42.9	100	100	115	115	14.0	14.0

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 14827C36
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = I LCS - LCSD I * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-022306

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	-	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Gamma-BHC	4.0	NA	0	3.58	NA	89.5	89.5				
Heptachlor	↓		↓	3.72		93.0	93.0				
Aldrin	↓	↓	↓	3.78	↓	94.5	94.5				
Dieldrin	8.0	↓	↓	7.28	↓	91.0	91.0				
Endrin	8.0	↓	↓	8.52	↓	106	106				
4,4'-DDT	8.0	↓	↓	8.40	↓	105	105	NA			

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

LDC #: 14827C3a
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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?

Example:

Sample I.D. _____ _____:

Conc. = (_____)
( )

= all ND

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

Note: _____

LDC #: 14827D3a

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/18/06

SDG #: ~~JB47~~/~~JB64~~/JB80/~~JB90~~

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: m

2nd Reviewer: m

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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 (15)
I.	Technical holding times	A	Sampling dates: 2/15/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed + met criteria
Xa.	Florisil cartridge check	N	Sulfur clean up performed on all samples
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: Sediments

1	LDW-SC20-0-2	11	MB-022306	21		31	
2	LDW-SC20-2-4	12		22		32	
3	LDW-SC20-2-4MS	13		23		33	
4	LDW-SC20-2-4MSD	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	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14827D3a
SDG #: JB80

VALIDATION FINDINGS WORKSHEET

Continuing Calibration

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)
Please see qualifications below for all questions answered "N" Not applicable questions are identified as "N/A".

What type or calibration verification calculation was performed? ___ %D or ___ RPD

[✓ Y] N N/A Were Evaluation mix standards run before initial calibration and before samples?

[✓ Y] N N/A Were Endrin & 4,4'-DDT breakdowns acceptable in the Evaluation Mix standard (≤15.0% for individual breakdowns)?

[✓ Y] N N/A Was at least one standard run daily to verify the working curve?

Y [✓ N] N/A Did the continuing calibration standards meet the percent difference (%D) / relative percent difference (RPD) criteria of ≤15.0%?

Level IV/D Only

Y N [✓ N/A] Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (Limits)	Associated Samples	Qualifications
	2/27/06	CCV	STX-CLP2	I	17.5	( )	All + Blk	J/UJ/A
	2131					( )		
			RTX-440	P	20	( )	↓	
				Q	17.5	( )		
				R	20.0	( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		

A. alpha-BHC
B. beta-BHC
C. delta-BHC
D. gamma-BHC
E. Heptachlor
F. Aldrin
G. Heptachlor epoxide
H. Endosulfan I
I. Dieldrin
J. 4,4'-DDE
K. Endrin
L. Endosulfan II
M. 4,4'-DDD
N. Endosulfan sulfate
O. 4,4'-DDT
P. Methoxychlor
Q. Endrin ketone
R. Endrin aldehyde
S. alpha-Chlordane
T. gamma-Chlordane
U. Toxaphene
V. Aroclor-1016
W. Aroclor-1221
X. Aroclor-1232
Y. Aroclor-1242
Z. Aroclor-1248
AA. Aroclor-1254
BB. Aroclor-1260
CC. DB 608
DD. DB 1701
EE.________
FF.________
GG.________
HH.________
II.________
JJ.________

LDC #: 14827E3a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/18/06

SDG #: JB91 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer:

2nd Reviewer:

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/17/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC20-2-4
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	Internal Std. was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur clean-up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: Sediments

+ 1	LDW-SC23-0-2	11	MB-022306	21		31	
+ 2	LDW-SC23-0-2DL 100X	12		22		32	
+ 3	LDW-SC23-2-4	13		23		33	
4		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	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14827E3a
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

What type or calibration verification calculation was performed? ___ %D or ___ RPD

Y N N/A Were Evaluation mix standards run before initial calibration and before samples?

Y N N/A Were Endrin & 4,4'-DDT breakdowns acceptable in the Evaluation Mix standard (≤15.0% for individual breakdowns)?

Y N N/A Was at least one standard run daily to verify the working curve?

Y N N/A Did the continuing calibration standards meet the percent difference (%D) / relative percent difference (RPD) criteria of ≤15.0%?

Level IV/D Only

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (Limits)	Associated Samples	Qualifications
	2/27/06 2131	CCV	STX-CLP2	I	17.5	( )	MB-022306	J/UJ/A
						( )		
			RTX-440	P	20	( )		
				Q	17.5	( )		
				R	20.0	( )		
						( )		
						( )		
	2/28/06 1121	CCV	RTX-440	2,4-DDT	17.5	( )	2	~~J/UJ/A~~ NA
						( )		
						( )		
						( )		
	2/28/06 11:46	CCV	RTX-440	M	20.0	( )		
						( )		
			STX-CLP2	M	17.5	( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		

A. alpha-BHC
B. beta-BHC
C. delta-BHC
D. gamma-BHC
E. Heptachlor
F. Aldrin
G. Heptachlor epoxide
H. Endosulfan I
I. Dieldrin
J. 4,4'-DDE
K. Endrin
L. Endosulfan II
M. 4,4'-DDD
N. Endosulfan sulfate
O. 4,4'-DDT
P. Methoxychlor
Q. Endrin ketone
R. Endrin aldehyde
S. alpha-Chlordane
T. gamma-Chlordane
U. Toxaphene
V. Aroclor-1016
W. Aroclor-1221
X. Aroclor-1232
Y. Aroclor-1242
Z. Aroclor-1248
AA. Aroclor-1254
BB. Aroclor-1260
CC. DB 608
DD. DB 1701
EE.
FF.
GG.
HH.
II.
JJ.

LDC #: 14827E3a
SDG #: JB91

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ✓ GC ___ HPLC

Are surrogates required by the method? Yes___ or No___.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	2	not specified	DCB	DO (50-150)	no Quan 100x Dil
			TCMX	DO (↓)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14827E39
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer:
2nd Reviewer:

METHOD: ✓ GC __ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	C	exceeded cal range	1	J/A dwt V/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14827E3a
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: ✓ **GC** __ **HPLC**

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 overall quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	C	exceeded cal Range	1	R/A
	All except C	diluted (higher RL)	2	R/A

Comments: _____

OVRNew.wpd

LDC #: 14827F3a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/18/06
SDG #: JB82 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: B
2nd Reviewer: R

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/16/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	LDW-SC31-2.8-4 / LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed + met criteria
Xa.	Florisil cartridge check	N	Sulfur clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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:
Sediments

1	LDW-SC39-0-1	11	MB-022806	21		31	
2	LDW-SC39-1-2	12		22		32	
3	LDW-SC39-2-4	13		23		33	
4		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 #: 14847B3a

SDG #: JB20

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/19/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/10/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC42-2-4
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: sediment

1	LDW-SC8-0-1	11	MB-021606	21		31	
2	LDW-SC8-1-2 5X	12		22		32	
3	LDW-SC8-2-4	13		23		33	
4	LDW-SC7-0-1	14		24		34	
5	LDW-SC7-1-1.7	15		25		35	
6	LDW-SC7-1.7-4	16		26		36	
7	LDW-SC10-0-1	17		27		37	
8	LDW-SC10-1-2 2X	18		28		38	
9	LDW-SC10-2-4 5X	19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14847B3a
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 6 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

What type or calibration verification calculation was performed? ___ %D or ___ RPD

Y N N/A Were Evaluation mix standards run before initial calibration and before samples?

Y N N/A Were Endrin & 4,4'-DDT breakdowns acceptable in the Evaluation Mix standard (≤15.0% for individual breakdowns)?

Y N N/A Was at least one standard run daily to verify the working curve?

Y N N/A Did the continuing calibration standards meet the percent difference (%D) / relative percent difference (RPD) criteria of ≤15.0%?

Level IV/D Only

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (Limits)	Associated Samples	Qualifications
	2/22/06 1526	CCV	RTX-440	Q	17.5	( )	MB-021606	J/UJ/A
						( )		
						( )		
						( )		
	2/22/06 1651	CCV	RTX-440	2,4-DDT	25.0	( )	↓	↓
						( )		
			STX-CLP2	2,4-DDT	22.5	( )		
				cis-nonachlor	17.5	( )	↓	↓
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		

A. alpha-BHC	E. Heptachlor	I. Dieldrin	M. 4,4'-DDD	Q. Endrin ketone	U. Toxaphene	Y. Aroclor-1242	CC. DB 608	GG.	
B. beta-BHC	F. Aldrin	J. 4,4'-DDE	N. Endosulfan sulfate	R. Endrin aldehyde	V. Aroclor-1016	Z. Aroclor-1248	DD. DB 1701	HH.	
C. delta-BHC	G. Heptachlor epoxide	K. Endrin	O. 4,4'-DDT	S. alpha-Chlordane	W. Aroclor-1221	AA. Aroclor-1254	EE.	II.	
D. gamma-BHC	H. Endosulfan I	L. Endosulfan II	P. Methoxychlor	T. gamma-Chlordane	X. Aroclor-1232	BB. Aroclor-1260	FF.	JJ.	

LDC #: 14847C3a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/19/06
SDG #: JB96 Level ~~III~~ IV III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: M
2nd Reviewer: A

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/18/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC31-2-8-4
VIII.	Laboratory control samples / SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed + met criteria
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	SW	D = 1+4 2+5 3+6
XV.	Field blanks	N	

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:
sediments

1	LDW-SC34-0-1	11	MB-022806	21		31	
2	LDW-SC34-1-2	12		22		32	
3	LDW-SC34-2-4	13		23		33	
4	LDW-SC203-0-1	14		24		34	
5	LDW-SC203-1-2	15		25		35	
6	LDW-SC203-2-4	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14847c3a
SDG #: J1396

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: / GC __ HPLC

Are surrogates required by the method? Yes____ or No____.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	1	not specified	DCB	NR (50 - 150)	no QUAL 5X DIL
				( )	
				( )	
	3 4	↓	↓	↓ (↓)	↓
				( )	
	5	↓	↓	↓ (↓)	↓
				( )	
	6	↓	↓	↓ (↓)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14847c3a
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: FT
2nd reviewer: a

METHOD: ___ GC __ HPLC
Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		%RPD Limit ≤100	Qualification Parent only / All Samples
	1	4		
C	7.0	23	107	
	2	5		
C	19	60	104	

Compound	Concentration (ug/kg)		%RPD Limit ≤100	Qualification Parent only / All Samples
	3	6		
C	0.96U	29	NC ~~200~~	

LDC #: 14865A3a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/28/06
SDG #: JB46/~~JC05~~ Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/14/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	QC sample
VIII.	Laboratory control samples /SRM	A	LCS 1P
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur clean up performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	RB= LDW-SC-RB2

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	~~LDW-SC-RB2~~	11	MB- 022106	21		31	
2		12		22		32	
3		13		23		33	
4		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 #: 14865B3a

SDG #: JB987~~JC10~~

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level ~~III~~ IV

Date: 3/~~29~~/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/17/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	~~Acid~~ Sulfur clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	~~N~~ A	
XII.	Compound quantitation and reported CRQLs	~~N~~ A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: sediment

1	LDW-SC31-0-1 . SY	11	MB-022806	21		31	
2	LDW-SC31-1-2.8 . SY	12		22		32	
3	LDW-SC31-2.8-4 . SY	13		23		33	
4	LDW-SC31-2.8-4MS	14		24		34	
5	LDW-SC31-2.8-4MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 14865B3a
SDG #: 1898

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: B
2nd Reviewer: M

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) $\leq$ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or ____%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓			
Were endrin and 4,4'-DDT breakdowns $\leq$ 15%.0 for individual breakdown in the Evaluation mix standards?	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) $\leq$ 15%.0 or percent recovieries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?	✓			
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.	-	✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?	✓			
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?	✓			

LDC #: 14865B3a
SDG #: JB98

VALIDATION FINDINGS CHECKLIST

Reviewer: B
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
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?	✓			
Was an LCS analyzed per extraction 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. Target compound identification				
Were the retention times of reported detects within the RT windows?			✓	
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 14865B3a
SDG #: JB98

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC ✓ HPLC _____

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

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (std)	Recalculated CF (std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/27/06	endosulfan I (10 ppb)	0.67387	0.67387	0.70677	0.70677	4.267	4.267
	RTX-440		methoxychlor (100)	0.55876	0.55876	0.56087	0.56087	1.075	1.075
2	RTX-CLP2		↓	1.08952	1.08952	1.09180	1.09180	1.285	1.285
				0.75835	0.75835	0.72509	0.72509	8.022	8.022
3									
4									

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 #: 14865B3a
SDG #: JB98

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC ✓ HPLC ____

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

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = Initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV	3/2/06	endosulfan I	20	19	19	5.0	5.0
		1801	methoxychlor	200	220	200	10	10
2								
3								
4								

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 #: 14865B3a
SDG #: JB98

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene	RTX-440	20	19.8	98.8	99	0
Decachlorobiphenyl	RTX-CLP2	20	23.4	117	117	0
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 14865B3a
SDG #: JB898

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JB
2nd Reviewer: M

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = I MS - MSD I * 2/(MS + MSD)

MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 4 + 5

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC	9.55	9.55	ND	6.19	6.76	64.8	64.8	70.4	70.4	8.8	8.8
Heptachlor	↓	↓		7.11	7.76	74.5	74.5	80.8	80.8	8.7	8.7
Aldrin	↓	↓		6.99	7.74	73.2	73.2	80.6	80.6	10.2	10.2
Dieldrin	19.1	19.1		15.6	16.7	81.7	81.7	87.0	87.0	6.8	6.8
Endrin	↓	↓		18.2	18.1	95.3	95.3	94.3	94.3	0.6	0.6
4,4'-DDT	↓	↓	↓	15.2	16.3	79.6	79.6	84.9	84.9	7.0	7.0

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 14865B3a
SDG #: JB98

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: B
2nd Reviewer: R

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery; LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS - 022806

Compound	Spike Added ( )		Sample Concentration ( )	Spiked Sample Concentration ( )		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	-	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Gamma-BHC	4.0	NA	0	3.88	NA	97.0	97.0				
Heptachlor	↓			3.86		96.5	96.5				
Aldrin	↓			3.84		96.0	96.0				
Dieldrin	↓			7.64		95.5	95.5				
Endrin	↓			7.66		95.8	95.8				
4,4'-DDT	↓			7.58		94.8	94.8	NA			

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

LDC #: 14865B3a
SDG #: JB98

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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?

Example:

Sample I.D. _____ _____:

Conc. = (_____)
( )

= all ND

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

Note: _____

LDC #: 14876A3a **VALIDATION COMPLETENESS WORKSHEET** Date: 4/26/06
SDG #: JC21 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/22/06
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	QC sample
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	RB= LDW-SC-RB3

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	~~LDW-SC-RB3~~	11	MB-022806	21		31	
2		12		22		32	
3		13		23		33	
4		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 #: 14894A3a **VALIDATION COMPLETENESS WORKSHEET** Date: 5/1/06
SDG #: JC32 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: FT
2nd Reviewer: JE

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/23/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	Std's were reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur clean-up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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-SC54-0-2 soil	11	MB030906	21		31	
2	LDW-SC54-2-4 ↓	12		22		32	
3		13		23		33	
4		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 #: 14894B3a **VALIDATION COMPLETENESS WORKSHEET** Date: 5/1/06
SDG #: JC42 Level ~~III~~ IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 3/24/04
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	sulfur clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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:
sediment

1	LDW-SC40-0-1.3	11	MB-030906	21		31	
2	LDW-SC40-1.3-2	12		22		32	
3	LDW-SC40-2-4	13		23		33	
4	LDW-SC40-2-4MS	14		24		34	
5	LDW-SC40-2-4MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 14894 B3a
SDG #: 1c42

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: B
2nd Reviewer: a

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) $\leq$ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ___%D or ___%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓			
Were endrin and 4,4'-DDT breakdowns $\leq$ 15%.0 for individual breakdown in the Evaluation mix standards?	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) $\leq$ 15%.0 or percent recovieries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?	✓			
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 14894B39
SDG #: JC42

VALIDATION FINDINGS CHECKLIST

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

Validation Area	Yes	No	NA	Findings/Comments
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?	✓			
Was an LCS analyzed per extraction 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. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

LDC #: 14894B3a
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 5
2nd Reviewer: A

METHOD: GC ____ HPLC ____

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

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (std)	Recalculated CF (std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL PEST	3/8/06	endosulfan I CLP1 (20)	1.44905	1.44905	1.47971	1.47971	10.588	10.588
			methoxychlor CLP1 (200)	0.39727	0.39727	0.39127	0.39127	13.120	13.120
2	↓	↓	↓ CLP2	1.04120	1.04120	1.03096	1.03096	4.125	4.125
			↓ CLP2	0.60406	0.60406	0.58403	0.58403	10.998	10.998
3									
4									

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 #: 14894B3a
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC ✓ HPLC ____

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

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV	3/13/06 1309	endosulfan I CLP1	20.0	21.3	21.3	6.5	6.5
			methoxychlor CLP1	200.	192	192	4.0	4.0
2	CCV	↓	↓ CLP2	20.0	19.2	19.2	4.0	4.0
			↓ CLP2	200.0	193	193	3.5	3.5
3								
4								

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 #: 14894B3a
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene	CLP1	40	28.3373	70.8	70.8	0
Decachlorobiphenyl	CLP2	↓	30.7071	76.8	76.8	0
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 14894B3a
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The percent recoveries (%R) and Relative Percent difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = I MS - MSD I * 2/(MS + MSD)

MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 4 & 5

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC	9.75	9.75	ND	6.49	6.55	66.6	66.6	67.4	67.4	0.9	0.9
Heptachlor	↓	↓		7.95	8.06	81.5	81.5	82.9	82.9	1.4	1.4
Aldrin	↓	↓		7.91	7.85	81.1	81.1	80.8	80.8	0.8	0.8
Dieldrin	19.5	19.5		15.9	16.1	81.5	81.5	83.0	83.0	1.2	1.2
Endrin	↓	↓		18.2	17.8	93.3	93.3	91.8	91.8	2.2	2.2
4,4'-DDT	↓	↓	↓	17.0	17.4	87.2	87.2	89.7	89.7	2.3	2.3

Comments: Refer ot Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 14894B3a
SDG #: JC47

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery
LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS-030906

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	-	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Gamma-BHC	4.0	NA	0	3.36	NA	84.0	84.0				
Heptachlor	↓			3.18		79.5	79.5				
Aldrin	↓			3.32		83.0	83.0				
Dieldrin	8.0			7.06		88.2	88.2				
Endrin	8.0			7.26		90.8	90.8				
4,4'-DDT	8.0	↓	↓	7.32	↓	91.5	91.5	NA			

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

LDC #: 14894B3a
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: B
2nd reviewer: C

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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?

Example:

Sample I.D. _____ _____:

Conc. = (_____)
(_____)

=

all ND

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

Note: _____

LDC #: 14894E3a **VALIDATION COMPLETENESS WORKSHEET** Date: 5/01/06
SDG #: JE74 Level III IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

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: 2/9/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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:
sediment

1	LDW-SC2-0-2	11	MB-032906	21		31	
2	LDW-SC2-2-4	12		22		32	
3	LDW-SC2-0-2MS	13		23		33	
4	LDW-SC2-0-2MSD	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	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14894E3a
SDG #: JE74

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: [✓ GC] __ HPLC

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

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-032906	R	45.2 (50-150)	( )	( )	All + Blk	J/UJ/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

GC Polychlorinated Biphenyls
Worksheets

LDC #: 14827A3b

VALIDATION COMPLETENESS WORKSHEET

SDG #: JA36/JA64/JA90/JB00

Level ~~III~~ IV

Laboratory: Analytical Resources, Inc.

Date: 4/17/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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

cooler temp = 5 ~~+~~ 11°C not enough time To cool down. (# & + 9)°C

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/6/06 → 2/9/06
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	~~ICV = 15~~
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	AQ = QC sample
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed + met criteria
Xa.	Florisil cartridge check	N	Sulfur + Acid clean-up for all sediments
Xb.	GPC Calibration	N	Sulfur clean-up only for water sample
XI.	Target compound identification	A	Not reviewed for Level III validation.
XII.	Compound quantitation and reported CRQLs	SW	Not reviewed for Level III validation.
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	R = ~~FB~~ LDW-SC-RB1

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: ** Indicates sample underwent Level IV validation

Soil + water

1	LDW-SC55-0-1**	11	LDW-SC52-0-1** 5x	21	LDW-SC52-0-1MSD	31 1	MB-021606	
2	LDW-SC55-1-2**	12	LDW-SC52-1-2** 5x	22	LDW-SC42-2-4MS	32 2	MB-021706	
3	LDW-SC55-2-3**	13	LDW-SC52-2-4**	23	LDW-SC42-2-4MSD	33 3	MB-021006	
4	LDW-SC49-0-1**	14	LDW-SC42-0-1** 2x	24	LDW-SC49-2-4D	34		
5	LDW-SC49-1-2**	15	LDW-SC42-1-2** 5x	25		35		
6	LDW-SC49-1-2DL** 5x	16	LDW-SC42-2-4**	26		36		
7	LDW-SC49-2-4**	17	LDW-SC42-2-4DL** 2x	27		37		
8	LDW-SC53-0-2**	18	LDW-SC3-0-2**	28		38		
9	LDW-SC53-2-4**	19	LDW-SC3-2-4**	29		39		
10	~~LDW-SC-RB1~~ 3 ** W	20	LDW-SC52-0-1MS 2	30		40		

LDC #: 14827A36
SDG #: JA36-64, -90, JB0D

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: JB
2nd Reviewer: ✓

Method: ____ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?		✓		
III. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or ____%R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
IV. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.			✓	
V. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?		✓	✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VI. 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?			✓	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 14827A36
SDG #: JA36-64, -90, JB00

VALIDATION FINDINGS CHECKLIST

Reviewer: 5
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
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. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XV. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14827A36
SDG #: JA36, -64-90, JB00

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ~~__GC~~ __ HPLC

Are surrogates required by the method? Yes____ or No____.

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

(Y) N N/A Were surrogates spiked into all samples and blanks?

Y (N) N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	16	ZB35	TCMX	46.2 (50 - 150)	J/UJ/A
				( )	
				( )	
	19	↓	↓	(49.8) (50 - 150)	~~J/UJ/A~~ no qual
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14827A36
SDG #: JA36, -64-90, JB00

VALIDATION FINDINGS WORKSHEET

Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: [✓ GC] __ HPLC

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?

[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

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

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	22+23	BB	0 (50-150)	0 (50-150)	( )	All except 10→11	No QUAL
			( )	( )	( )		2x Dil +
			( )	( )	( )		parent > 2x
			( )	( )	( )		Spike Amt
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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LDC #: 14827A3b
SDG #: JA36 / JA64 / JB00

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: RT
2nd Reviewer: [illegible]

METHOD: ___ GC ___ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	Aroclors identification was chosen on the best possible fit, but that the fits were not optimal and the patterns were highly weathered. Text			

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14827A36
SDG #: JA36-64, -90, JB00

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: ✓ **GC** __ **HPLC**

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	% RPD Bet column Finding ≤ 40	Associated Samples	Qualifications
	BB	43	15	J/A det

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14827A3b
SDG #: JA36, -64, -90, JB00

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: ~~GC~~ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA, BB	exceeded cal range	5, 16	~~J/A det~~ N/A
	Y, AA, BB	↓	# 7	↓ ↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14827A36
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: / **GC** __ **HPLC**

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 overall quality and usability of the data acceptable?

#	Compound Name	~~Finding~~	Associated Samples	Qualifications
	AA, BB	5, 16		R/A
	All except above	6, 17		
	X, AA, BB	7		
	All except above	8, 24		

Comments: _____

LDC #: 14827A36
SDG #: JA36, -64, -90, JB00

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC ✓ HPLC ____

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

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (250 std)	Recalculated CF (std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/21/06	1260-1 (ZB5)	0.0530	0.0530	0.0561	0.0561	18.1	18.1
			(ZB35)	0.0751	0.0751	0.0778	0.0778	12.2	12.2
2									
3									
4									

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.

INICIALSB

LDC #: 14827A36
SDG #: JA36, -64, -90, JB00

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC ✓ HPLC ____

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

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV	2/22/06	1260-1	500	497.3	497.3	0.5	0.5
	0650	ZB5	↓	500	514.2	514.2	2.8	2.8
		ZB35						
2								
3								
4								

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 #: 14827A36
SDG #: JA36-64-90, JB00

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

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

METHOD: ~~GC~~ HPLC

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	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
DCB	ZB35	40.0	33.9	84.7	84.7	0
TCMX	ZB5	40.0	21.5	53.8	53.8	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 14827A36
SDG #: JA36, -64, -90, -JB00

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: P
2nd Reviewer: LC

METHOD: ~~GC~~ __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration SA = Spike added SC = Sample concentration

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 22 & 23

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1016	20.0	20.0	ND	21.5	20.4	108	108	101	101	5.3	5.3

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

LDC #: 14827A36
SDG #: JA36, -64, -90, JB00
METHOD: GC HPLC

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration, SA = Spike added, SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100 LCS = Laboratory Control Sample percent recovery LCSD = Laboratory Control Sample duplicate percent recovery

LCS/LCSD samples: LCS - 021006

Compound	Spike Added ( )		Sample Conc. ( )	Spike Sample Concentration ( )		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1260	5.12	NA	0	4.38	NA	85.5	85.5	NA			

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

LDC #: 14827A36
SDG #: JA36, -64, -90, JB00

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: B
2nd Reviewer: A

METHOD: __GC __ HPLC

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 within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #1 Compound Name _____

Concentration = $\frac{198 \times 1}{25.3}$ (final)

= 7.8 ng/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications
	1260-1 =	1530253 / 9641861 × 80 / 0.0778 =	163.2		
	1260-1 = 163.2				
	-2 = 193.7				
	5 = 236.7				
	198				

Comments: _____

SAMPCALew.wpd

LDC #: 14827B3b

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 4/18/06

SDG #: JB30

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/13/04
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	ICV ≤ 15
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC30 - 2.5-4 MS ID
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std. was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur + Acid clean-up performed on all samples
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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:

sediments

1	LDW-SC13-0-2 5X	11	MB-022506	21		31	
2	LDW-SC13-2-4	12	MB-022206	22		32	
3	LDW-SC13-2-4DL 2X	13		23		33	
4	LDW-SC9-0-1	14		24		34	
5	LDW-SC9-0-1DL 5X	15		25		35	
6	LDW-SC9-1-2.6 100X	16		26		36	
7	LDW-SC9-2.6-4 5X	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14827B36
SDG #: JB30

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

Page: 1 of 1
Reviewer: 19
2nd Reviewer: AC

METHOD: ✓ GC ___ HPLC

Are surrogates required by the method? Yes____ or No____.

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

(Y) N N/A Were surrogates spiked into all samples and blanks?

Y (N) N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	1	not specified	TCMX	49.4 (50-150)	NO QUAL 5X DIL
				( )	
				( )	
	6	↓	DCB	DO (↓)	100X DIL
		↓	TCMX	DO (↓)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14827B36
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: ✓ GC ___ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	BB	exceeded cal range	2	N/A det
	Z	↓	4	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14827B3b
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: P
2nd Reviewer: al

METHOD: ✓ GC __ HPLC

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 overall quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	BB	exceeded cal range	2	R/A
	All except BB	diluted (higher RL)	3	R/A
	Z	exceeded cal range	4	R/A
	All except Z	diluted (higher RL)	5	R/A

Comments: _____

LDC #: 14827C3b

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 4/18/06

SDG #: JB31

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/11 to 2/13/06
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	ICV = 15
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	LDW-SC30-2.5-4, LDW-SC201-1.5-4
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur & Acid clean-up performed on all samples
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: Sediments

1	LDW-SC32-0-1 2.5X	11	MB-022506	21		31		
2	LDW-SC32-1-2 40X	12	MB-022206	22		32		
3	LDW-SC32-2-4	13		23		33		
4	LDW-SC14-0-1.4 2X	14		24		34		
5	LDW-SC14-1.4-2 5X	15		25		35		
6	LDW-SC14-2-4.1 20X	16		26		36		
7	LDW-SC11-0-0.8 5X	17		27		37		
8	LDW-SC11-0.8-2	18		28		38		
9	LDW-SC11-2-3.4	19		29		39		
10	LDW-SC11-3.4-4.1	20		30		40		

LDC #: 14827C3b
SDG #: JB31

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ✓ GC __ HPLC

Are surrogates required by the method? Yes____ or No____.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	7	not specified	DCB	DO (50 - 150)	no qual 40x Dil
				( )	
	6	↓	↓	↓ (↓)	↓ 20x DIL
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14827C3b

SDG #: JB31

VALIDATION FINDINGS WORKSHEET

Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1

Reviewer: B

2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

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?

[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

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

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
			( )	( )	( )		
	LDW-SC201-	BB	175 (50-150)	( )	( )	no Ass. Sample	no QUAL
	1.5-4MS/D		( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 14827D3b

VALIDATION COMPLETENESS WORKSHEET

SDG #: JB47/JB64/JB80/JB90

Level III

Laboratory: Analytical Resources, Inc.

Date: 4/18/06

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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

cooler temp = 5° → 11°C not enough time to cool down (# 10 & 11)

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/7/06 2/8/06 → 2/15/06
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	RSD ≤ 15
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples / SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur + Acid clean up performed on all samples
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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:

sediments

1	1	LDW-SC30-0-2.5		11	LDW-SC56-2-4	21	2	LDW-SC21-2-4MSD	31	1	MB-022506
2	1	LDW-SC30-2.5-4		12	LDW-SC48-0-1	22	3	LDW-SC20-2-4MS	32	2	MB-022706
3	2	LDW-SC21-0-1	5X	13	LDW-SC48-0-1DL	23	3	LDW-SC20-2-4MSD	33	3	MB-022806
4	2	LDW-SC21-1-2	2X	14	LDW-SC48-1-2	24		LDW-SC56-2-4MS	34	4	MB-022106
5	2	LDW-SC21-2-4	5X	15	LDW-SC48-2-4	25		LDW-SC56-2-4MSD	35	5	MB-022106-A
6	3	LDW-SC35-0-2		16	LDW-SC1-0-2	26			36		
7	3	LDW-SC35-2-4	5X	17	LDW-SC1-2-4	27			37		
8	3	LDW-SC20-0-2		18	1 LDW-SC30-0-2.5MS → 4 MS	28			38		
9	3	LDW-SC20-2-4		19	1 LDW-SC30-0-2.5MSD → 4 MSD	29			39		
10		LDW-SC56-0-2		20	4 LDW-SC21-2-4MS	30			40		

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14827D3b
SDG #: JB47, -64, -80, -90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ GC ___ HPLC

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?
[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	20 + 21	V	269 (50-150)	252 (50-150)	( )	5	no QUAL 5X DIL
		BB	0 (↓)	0 (↓)	( )	↓	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 48270B6
SDG #: JB47-64, -80, -90

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: ✓ GC ___ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	%RPD But column Finding ≤40	Associated Samples	Qualifications
	BB	42	5	J/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14827D36
SDG #: JB47, -64, -80, -90

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: BP
2nd Reviewer: LC

METHOD: ✓ GC ___ HPLC

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

Level IV/D Only

Y N (N/A) Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N (N/A) Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA	exceeded cal range	12	J/A det N/A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14827D36
SDG #: JB/47, -64, -80, -90

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: ✓ GC ___ HPLC

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 overall quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA	exceeded cal range	12	R/A
	X, BB	lower result	~~12~~	R/A R
	All except AA, X, BB	diluted (Higher R.L.)	13	R/A

Comments: _____

OVRNew.wpd

LDC #: 14827E3b

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 4/18/06

SDG #: JB91

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/17/06
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	N	
IV.	Continuing calibration	~~A~~	~~ICV ≤ 15~~
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	LDW-SC21-2-4
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	Internal Std was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur + Acid clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: sediment

+ 1	LDW-SC23-0-2 SX	11	MB-022706	21		31	
+ 2	LDW-SC23-2-4 SX	12		22		32	
3		13		23		33	
4		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 #: 14827E3b
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ GC ___ HPLC

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?
[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LDW-SC21-2-4	V	269 (50-150)	252 (50-150)	( )	no Ass. sample	no Qual 5X DIL
	MS/D	BB	0 (↓)	0 (↓)	( )	↓	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 14827F3b

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/18/06

SDG #: JB82

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/16/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW	~~RSD ≤ 15~~
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW A	LDW-SC20-2-4
VIII.	Laboratory control samples / SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed a not amend
Xa.	Florisil cartridge check	N	Acid + Sulfur clean performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	SW	D = 1 + 4 2,5* 3,6*
XV.	Field blanks	N	

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: sediments

1	LDW-SC36-0-1	11 2	LDW-SC12-2-4 2X	21 1	MB-022806	31	
2	LDW-SC36-1-2	12	LDW-SC36-2-4MS	22 2	MB-022806A	32	
3	LDW-SC36-2-4	13	LDW-SC36-2-4MSD	23		33	
4	LDW-SC202-0-1	14		24		34	
5	LDW-SC202-1-2	15		25		35	
6	LDW-SC202-2-4	16		26		36	
7 2	LDW-SC39-0-1	17		27		37	
8	LDW-SC39-1-2 10X	18		28		38	
9	LDW-SC39-2-4 ✓ 5X	19		29		39	
10	LDW-SC12-0-2 ✓ 5X	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14827F36
SDG #: 1B82

VALIDATION FINDINGS WORKSHEET

Continuing Calibration

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: ✓ GC __ HPLC

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

What type of continuing calibration calculation was performed? __%D or __RPD

[✓ Y] N N/A Were continuing calibration standards analyzed at the required frequencies?

Y [✓ N] N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?

Level IV Only

Y N [✓ N/A] Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ ~~Column~~	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
	3/8/06	CCV	ZB-5	V	15.5	(　)	9, 10	J/UJ/A
	1208					(　)		QUAL V, W, X
						(　)		
						(　)		
						(　)		
						(　)		
						(　)		
						(　)		
						(　)		
						(　)		
						(　)		
						(　)		
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						(　)		
						(　)		
						(　)		
						(　)		
						(　)		

LDC #: 14827F36
SDG #: JB82

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ~~GC~~ ___ HPLC

Are surrogates required by the method? Yes____ or No____.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	2	not specified	TCMX	49.5 (50-150)	~~J/UJ/P~~ no qual
				( )	
				( )	
	5	↓	↓	44.0 (↓)	J/UJ/P
				( )	
	6	↓	↓	47.8 (↓)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14827F36
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

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

METHOD: ✓ GC ___ HPLC

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

Compound	Concentration (ng/kg)		%RPD Limit ≤ 50	Qualification Parent only / All Samples
	1	4		
Z	18	21 U	~~200~~ NC	
AA	32	30	6	
BB	25	31 U	~~200~~ NC	

Compound	Concentration ( )		%RPD Limit _____	Qualification Parent only / All Samples

LDC #: 14847A3b

SDG #: JB01/~~JB212~~ JB22

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/19/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/9/06 – 2/11/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	ICV ≤ 15
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples / SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std. was reviewed + met criteria
Xa.	Florisil cartridge check	N	Sulfur + Acid clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	SW	D = 8 + 10 9 + 11
XV.	Field blanks	N	

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: sediments

1	1	LDW-SC4-0-1 10X	11	1	LDW – SC 201-1.5-4	21		31	
2	1	LDW-SC4-1-2 10X	12	2	LDW-SC201-1.5-4MS	22		32	
3	1	LDW-SC4-2-4 10X	13	2	LDW-SC201-1.5-4MSD	23		33	
4	1	LDW-SC2-0-2 50X	14	1	MB – 021706	24		34	
5	1	LDW-SC2-2-4	15	2	MB – 022206	25		35	
6	1	LDW-SC4-0-1MS	16			26		36	
7	1	LDW-SC4-0-1MSD	17			27		37	
8	2	LDW-SC33-0-2 5X	18			28		38	
9	2	LDW-SC 33-2-4	19			29		39	
10	2	LDW – SC 201-0-1.5	20			30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14847 A3b
SDG #: JB01/JB22

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ✓ GC __ HPLC

Are surrogates required by the method? Yes____ or No____.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	1	not specified	DCB	NR (50-150)	no qual 10x DIL
				( )	
				( )	
	2	↓	↓	↓ (↓)	↓ 10x
				( )	
				( )	
	3	↓	↓	↓ (↓)	↓ 10x
				( )	
				( )	
	4	↓	↓	↓ (↓)	↓ 50x DIL
				( )	
				( )	
	5	↓	↓	DO (↓)	↓ 100x DIL
				DO (↓)	↓
				( )	
				( )	
				( )	
				( )	
				( )	
			NR =	not reported ( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14847A3b
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: ✓ GC ___ HPLC

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?
Y N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y N N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	6 & 7	BB	35.2 (50-150)	( )	( )	1	no qual for P1L
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
	12 & 13	BB	175 (50-150)	( )	( )	11	J/A det
			( )	( )	( )		qual Y, Z,
			( )	( )	( )		AA, BB
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 14847A36
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Level IV/D Only
Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	% RPD Between column Finding ≤40	Associated Samples	Qualifications
	Y	41	11	J/A det

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14847A36
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: B
2nd reviewer: M

METHOD: ✓ GC ___ HPLC

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

Compound	Concentration (ug/kg)		%RPD Limit ≤ 50	Qualification Parent only / All Samples
	8	10		
Y	1500	330	128	
AA	860	510	51	
BB	760	610	22	

Compound	Concentration (ug/kg)		%RPD Limit ≤ 50	Qualification Parent only / All Samples
	9	11		
AA	240	220	9	
BB	180	240	29	
Y	32 U	74	NC ~~200~~	

LDC #: 14847B3b

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/19/06

SDG #: JB20

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/10/06
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	ICV ≤ 15
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	LDW-SC56-2-4
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur + Acid clean ups performed
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: sediment

1	1	LDW-SC6-0-2	10X	11	2	LDW-SC7-1-1.7DL	5X	21	1	MB-022106	31
2	2	LDW-SC6-2-4.5		12	1	LDW-SC7-1.7-4		22		MB-022106H	32
3	2	LDW-SC6-2-4.5DL	5X	13	1	LDW-SC10-0-1		23			33
4	1	LDW-SC8-0-1	5X	14	1	LDW-SC10-1-2		24			34
5	2	LDW-SC8-1-2	5X	15	1	LDW-SC10-2-4		25			35
6	2	LDW-SC8-1-2DL	5X	16	2	LDW-SC6-2-4.5MS		26			36
7	2	LDW-SC8-2-4		17	2	LDW-SC6-2-4.5MSD		27			37
8	2	LDW-SC8-2-4DL	2X	18				28			38
9	1	LDW-SC7-0-1		19				29			39
10	2	LDW-SC7-1-1.7		20				30			40

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14847 B36
SDG #: JB20

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ✓ GC __ HPLC

Are surrogates required by the method? Yes____ or No____.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	15	not specified	DCB	DO (50-150)	no QualA 20% PIL
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14847B36
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: __ ~~GC~~ __ HPLC

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?
[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	16+17	V	166 (50-150)	187 (50-150)	( )	2, 3	No QUAL
			( )	( )	( )		5x DIL
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 14847B36
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: / **GC** __ **HPLC**

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding (%RPD Bet columns ±40)	Associated Samples	Qualifications
	Y	43	13	J/A dil

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14847B36
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: ✓ GC __ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA	exceeded cal Range	2, 5, 7, ~~10~~	N/A ~~dil~~
		↓		
	~~AA~~ 7	↓	10	↓ ~~Dilute/A~~ n

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14847B32
SDG #: JB320

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: FT
2nd Reviewer: AL

METHOD: / **GC** __ **HPLC**

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 overall quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA	2, 5, 7		R/A
	All except AA	3, 6, 8		
	Y	10		
	All except Y	11		↓

Comments: _____

OVRNew.wpd

LDC #: 14847C3b

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/19/06

SDG #: JB96

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/18/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	ICV ≤ 15
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC36-2-4
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed + met criteria
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	Sulfur clean up performed
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	SW	D = 1,4 2,5 3,6
XV.	Field blanks	N	

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: sediment

1	LDW-SC34-0-1 SX	11	MB-022806	21		31	
2	LDW-SC34-1-2 SX	12		22		32	
3	LDW-SC34-2-4 SX	13		23		33	
4	LDW-SC203-0-1 SX	14		24		34	
5	LDW-SC203-1-2 10X	15		25		35	
6	LDW-SC203-2-4 5X	16		26		36	
7	LDW-SC25-0-1 SX	17		27		37	
8	LDW-SC25-1-2 SX	18		28		38	
9	LDW-SC25-2-4 SX	19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14847C36
SDG #: JB96

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ✓ GC ___ HPLC

Are surrogates required by the method? Yes____ or No____.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	1	not specified	DCB	155 (50-150)	no qual 5x DIL
				( )	
				( )	
	5	↓	DCB	DO ( )	10x DIL
			TCMX	DO (↓)	↓
				( )	
	6	↓	TCMX	49.1 (↓)	↓ 5x
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14847C3b
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

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

METHOD: / GC __ HPLC

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

Compound	Concentration (ug/kg)		%RPD Limit ~~100~~ 50	Qualification Parent only / All Samples
	1	4		
AA	110	110	0	
BB	100	84	17	
Z	99 U	60	NC ~~200~~	

Compound	Concentration (ug/kg)		%RPD Limit ~~100~~ 50	Qualification Parent only / All Samples
	2	5		
Z	82	330 U	NC ~~200~~	
AA	120	110	9	
BB	77	140 U	NC ~~200~~	

LDC #: 14847C36
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 5
2nd reviewer: [illegible]

METHOD: / GC ___ HPLC

Y N N/A Were field duplicate pairs identified in this SDG?

Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ug/kg)		%RPD Limit ≤ 100 50	Qualification Parent only / All Samples
	3	6		
Z	58	38	42	
AA	110	81	30	
BB	81	55	38	

Compound	Concentration ( )		%RPD Limit _____	Qualification Parent only / All Samples

LDC #: 14865A3b

SDG #: JB46/JC05

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/22/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/10 – 2/14/06
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	%D ≤ 15
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC-56-2-4
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed a mil criteria
Xa.	Florisil cartridge check	N	Acid + sulfur clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	RB: LDW-SC-RB2

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:

Sediments

1	LDW-SC22-0-1.1 · Sed		11	LDW-SC5-0-1 Sed	10X	21	MB-022706	31	
2	LDW-SC22-1.1-2 ·		12	LDW-SC5-1-2.2	5X	~~22~~	~~MB-022406~~	32	
3	LDW-SC22-2-4 ·		13	LDW-SC5-2.2-4	"	23	MB-022506	33	
4	LDW-SC16-0-2 ·	5X	14			24		34	
5	LDW-SC16-2-4 ·		15			25		35	
6	LDW-SC16-2-4DL	100X	16			26		36	
~~7~~	~~LDW-SC-RB2 · R~~		17			27		37	
8	LDW-SC27-0-2 · Sed		18			28		38	
9	LDW-SC27-0-2DL	50X	19			29		39	
10	LDW-SC27-2-4.5 ·	5X	20			30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14865A3b
SDG #: JB46/JC05

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ✓ GC ___ HPLC

Are surrogates required by the method? Yes___ or No___.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	2	not specified	TCMX	46.2 (50 - 150)	J/UJ/P
	4	↓	↓	42.8 (↓)	↓
-	5	↓	DCB	~~NR~~ 220 (50 - 150)	J/P det
	6	↓	DCB	DO (↓)	no qual 100X P/L
			TCMX	DO (↓)	↓
	8	↓	~~DCB~~	~~NR~~ K (↓)	~~J/P det~~ J/UJ/P
			TCMX	42.2 (↓)	↓
	9	↓		DO (↓)	no qual 50X P/L
			↓	DO (↓)	↓
	10	↓	TCMX	42.1 (50 - 150)	J/UJ/P
	#5 checked Raw data %ss > upper limit (220 (+219%))				

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14865 A36
SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: EB
2nd Reviewer: AL

METHOD: GC Pesticides/PCBs (EPA SW 846, 8081)

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, cleanup, activities, etc.?
Y N N/A Did the recalculated results for detected target compounds agree within 10.0% of the reported results?

#	Date	Lab ID/Reference	Finding	Associated Samples	Qualifications
		5	%RPD Bet column ≤40 78%	compound BB	J/A det

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14865A36
SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: GC ___ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	Z, AA, BB	exceeded cal Range	5, B	J/A ~~det~~

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14865A36
SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: ✓ **GC** ___ **HPLC**

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 overall quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	Z, AA, BB	exceeded cal Range	5, 8	R/A
	all except Z, AA, BB	diluted (Higher RL)	6, 9	R/A

Comments: _____

LDC #: 14865B3b

SDG #: JB98/JC10

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/28/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/17 – 2/21/06
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration	A	ICV ≤ 15
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC31-1-2.8
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	Sulfur + acid clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: sediments

1	LDW-SC15-0-1	11	LDW-SC24-1-2	21	LDW-SC31-2.8-4MSD	31	MB-030306
2	LDW-SC15-1-2	12	LDW-SC24-2-4	22		32	
3	LDW-SC15-2-4	13	LDW-SC45-0-1	23		33	
4	LDW-SC18-0-1	14	LDW-SC45-1-2	24		34	
5	LDW-SC18-1-2	15	LDW-SC45-2-4	25		35	
6	LDW-SC18-2-4	16	LDW-SC38-0-1	26		36	
7	LDW-SC31-0-1	17	LDW-SC38-1-2	27		37	
8	LDW-SC31-1-2.8	18	LDW-SC38-2-3	28		38	
9	LDW-SC31-2.8-4	19	LDW-SC38-3-3.3	29		39	
10	LDW-SC24-0-1	20	LDW-SC31-2.8-4MS	30		40	

LDC #: 14865 B3b
SDG #: JB98/JC10

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ___ GC ___ HPLC

Are surrogates required by the method? Yes____ or No____.

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

Y (N) N/A Were surrogates spiked into all samples and blanks?

Y (N) N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	2	not specified	DCB	NR (50-150)	no qual 5x RL
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14605B36
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: GC Pesticides/PCBs (EPA SW 846, 8081)

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

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, cleanup, activities, etc.?
Y N N/A Did the recalculated results for detected target compounds agree within 10.0% of the reported results?

#	Date	Lab ID/Reference	%RPD Bet column ≤40 Finding	Associated Samples	Qualifications
		BB	46	2	J/A det

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14876A3b

SDG #: JC21

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/26/06

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/22/06
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration A	SW	LCV ~~≤ 15%~~
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur & Acid clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	R = LDW-SC-RB3

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: Sediment

1	~~LDW-SC-RB3~~	11	LDW-SC26-0-1 ✓ 2X	21	MB-030806	31	
2	LDW-SC51-0-2 ✓	12	LDW-SC26-0-1DL 4X	22	MB-030906	32	
3	LDW-SC51-0-2DL 2X	13	LDW-SC26-1-2 ✓ 2X	23		33	
4	LDW-SC51-2-3.8 ✓	14	LDW-SC26-1-2DL 4X	24		34	
5	LDW-SC37-0-1 ✓ 2X	15	LDW-SC26-2-4 ✓ 2X	25		35	
6	LDW-SC37-0-1DL 10X	16	LDW-SC26-2-4DL 4X	26		36	
7	LDW-SC37-1-2 ✓	17	LDW-SC37-1-2MS	27		37	
8	LDW-SC37-1-2DL 2X	18	LDW-SC37-1-2MSD	28		38	
9	LDW-SC37-2-4 ✓ 5X	19	LDW-SC26-1-2MS	29		39	
10	LDW-SC37-2-4DL 8X	20	LDW-SC26-1-2MSD	30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14876A3b
SDG #: JC21

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ✓ **GC** __ **HPLC**

Are surrogates required by the method? Yes___ or No____.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	9	not specified	DCB	160 (50-150)	no qual 5x PL
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14876A3b
SDG #: JC21

VALIDATION FINDINGS WORKSHEET

Matrix Spike/Matrix Spike Duplicates

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

METHOD: ✓ GC ___ HPLC

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?
[✓ Y] N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	19 & 20	V	194 (50-150)	205 (50-150)	( )	11, 12	No QUAL
		BB	NA (↓)	NA (↓)	( )	↓	2x DIL
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 14876A3b
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: B
2nd Reviewer: A

METHOD: ✓ GC ___ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding (% RPD Bet 2 columns ≤40)	Associated Samples	Qualifications
	BB	61	7	J/A det
	BB	41	9	↓
	BB	41	15	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14876A35
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: 5
2nd Reviewer: A

METHOD: ✓ GC ___ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA	exceeded cal range	2, 7	N/A det
	AA, BB	exceeded cal range	5, 9, 11, 13, 15	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14876A36
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: ET
2nd Reviewer: ar

METHOD: ✓ **GC** __ **HPLC**

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 overall quality and usability of the data acceptable?

#	Compound Name	Finding	Associated Samples	Qualifications
	AA	2, 7		R/A
	All except AA	3, 8		
	AA, BB	5, 9, 11, 13, 15		
	All except above	6, 10, 12, 14, 16		↓

Comments: _____

OVRNew.wpd

LDC #: 14894A3b

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 5/1/06

SDG #: JC32

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/23/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	SW	~~ICV = 15~~
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW - SC31 - 1 - 2.8
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur + acid clean up was performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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:

sediments

1	LDW-SC43-0-2	11	MB-030706	21		31	
2	LDW-SC43-2-4	12		22		32	
3	LDW-SC54-0-2 4X	13		23		33	
4	LDW-SC54-2-4 4X	14		24		34	
5	LDW-SC47-0-1	15		25		35	
6	LDW-SC47-1-2 2X	16		26		36	
7	LDW-SC47-2-3	17		27		37	
8	LDW-SC47-3-4	18		28		38	
9	LDW-SC47-3-4MS	19		29		39	
10	LDW-SC47-3-4MSD	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14894A36
SDG #: JC32

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FD

METHOD: V GC ___ HPLC

2nd Reviewer: AC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ___%D or ___RPD
Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?
Level IV Only
Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
	3/14/06	CCV	ZB-35	BB	16.3	( )	MB-030706, 7	J/UJ/A
	0000					( )		QUAL Z, AA, BB
						( )		
						( )		
	3/14/06	CCV	ZB-35	BB	15.9	( )	1, 2, 5, 9, 10, 8	J/UJ/A
	0500					( )		QUAL Y, AA, BB
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
	3/14/06@ 0500	1248 CCV was analyzed + passed				( )		
	3/14/06@ 0000	1242 CCV was analyzed + passed				( )		

LDC #: 14894B3b

SDG #: JC42

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III / IV

Date: 5/1/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 3/24/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	ICV ~~=~~
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC37-1-2 MS/D
VIII.	Laboratory control samples /SRM	SW	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	sulfur + acid clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: sediment

1	1	LDW-SC40-0-1.3		11	2	LDW-SC46-0-1	4x	21	1	MB-030906	31
2	2	LDW-SC40-1.3-2		12	2	LDW-SC46-1-2	2x	22	2	MB-031006	32
3	2	LDW-SC40-2-4		13	2	LDW-SC46-2-4	4x	23			33
4	1	LDW-SC17-0-1		14	2	LDW-SC40-2-4MS		24			34
5	1	LDW-SC17-1-2		15	2	LDW-SC40-2-4MSD		25			35
6	1	LDW-SC17-2-4	4x	16				26			36
7	1	LDW-SC50-0-1		17				27			37
8	1	LDW-SC50-1-2	2x	18				28			38
9	2	LDW-SC50-2-2.8	2x	19				29			39
10	2	LDW-SC50-2.8-4		20				30			40

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14894B36
SDG #: JC42

VALIDATION FINDINGS CHECKLIST

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

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) < 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed 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 the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 14894B36
SDG #: JC42

VALIDATION FINDINGS CHECKLIST

Reviewer: 5
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
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. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XV. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	

LDC #: 14894B36
SDG #: JCY2

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ___ GC ___ HPLC

Are surrogates required by the method? Yes____ or No____.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	3	~~not specified~~ ZB-35	TCMX	48.2 (50 - 150)	J/UJ/P
				( )	
				( )	
	11	ZB-5	DCB	160 (50 - 150)	no qual if P ok
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14894B3b
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: P
2nd Reviewer: d

METHOD: ✓ GC ___ HPLC

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

[✓ Y] N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

Y [✓ N] N/A Were the LCS percent recoveries (%R) and relative percent differences (RPD) within the QC limits?

Level IV/D Only

Y N [✓ N/A] Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	LCS-031006	V	43.1 (50-150)	( )	( )	MB-031006,	J/UJ/P
			( )	( )	( )	2, 3, 9 → 13	QUAL V, W, X
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		

LDC #: 14894#36
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Level IV/D Only
Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	% RPD Bet 2 column Finding ≤40	Associated Samples	Qualifications
(1)	~~BB~~ A Δ	52%	1	J/A det
(2)	Z	46%	9	↓
(3)	BB	40.2%	12	No qual
(4)	The choice of 'best fit' Aroclors or might be more complex mixtures.	A reclors reported were based on a choice for peaks that could be due to weathered		Text

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14894B36
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC / HPLC ____

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

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF (25 std)	Recalculated CF (25 std)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	ZB5 ICAL	3/15/06	Aroclor 1260 - 1	0.0564	0.0564	0.0577	0.0577	12.2	12.2
2	ZB35	↓	↓	0.0912	0.0912	0.0920	0.0920	7.9	7.9
3									
4									

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 #: 14894B3b
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC ✓ HPLC ____

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

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = Initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	ccv	3/15/06 2146	1260-1 ZB-5	500.0	437.3	437.3	12.5	12.5
			↓ ZB35	500.0	491.4	491.4	1.7	1.7
2	ccv	3/16/06 0325	↓	↓	432.0	432.0	13.6	13.6
			↓	↓	418.0	418.0	16.3	16.3
3	ccv	3/20/06 2114	↓	↓	513.7	513.7	2.6	2.6
			↓	↓	484.9	484.9	3.0	3.0
4	ccv	3/21/06 0137	↓	↓	532.6	532.6	6.5	6.5
			↓	↓	510.4	510.4	2.1	2.1

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 #: 14894B36
SDG #: J C42

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC ✓ HPLC ____

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

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV	3/22/06 2040	1260-1 ZB5	500.0	508.1	508.1	1.6	1.6
			↓ ZB35	↓	518.9	518.9	3.8	3.8
2	CCV	3/23/06 0045	↓	↓	454.3	454.3	9.1	9.1
					541.2	541.2	8.2	8.2
3	CCV	3/24/06 1334	↓	↓	549.9	549.9	10.0	10.0
					504.1	504.1	0.8	0.8
4								

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 #: 14894B36
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: B
2nd reviewer: 4

METHOD: ✓ GC ___ HPLC

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	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
DCB	ZB5	40	26.2	65.5	65.5	0
TCMX	↓	40	26.6	66.5	66.5	↓

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 14894B36
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: ✓ GC ___HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration SA = Spike added SC = Sample concentration

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 14 15

Compound	Spike Added (ng/kg)		Sample Conc. (ng/kg)	Spike Sample Concentration (ng/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)									—		
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1260	19.5	19.5	0	16.7	16.8	85.6	85.6	86.2	86.2	0.6	0.6

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

LDC #: 14894B36
SDG #: J642

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

__METHOD: ✓GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration, SA = Spike added, SC = Sample concentration

RPD = | LCS - LCSD | * 2/(LCS + LCSD) LCS = Laboratory Control Sample percent recovery LCSD = Laboratory Control Sample duplicate percent recovery

LCS/LCSD samples: LCS-030906

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1260	102	NA	0	73.9	NA	72.5	72.5	NA			

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

LDC #: 14894B36
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: GC ___ HPLC

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 within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #1 Compound Name 1248

Concentration = $\frac{303.84 \times 5}{25.0}$

= 61 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications
	1248-1 = $\frac{1353125}{25821805} \times \frac{80}{0.01377}$ =		304		
	1248 - $\frac{1+2+3+4+5}{5}$ =	$\frac{304.4+237.4+313.7+449.9+213.8}{5}$			
		= 303.84			

Comments: _____

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LDC #: 14894C3b

VALIDATION COMPLETENESS WORKSHEET

Date: 5/1/06

SDG #: JC48

Level III IV

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer:

2nd Reviewer:

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/25/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A	ICV ~~SAT~~
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples /SRM	A	
IX.	Regional quality assurance and quality control	N	Internal std was reviewed + met criteria
Xa.	Florisil cartridge check	N	Sulfur + Acid clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	SW	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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:

Sediment

1	LDW-SC28-0-1	11	MB-031406	21		31	
2	LDW-SC28-1-2	12		22		32	
3	LDW-SC28-2-4	13		23		33	
4	LDW-SC28-0-1MS	14		24		34	
5	LDW-SC28-0-1MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 14894C36
SDG #: JC48

VALIDATION FINDINGS CHECKLIST

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

Method: ____ GC ____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓	✓	
Did the initial calibration meet the curve fit acceptance criteria?				
Were the RT windows properly established?		✓		
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ____%D or %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 15%.0 or percent recoveries 85-115%?	✓			
Were all the retention times within the acceptance windows?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed 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 the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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?	✓			
Was an LCS analyzed per extraction batch?	✓			

LDC #: 14894c36
SDG #: JC4X

VALIDATION FINDINGS CHECKLIST

Reviewer: B
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
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. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XV. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	

LDC #: 14894c3b
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: TT
2nd Reviewer: M

METHOD: ✓ GC __ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	The choice of best fit for Aroclors or	Aroclors reported is based on a choice of peaks. Response could be due to weathered more complex mixtures		Text

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14894C36
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC ✓ HPLC ____

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

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

A = Area of compound,
C = Concentration of compound,
S = Standard deviation of the CF
X = Mean of the CFs

#	Standard ID	Calibration Date	Compound	Reported CF ($\overline{CF}_{std}$)	Recalculated CF ($\overline{CF}_{std}$)	Reported Average CF (initial)	Recalculated Average CF (initial)	Reported %RSD	Recalculated %RSD
1	IGAL	3/15/06	1260-1 (ZB-5)	0.05189	0.05189	0.05771	0.05771	12.245	12.245
			(ZB-35)	0.08478	0.08478	0.09199	0.09199	7.872	7.872
2									
3									
4									

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 #: 14894C36
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: B
2nd Reviewer: A

METHOD: GC ✓ HPLC ____

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

% Difference = 100 * (ave. CF - CF)/ave. CF
CF = A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/Conc. CCV	Recalculated CF/Conc. CCV	Reported %D	Recalculated %D
1	CCV	3/21/06 1159	Aroclor 1260-1 (ZB5)	500.0	545.7	545.7	9.1	9.1
			ZB35	500.0	556.0	556.0	11.2	11.2
2								
3								
4								

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 #: 14894c36
SDG #: JC48

METHOD: GC ___ HPLC

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: B
2nd reviewer: a

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	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
DCB	ZB35	40	42.5	106	106	0
TCMX	↓	40	28.6	71.5	71.5	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 14894C36
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: ✓ GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration; SA = Spike added; SC = Sample concentration

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 4 & 5

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	—	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1260	202	202	159	~~202~~ 347	378	93.1	93.1	108	108	8.6	8.6

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

LDC #: 14894C36
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

_____METHOD: ~~GC~~ HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC - SC)/SA Where SSC = Spiked concentration, SA = Spike added, SC = Sample concentration

RPD =(((SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100 LCS = Laboratory Control Sample percent recovery LCSD = Laboratory Control Sample duplicate percent recovery

LCS/LCSD samples: LCS-031406

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Aroclor 1260	102	NA	0	122	NA	120	120	NA			

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

LDC #: 14894c36
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: ✓ GC ___ HPLC

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 within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. #1 Compound Name Aroclor 1260

Concentration = $\frac{402 \times 5}{12.7}$

= 158 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications
	Aroclor 1260-2 = 3341468 / 7419967	x 80 / 0.0700	= 514.7		
	1260-2+	3+4+5= 514.8 + / 3	344.6 + 338.0 + / 4	411.9 = 402	

Comments: _____

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LDC #: 14894D3b

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 6/1/06

SDG #: JC95

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

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: 2/21/06 - 2/24/06
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration	A SW	ICV ~~≤ 15~~
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC47-3-4
VIII.	Laboratory control samples /SRM	A	LCS
IX.	Regional quality assurance and quality control	N	Internal std was reviewed & met criteria
Xa.	Florisil cartridge check	N	Sulfur + Acid clean up performed
Xb.	GPC Calibration	N	
XI.	Target compound identification	A	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	N	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: sediment

1	LDW-SC41-0-1		11	LDW-SC19-1-2	10X	21	MB-030706	31	
2	LDW-SC41-1-2	5X	12	LDW-SC19-2-4	5X	22		32	
3	LDW-SC41-2-4	5X	13			23		33	
4	LDW-SC44-0-2	10X	14			24		34	
5	LDW-SC44-2-3.2	10X	15			25		35	
6	LDW-SC44-3.2-4		16			26		36	
7	LDW-SC29-0-1		17			27		37	
8	LDW-SC29-1-2		18			28		38	
9	LDW-SC29-2-3.6		19			29		39	
10	LDW-SC19-0-1	10X	20			30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 14894D36
SDG #: JC95

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

2nd Reviewer: [illegible]

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ___%D or ___RPD
Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?
Level IV Only
Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
	3/14/06	CCV	~~DB~~ ZB-35	BB	16.3	( )	MB-030706,	J/UJ/A
	0000					( )	1	Z, AA, BB
						( )		
						( )		
						( )		
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LDC #: 14894D36
SDG #: JC95

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

METHOD: ✓ GC ___ HPLC

Are surrogates required by the method? Yes___ or No___.

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

Y N N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications
	4	not specified	DCB	174 (50-150)	no qual 10X DIL
	5	↓	↓	DO (↓)	↓ 10X DIL
	10	↓	↓	160 (↓)	↓ 10X DIL
	8	↓	TCMX	45.5 (↓)	J/UJ/P

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decafluorobiphenyl (DCB)	U	Tripentyltin
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate

LDC #: 14894D36
SDG #: JC95

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Page: 1 of 1
Reviewer: B
2nd Reviewer: M

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Level IV/D Only
Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Finding	Associated Samples	Qualifications
	Z	50%	7	J/A det
	BB	52%	↓	↓

Comments: See sample calculation verification worksheet for recalculations

GC/MS Butylins
Worksheets

LDC #: 14827A19 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: ~~JA36/JA64/~~JA90/JB00 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: 9
2nd Reviewer: [illegible]

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: 2/8/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	no RRFs ↓
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/CRQLs	A	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	RB = LDW-SC-RB1

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-SC3-0-2 sed	11	MB-022106	21		31	
2	LDW-SC3-2-4	12		22		32	
3	LDW-SC3-0-2MS	13		23		33	
4	LDW-SC3-0-2MSD	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 #: 148-TA19
SDG #: JA36/AA64, AA90/AB00

VALIDATION FINDINGS CHECKLIST

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

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 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 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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 #: 48879J9
SDG #: JA36/JA64/JA90/JB00

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction 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 from 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.		✓		

LDC #: 14827A19
SDG #: ~~14364~~/14364/A90/B00

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 0

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (2 std)	Recalculated RRF (2 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/3/06	~~Phenol~~ (1st internal standard) TBT	0.567	0.567	0.548	0.548	4.1	4.1
			~~Naphthalene~~ (2nd internal standard) DBT	0.053	0.053	0.053	0.053	1.9	1.7
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th 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 #: 48TA9
SDG #: ~~A36612~~/90/ABOO

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: 2

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC0222	2/22/06	~~Phenol~~ (1st internal standard) TBT	0.548	0.57822		1.96526	
			~~Naphthalene~~ (2nd internal standard) DBT	0.053	0.05399		1.55736	
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2	CC0222	2/22/06	~~Phenol~~ (1st internal standard) TBT	0.548	0.55423	0.55423	1.17753	1.1354
			~~Naphthalene~~ (2nd internal standard) BT	0.053	0.05399	0.05399	1.55736	1.1867
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th 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 #: 48-TA19
SDG #: ~~A36/A64/A90/B00~~

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

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

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

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
~~Nitrobenzene-d5~~ TPRT	~~0.50.125~~	0.37322	~~63.5~~		
~~2-Fluorobiphenyl~~ TPNT	~~0.50.1445~~	0.39626	69.8		
Terphenyl-d14					
Phenol-d5 TPRT	0.58T68	0.3T322	63.5	63.5	0
2-Fluorophenol TPNT	0.56T6	0.39626	69.8	69.8	0
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 48719
SDG #: 14356/A64/A490/B00

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: a

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 3/4

Compound	Spike Added (µg/kg)		Sample Concentration (µg/kg)	Spiked Sample Concentration (µg/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-----	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	42.6	42.5	ND	32.7	34.9	76.8	76.8	82.1	82.1	6.5	6.5
2-Chlorophenol											
1,4-Dichlorobenzene											
N-Nitroso-di-n-propylamine											
1,2,4-Trichlorobenzene											
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol											
~~Pyrene~~											

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

LDC #: 46TA19
SDG #: JA36/JA64/JA90

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 6 of 1
Reviewer: 9
2nd Reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

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

LCS/LCSD samples: LCS-022106

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	44.6	NA	43.6	NA	97.8	97.8				
2-Chlorophenol										
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol										
~~Pyrene~~										

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

LDC #: 14857A19
SDG #: ~~14364/14365~~/14490/14800

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 2
2nd reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

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)

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

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

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

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. ND , _____:

Conc. = ( )( )( )( )( ) / ( )( )( )( )( )

=

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

LDC #: 14827C19 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JB31 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM) / krone

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: 2/13/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	no RRFs
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC3-0-2 (JB00)
VIII.	Laboratory control samples	A	LCS. SEM
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	N	

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-SC14-0-1.4 Sed	11	MB-022106	21		31	
2	LDW-SC14-1.4-2	12		22		32	
3	LDW-SC14-2-4.1	13		23		33	
4		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 #: 14827D19 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06

SDG #: ~~JB47/JB64~~JB80/JB90 Level III IV III IV Page: 1 of 1

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

2nd Reviewer: [illegible]

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: 2/9-15/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	NO RRFs
IV.	Continuing calibration	A	V
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS. SRM
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	N	

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
MI soils

1	LDW-SC20-0-2	11	MB-022706	21		31	
2	LDW-SC20-2-4	12	MB-022106	22		32	
3	LDW-SC1-0-2	13		23		33	
4	LDW-SC1-2-4	14		24		34	
5	LDW-SC20-2-4MS	15		25		35	
6	LDW-SC20-2-4MSD	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 48270'19
SDG #: secondr

VALIDATION FINDINGS CHECKLIST

Reviewer: a
2nd Reviewer: A

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 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 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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 #: 48-T019
SDG #: 580011

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: K

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction 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 from 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.			✓	

LDC #: 48-T019
SDG #: JB80/JB90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		5/6	A	16.7 (20-139	( )	5.1 (≤ 50)	2	J/UJ/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		A = Butyl Tin Ion		( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14827019
SDG #: Sediment

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (/ std)	Recalculated RRF (/ std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	2/3/06	~~Phenol~~ (1st internal standard) TBT	0.570	0.570	0.548	0.548	4.1	4.1
			~~Naphthalene~~ (2nd internal standard) BT	0.054	0.054	0.053	0.053	1.9	1.7
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th 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 #: 48-TD19
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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	CC0222	2/22/06	~~Phenol~~ (1st internal standard) TBT	0.548	0.554	0.554	1.1	1.1
			~~Naphthalene~~ (2nd internal standard) BT	0.053	0.054	0.054	1.9	1.9
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2	CC0228A		~~Phenol~~ (1st internal standard) TBT	0.548	0.582	0.582	6.2	6.2
			~~Naphthalene~~ (2nd internal standard) BT	0.053	0.060	0.060	13.2	13.9
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th 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 #: 14894D19
SDG #: Second

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: W

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

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
~~Nitrobenzene-d5~~ Tripropyl Tin C	0.589	0.30048	51.0	51.0	0
2-Fluorobiphenyl Tripentyl Tin C	0.568	0.37826	66.6	66.6	0
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 48270B9
SDG #: 36ecum

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 5/6

Compound	Spike Added (MS/S)		Sample Concentration (MS)	Spiked Sample Concentration (MS)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-----	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	43.8	43.8	ND	34.6	35.7	79.0	79.0	81.5	81.5	3.1	3.1
2-Chlorophenol											
1,4-Dichlorobenzene											
N-Nitroso-di-n-propylamine											
1,2,4-Trichlorobenzene											
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol											
~~Pyrene~~											

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

LDC #: 148-TD9
SDG #: Jacuzzi

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

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

LCS/LCSD samples: LCS-022706

Compound	Spike Added (~~µg~~)		Spike Concentration (~~µg~~)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	44.6	NA	35.9	NA	80.5	80.5				
2-Chlorophenol										
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol										
Pyrene										

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

LDC #: 14894D19 (27)
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

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)

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

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

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

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 3 . TBT

Conc. = $\frac{(89620)(2)(500)(1)(0.767)}{(383956)(0.578)(5.13)(1)()}$

= ~~8303~~ 63.68 µg/kg

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

LDC #: 14827E19 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JB91 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: 2/17/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	no RRFs
IV.	Continuing calibration	A	✓
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS
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	N	

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-SC23-0-2 Sed	11	MB-022706	21		31	
2	LDW-SC23-2-4 ↓	12		22		32	
3		13		23		33	
4		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 #: 14870219
SDG #: VB91

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		SDW-SC20-2-4 (VB80)	A	16.7 (20-130)	( )	5.1 (≤50)	None	No Control
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		A = Butyl Tin Ion		( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14827F19 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JB82 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: F
2nd Reviewer: M

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: 3/16/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	NO RRFs
IV.	Continuing calibration	A	✓
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS
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	SW	D = 1+4, 2+5*, 3+6*
XVII.	Field blanks	N	

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
All Soils

1	LDW-SC36-0-1	11	LDW-SC12-2-4	21	MB-022706	31	
2	LDW-SC36-1-2	12		22		32	
3	LDW-SC36-2-4	13		23		33	
4	LDW-SC202-0-1	14		24		34	
5	LDW-SC202-1-2	15		25		35	
6	LDW-SC202-2-4	16		26		36	
7	LDW-SC39-0-1	17		27		37	
8	LDW-SC39-1-2	18		28		38	
9	LDW-SC39-2-4	19		29		39	
10	LDW-SC12-0-2	20		30		40	

LDC #: 48TF19
SDG #: VB82

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		LDW-SC20-2-4 (VB80)	A	16.T (20-130)	( )	51.1 (≤50)	~~No Qual~~ None	No Qual
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		A = Di Butyl Tin Ion		( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 48TF19
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd reviewer: M

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target compounds identified in the field duplicate pairs?

Compound	Concentration (MS/KG)		RPD (≤50)
	1	4	
Tributyl Tin Ion	28	5.5	134

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD

LDC #: 14847A19

SDG #: JB01/~~JB22~~

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: ~~4/6~~/06

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: 2/9/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	No RRFs
IV.	Continuing calibration	A	No RRFs
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	Text
VIII.	Laboratory control samples	A	LCS. SRM
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	N	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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-SC4-0-1 SOil	11	MB-022106	21		31	
2	LDW-SC4-1-2	12		22		32	
3	LDW-SC4-2-4	13		23		33	
4		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 #: 14847B19
SDG #: JB20
Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III

Date: 4/21/06
Page: 1 of 1
Reviewer: 9
2nd Reviewer: 2

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: 2/10/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	No RRFs
IV.	Continuing calibration	A	No RRFs
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	LDW-SC3-0-2 (JB00)
VIII.	Laboratory control samples	A	LCS . SRM
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	N	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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-SC7-0-1	11	MB-022106	21		31	
2	LDW-SC7-1-1.7	12		22		32	
3	LDW-SC7-1.7-4	13		23		33	
4		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 #: 14847C19

SDG #: JB96

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/24/06

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: 2/18/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	No RRFs
IV.	Continuing calibration	A	No RRFs
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS. SRM
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	N	

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

Mzeds

1	LDW-SC25-0-1	11	MB-030306	21		31	
2	LDW-SC25-1-2	12		22		32	
3	LDW-SC25-1-2DL	13		23		33	
4	LDW-SC25-2-4	14		24		34	
5	LDW-SC25-2-4DL	15		25		35	
6	LDW-SC25-2-4MS	16		26		36	
7	LDW-SC25-2-4MSD	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 48FTC19
SDG #: 1B96

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 12

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		6/T	A	749 (20-130)	2420 (20-130)	50.2 (≤ 50)	4	J/UJ/A *
			B	315 (L)	389 (V)	( )		No Qual (conc ≥ 2x SA)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		* No Qual for %R due to conc ≥ 2x SA
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		A = Tributyl	Tin	Ion ( )	( )	( )		
		B = Dibutyl	Tin	Ion ( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14847C19
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		2, 4	Tributyl Tin ion >calib range	2, 4	N tolbutyltin/B

Comments: See sample calculation verification worksheet for recalculations

LDC #: 14847C19
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		2, 4	Tributyl Tin Ion	2, 4	R/A
		3, 5	MI except above	3, 5	✓

Comments: _____

LDC #: 14865A19 **VALIDATION COMPLETENESS WORKSHEET** Date: 5/9/06

SDG #: JB46/JC05 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer:

2nd Reviewer: R

METHOD: GC Butyltins (Krone)

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	N	Sampling dates:
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	N	
IVa.	Surrogate recovery	N	
IVb.	Matrix spike/Matrix spike duplicates	N	
IVc.	Laboratory control samples	N	
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	RB = LDW-SC-RB2

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-SC-RB2	11		21		31	
2		12		22		32	
3		13		23		33	
4		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 #: 14865B19
SDG #: JB98/JC10
Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III

Date: 4/2/06
Page: 1 of 1
Reviewer: 9
2nd Reviewer: 1

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: 2/17/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	No RRFs
IV.	Continuing calibration	A	No RRFs
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	
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	N	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

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
MS only

1	LDW-SC15-0-1	11	MB0	21		31	
2	LDW-SC15-1-2	12		22		32	
3	LDW-SC15-2-4	13		23		33	
4	LDW-SC31-0-1	14		24		34	
5	LDW-SC31-1-2.8	15		25		35	
6	LDW-SC31-2.8-4	16		26		36	
7	LDW-SC31-2.8-4MS	17		27		37	
8	LDW-SC31-2.8-4MSD	18		28		38	
9	MB-030206	19		29		39	
10		20		30		40	

LDC #: 14876A19

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: ~~4/24/06~~

SDG #: JC21

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: 9

2nd Reviewer: 2

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: ~~2/10/06~~ 2/22/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	No RRFs
IV.	Continuing calibration	A	No RRFs
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	AN	Text
VIII.	Laboratory control samples	A	LCS. SRM
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	SN	
XIII.	Tentitatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	SN	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	LDW-SC-RB3

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-SC-RB3~~	11	MB-030206	21		31	
2	LDW-SC26-0-1 Sed	12		22		32	
3	LDW-SC26-1-2	13		23		33	
4	LDW-SC26-2-4	14		24		34	
5	LDW-SC26-2-4DL	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: ~~48760~~19
SDG #: K21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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	Sample ID	Finding	Associated Samples	Qualifications
		3 4	Tributyl Tin Ion > calib range	4	~~NA Jets/A~~

Comments: See sample calculation verification worksheet for recalculations

LDC #: 48760A19
SDG #: VC21

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 4

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		4	TBT, Dibutyl Tin ion	4	R/A
		4	Tributyl Tin ion,	4	R/A
			~~Dibutyl Tin ion~~		
		5	All except above	5	↓

Comments: _____

OVR.2S

LDC #: 14894C19
SDG #: JC48
Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET
Level III IV

Date: 4/29/06
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Butyltins (EPA SW 846 Method 8270C-SIM/Krone)

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: 2/25/06
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	No RRFs
IV.	Continuing calibration	A	No RRFs
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A KW	
VIII.	Laboratory control samples	A	LCS. SRM.
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	N	

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
All soils

1	LDW-SC28-0-1	11	MB-031406	21		31	
2	LDW-SC28-1-2	12		22		32	
3	LDW-SC28-2-4	13		23		33	
4	LDW-SC28-0-1MS	14		24		34	
5	LDW-SC28-0-1MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 14894C19
SDG #: JC48

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: JC

Method: Semivolatiles (EPA SW 846 Method 8270C)

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 DFTPP 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 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 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
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 #: 14894C19
SDG #: JC48

VALIDATION FINDINGS CHECKLIST

Page: 2of2
Reviewer: 9
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction 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 from 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.			✓	

LDC #: 48419C19
SDG #: J1248

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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
		4/5	TBT	196 (20-130)	443 (20-130)	( )	1	No Qual *
			DBT	281 (↓)	( )	65.3 (≤50)		Y/N/A **
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )	* No Qual for TBT due to conc ≥ 2X SA	
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )	* Conc ≥ 2X SA	
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		TBT = Tributyl Tin Ion		( )	( )	( )		
		DBT = Dibutyl Tin Ion		( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 14894c19
SDG #: VC48

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (/ std)	Recalculated RRF (/ std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	16X L	3/15/06	~~Phenol~~ (1st internal standard) TBT	0.600	0.600	0.586	0.586	3.0	3.0
			~~Naphthalene~~ (2nd internal standard) DT	0.094	0.095	0.093	0.093	4.1	4.1
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			Phenol (1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Pentachlorophenol (4th internal standard)						
			Bis(2-ethylhexyl)phthalate (5th internal standard)						
			Benzo(a)pyrene (6th 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 #: 14894CA
SDG #: YC48

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3			Phenol (1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Pentachlorophenol (4th internal standard)					
			Bis(2-ethylhexyl)phthalate (5th internal standard)					
			Benzo(a)pyrene (6th 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 #: 48909
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: M

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270)

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
~~Nitrobenzene-d5~~ TPP&T	0.58768	0.30682	52.2	52.2	0.1
2-Fluorobiphenyl TPTT	0.5676		62.7	62.8	V
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
~~1,2-Dichlorobenzene-d4~~					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
Phenol-d5					
2-Fluorophenol					
2,4,6-Tribromophenol					
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

LDC #: 48944C19
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike percent recovery MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 4/5

Compound	Spike Added (MS/MSD)		Sample Concentration (MS)	Spiked Sample Concentration (MS)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-----	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	43.9	43.8	164	250	358	196	196	443	443	35.5	35.5
2-Chlorophenol											
1,4-Dichlorobenzene											
N-Nitroso-di-n-propylamine											
1,2,4-Trichlorobenzene											
4-Chloro-3-methylphenol											
Acenaphthene											
4-Nitrophenol											
2,4-Dinitrotoluene											
Pentachlorophenol											
~~Pyrene~~											

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

LDC #: 48944C19
SDG #: V048

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

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

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

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

LCS/LCSD samples: LCS-031406

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~Phenol~~ TBT	44.6	NA	32.8	NA	73.5	73.5				
2-Chlorophenol										
1,4-Dichlorobenzene										
N-Nitroso-di-n-propylamine										
1,2,4-Trichlorobenzene										
4-Chloro-3-methylphenol										
Acenaphthene										
4-Nitrophenol										
2,4-Dinitrotoluene										
Pentachlorophenol										
~~Pyrene~~										

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

LDC #: 14894C19
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

(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 = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

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)

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

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

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

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 2 , TBT :

Conc. = $\frac{(55720)(2)(500)(1)(0.773)}{(25833)(0.586)(5.20)(1)(\quad)}$

= 54.72 ug/kg

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

Metals
Worksheets

LDC #: 14827A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/17/06

SDG #: JA36/JA64/JA90/JB00 Level ~~III~~ IV Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: e

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/6/06 - 2/9/06
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	A/	Not performed.
XI.	Sample Result Verification	A	Not reviewed for Level III validation.
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	SW	RB=~~9~~ LDW-SC-RB1

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: ** Indicates sample underwent Level IV validation

Sediment ~~All sediment except 9, 23, 33~~

1 1	LDW-SC55-0-1**	11	LDW-SC52-1-2**	21 2	LDW-SC53-0-2DUP**	31	
2	LDW-SC55-1-2**	12	LDW-SC52-2-4**	22 5	~~LDW-SC-RB1MS~~ A2	32	
3	LDW-SC55-2-3**	13	LDW-SC42-0-1**	23 5	~~LDW-SC-RB1DUP~~ ✓	33	
4	LDW-SC49-0-1**	14	LDW-SC42-1-2**	24 3	LDW-SC42-2-4MS	34	
5	LDW-SC49-1-2**	15 3	LDW-SC42-2-4**	25 3	LDW-SC42-2-4DUP**	35	
6 1	LDW-SC49-2-4**	16 4	LDW-SC3-0-2**	26 4	LDW-SC3-0-2MS	36	
7 2	LDW-SC53-0-2**	17 4	LDW-SC3-2-4**	27 4	LDW-SC3-0-2DUP**	37	
8 2	LDW-SC53-2-4**	18 1	LDW-SC55-0-1MS	28	PB	38	
9 5	~~LDW-SC-RB1 FB~~	19 1	LDW-SC55-0-1DUP**	29		39	
10 3	LDW-SC52-0-1**	20 2	LDW-SC53-0-2MS	30		40	

Notes: _____

LDC #: 48Y7A4
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

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

Method: Metals (EPA SW 846 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients > 0.995? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
IV. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓	✓		
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VI. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	

LDC #: 48527 A4
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 2 of 7
Reviewer: MM
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data			✓	
VIII. Internal Standards (EPA SW 846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?		✓	✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			

LDC #: 14827A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: A

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-8, 10-17 ~~1-19~~	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
18-21, 23-27	↓	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

LDC #: 14827A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

100X. (1g → 50 mL, 2X)

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: ~~100X~~ ~~50X~~ 1-6, 19 (All >10X)
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples:

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	Sample Identification										
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Cc															Co
Cu															Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Nl															Nl
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn	1.3														Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 14827A4

SDG #: See cover

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: MH

2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: 50x/10x (8-30mL, 1X

Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 7, 8, ~~10~~ 21 (All >10X)

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit											
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Cc															Co
Cu															Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Nl															Nl
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn	0.8														Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 14827 A4
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MH
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Were ICP interference check samples performed as required?
(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	2/22/06	ICSA	Cr	-5.7 ug/L (RL = 5 ug/L)	6, 15, 25,	No qual (>1.X ICSA).

Comments:

LDC #: 14857A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	18	Sediment	Sb	20.2	1-6, 19	J/UJ/A (post spike = 98.8%)
2	20			16.5	7, 8, 21	95.1 %)
3	24			15.9	10-15, 25	95.6 %)
4	26			30.9	16, 17, 27	95.6 %)

Comments:

LDC #: 14827A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment. ≤ 30

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
1	25	Solid	Pb	52.3 (≤30)		10-15, 25	J/UJ/A

Comments: _____

LDC #: 14827A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Field Blanks

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Sample: LDW-SC-RB1 Field Blank / Trip Blank / Rinsate / Other ~~X~~ RB (circle one)

Analyte	Concentration Units (mg/L)
Zn	0.007

Sample: _____ Field Blank / Trip Blank / Rinsate / Other _____ (circle one)

Analyte	Concentration Units ( )

LDC #: 14827 A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MJ
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$\%R = \frac{\text{Found}}{\text{True}} \times 100$ Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Mo	100.2	1000	100.2	100.2	Y
	GFAA (Initial calibration)						
ICV	CVAA (Initial calibration)	Hg	8.24	8.0	103.0	103.0	Y
CCV	ICP (Continuing calibration)	✓	949.3	1000	94.9	94.9	↓
	GFAA (Continuing calibration)						
CCV	CVAA (Continuing calibration)	Hg	4.39	4.0	109.8	~~Hg.0~~ 109.8	Y
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

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

LDC #: 14827A4
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$\%R = \frac{Found}{True} \times 100$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Tl	879.2	1000	87.2	87.9	Y
LCS	Laboratory control sample	Ni	47.5	50	95	94.0	|
18	Matrix spike	Zn	(SSR-SR) 66.2	78.1	84.8	84.5	|
~~18~~ 19	Duplicate	Cr	20.0	19.8	1.0	1.5	✓
	ICP serial dilution						

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

LDC #: 14827A4
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MH
2nd reviewer: a

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for 1, 11 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

#1

$$As = \frac{0.06277\ mg/L \times 0.05L \times 2 \times 1000\ g/kg}{1.037g \times 0.618} = 9.8\ mg/kg$$

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	As	10	10	Y
	Cd	0.4	0.4	
	Cr	19.8	19.8	
	Co	7.2	7.2	
	Cu	25.2	25.2	
	Pb	10	10	
	Hg	0.08	0.08	
	Ni	15	15	
	V	54.6	54.5	
	Zn	54.0	54.0	
11	As	28	28	Y
	Cd	1.9	1.9	
	Cr	135	135	
	Co	8.2	8.2	
	Cu	47.6	47.6	
	Pb	36	35	
	Hg	0.25	0.25	
	Mo	1.9	1.9	
	Ni	49	49	
	Ag	2.6	2.6	
	V	63.0	63.0	
	Zn	104	104	

LDC #: 14827B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/18/06

SDG #: JB30 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MH

2nd Reviewer: A

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/13/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	3 x.t utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	x.t performed.
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC13-0-2	11		21		31	
2	LDW-SC13-2-4	12		22		32	
3	LDW-SC9-0-1	13		23		33	
4	LDW-SC9-1-2.6	14		24		34	
5	LDW-SC9-2.6-4	15		25		35	
6	LDW-SC13-0-2MS	16		26		36	
7	LDW-SC13-0-2DUP	17		27		37	
8	PB	18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 14827B4
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: ML

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-5	Sdmt	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
a6,7	↓	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: [✓ Mercury by CVAA if performed]

LDC #: 14827 B4
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~ 70-130? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	6	Sediment	Sb	19.4	1-5, 7	J/UJ/A (post spike 96.6)

Comments:

MS.4S2

LDC #: 14827 B4
SDG #: JB30

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Page: 1 of 1
Reviewer: MH
2nd Reviewer: R

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits) ≤20	Difference (Limits)	Associated Samples	Qualifications
1	7	Soil	Pb	47.9		1-5, 7	J/UJ/A

Comments:

LDC #: 14827C4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/18/06
SDG #: JB31 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: M

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/11/06 - 2/13/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples: Sediment

1	LDW-SC32-0-1	11	LDW-SC32-0-1MS	21		31	
2	LDW-SC32-1-2	12	LDW-SC32-0-1DUP	22		32	
3	LDW-SC32-2-4	13	PB	23		33	
4	LDW-SC14-0-1.4	14		24		34	
5	LDW-SC14-1.4-2	15		25		35	
6	LDW-SC14-2-4.1	16		26		36	
7	LDW-SC11-0-0.8	17		27		37	
8	LDW-SC11-0.8-2	18		28		38	
9	LDW-SC11-2-3.4	19		29		39	
10	LDW-SC11-3.4-4.1	20		30		40	

Notes:

LDC #: 14827C4
SDG #: JB34

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: MH
2nd reviewer: N

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-10	Sediment	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
11, 12	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: Mercury by CVAA if performed

LDC #: 48979c4
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MH
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Were ICP interference check samples performed as required?

(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/6/06	ICSA	Cr	6.2 ug/L (LRL = 5.0 ug/L)	1, 12	Ni qual (>10X ICSA)

Comments:

LDC #: 14827c4
SDG #: JB31

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70 - 130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	11		Sb	18.2	1-10, R	J/UJ/A (post spike 97.4)

Comments:

LDC #: 14827D4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/18/06

SDG #: JB47/JB64/JB80/JB90 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/7/06 - 2/15/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Sediment

1 1	LDW-SC30-0-2.5	11 4	LDW-SC56-2-4	21 4	LDW-SC56-0-2MS	31	
2 1	LDW-SC30-2.5-4	12 4	LDW-SC48-0-1	22 4	LDW-SC56-0-2DUP	32	
3 2	LDW-SC21-0-1	13 4	LDW-SC48-1-2	23	PB	33	
4 2	LDW-SC21-1-2	14 4	LDW-SC48-2-4	24		34	
5 2	LDW-SC21-2-4	15 4	LDW-SC1-0-2	25		35	
6 2	LDW-SC35-0-2	16 4	LDW-SC1-2-4	26		36	
7 2	LDW-SC35-2-4	17 2	LDW-SC21-0-1MS	27		37	
8 3	LDW-SC20-0-2	18 2	LDW-SC21-0-1DUP	28		38	
9 3	LDW-SC20-2-4	19 3	LDW-SC20-2-4MS	29		39	
10 4	LDW-SC56-0-2	20 3	LDW-SC20-2-4DUP	30		40	

Notes: _____

LDC #: 1482704
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

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

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-16	Sediment	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
17-[illegible]	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

ELEMENTS.4

LDC #: 14827D4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MH
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Were ICP interference check samples performed as required?
Y N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/2/06	ICSA	Cr	6.0 ug/L (RL = 5.0 ug/L)	10-16, 22	No qual (>10X ICSA)

Comments:

LDC #: 148704
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y)/N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	LDW-SC22-0-1u1	Sediment	Sb	35.3	1, 2	J/uJ/A (post spike 99.0)
2	17		Sb	17.1	3-7, 18	J/uJ/A (post spike 96.6)
3	19		Sb	17.0	8, 9, 20	J/uJ/A (post spike 95.7)
4	~~22~~ 21		Sb	34.9	14-16, 22	J/uJ/A (post spike 102)
			~~Pb~~	354		J/uJ/A (post spike 90.4)
			Zn	55.5	↓	J/uJ/A (post spike 88.6)

Comments: _____

MS.4S2

LDC #: 14827D4
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Reviewer: MY
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits) ≤30	Difference (Limits)	Associated Samples	Qualifications
1	LDW-SC22-0-1	Sediment	Cu	6.2		1, 2	J/UJ/A
			Pb	(30.4)		↓	NJ qual
			Ni	47.1			J/UJ/A

Comments:

LDC #: 14827E4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/18/06

SDG #: JB91 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MH

2nd Reviewer: ✓

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/17/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	3 MS/dup from SDG JB90
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC23-0-2	11		21		31	
2	LDW-SC23-2-4	12		22		32	
3	FB	13		23		33	
4		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	

Notes: _____

LDC #: 14827E4
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1, 2	Sediment	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

LDC #: 14827 24
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MM
2nd Reviewer: K

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Were ICP interference check samples performed as required?

Y N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/2/06	ICSAB	Cr	6.0 ug/L (RL, 5.0ug/L)	All	No qual (> 10X ICSA)

Comments:

LDC #: 14827E4
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	LDW-SC56-0-2	Sediment	Sb	34.9	All	J/UJ/A (post spike 102)
			Pb	354	↓	J/UJ/A (↓ 5a, K)
			Zn	55.5	↓	J/UJ/A (↓ 88-6 2)

Comments:

LDC #: 14827F4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/18/06

SDG #: JB82 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MH

2nd Reviewer: dl

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/16/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Not Multiple
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed.
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(1,4), (2,5) (3,6)
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC36-0-1	11	LDW-SC12-2-4	21		31	
2	LDW-SC36-1-2	12	LDW-SC36-0-1MS	22		32	
3	LDW-SC36-2-4	13	LDW-SC36-0-1DUP	23		33	
4	LDW-SC202-0-1	14	PB	24		34	
5	LDW-SC202-1-2	15		25		35	
6	LDW-SC202-2-4	16		26		36	
7	LDW-SC39-0-1	17		27		37	
8	LDW-SC39-1-2	18		28		38	
9	LDW-SC39-2-4	19		29		39	
10	LDW-SC12-0-2	20		30		40	

Notes:

LDC #: 14827F4
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: h

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-11	Sediment	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN$^-$, ___ ___
-12,13	✓	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
ICP Trace		Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN$^-$, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN$^-$,

Comments: Mercury by CVAA if performed

LDC #: 14827F4
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	12	Sediment	Sb	17.3	1-11, 13	J/UJ/A (post spike 98.4)

Comments:

LDC#: 14827F4
SDG#: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg) 1	4	(≤30) RPD	
Arsenic	12	13	8	
Cadmium	0.3	0.3U	NC ~~200~~	
Chromium	23.5	24.8	5	
Cobalt	7.3	8.1	10	
Copper	44.4	56.3	24	
Lead	29	19	42	
Mercury	0.23	0.14	49	
Nickel	18	21	15	
Vanadium	61.5	65.2	6	
Zinc	77.8	74	5	

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Compound	Concentration (mg/kg) 2	5	(≤30) RPD	
Arsenic	11	12	9	
Chromium	25.2	23.3	8	
Cobalt	7.8	8.0	3	
Copper	36.9	37.6	2	
Lead	16	16	0	
Mercury	0.33	0.21	44	

LDC#: 14827F4
SDG#: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MG
2nd Reviewer: M

METHOD: Metals (EPA Method 6010B/7000)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		RPD	
	2	5		
Nickel	22	18	20	
Vanadium	63.4	64.0	1	
Zinc	67.1	65.2	3	

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Compound	Concentration (mg/kg)		(530) RPD	
	3	6		
Arsenic	10	9	11	
Chromium	17.3	17.7	2	
Cobalt	6.2	6.5	5	
Copper	24.5	25.6	4	
Lead	7	6	15	
Mercury	0.13	0.11	17	
Nickel	13	14	7	
Vanadium	56.5	58.2	3	
Zinc	40.6	42.0	3	

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LDC #: 14847A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/18/06
SDG #: JB01/JB22 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: JC

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/9/06 - 2/11/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(6, 8), (7, 9)
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC4-0-1	11	LDW-SC4-0-1DUP	21		31	
2	LDW-SC4-1-2	12	PB	22		32	
3	LDW-SC4-2-4	13		23		33	
4	LDW-SC2-0-2	14		24		34	
5	LDW-SC2-2-4	15		25		35	
6	LDW-SC33-0-2	16		26		36	
7	LDW-SC33-2-4	17		27		37	
8	LDW-SC201-0-1.5	18		28		38	
9	LDW-SC201-1.5-4	19		29		39	
10	LDW-SC4-0-1MS	20		30		40	

Notes:

LDC #: 14847B4
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: ll

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-9	Sediment	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu] Fe [✓ Pb] Mg, Mn, [✓ Hg, Ni] K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo] B, Si, CN⁻, ___ ___
ML10,11	↓	Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg, Ni] K [✓ Se, Ag] Na [✓ Tl, V, Zn, Mo] B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___

Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co,] [✓ Cu] Fe [✓ Pb] Mg, Mn, Hg, [✓ Ni] K, [✓ Se, Ag,] Na, [✓ Tl, V, Zn, Mo] B, Si, CN⁻, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___

Comments: [✓ Mercury by CVAA if performed]

ELEMENTS.4

LDC #: 14847A4
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Were ICP interference check samples performed as required?
(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	2/22/06	ICSA	Cr	-5.9 ug/L (RL = 5 ug/L)	1-3, 6-9, 11	No qual (> 10X ICSA)

Comments:

LDC #: 14847A4
SDG #: JB21/JB32

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	10	Sediment	Cu	63.7	1-9, 11	J/UJ/A (post spike 92.4)
			Sb	17.8	↓	↓ (↓ 96.7 q.)

Comments:

LDC #: 14847A4
SDG #: JB01/JB02

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits) ≤30	Difference (Limits)	Associated Samples	Qualifications
1	11	Sediment	Cu	35.2		1-9, 11	J/UJ/(J)
			Hg	74.3			

Comments:

LDC#: 14847A4
SDG#: JB01/JB27

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: M

METHOD: Metals (EPA Method 6010B/7000)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		RPD	
	6	8		
Antimony	13	8U	NC ~~200~~	
Arsenic	56	19	99	
Cadmium	1.2	0.7	53	
Chromium	49.9	37.9	27	
Cobalt	12.2	9.6	24	
Copper	190	88.0	73	
Lead	108	772	151	
Mercury	0.39	0.28	33	
Molybdenum	9.1	2.0	128	
Nickel	32	24	29	
Silver	2.6	1.1	81	
Vanadium	71.6	72.6	1	
Zinc	236	143	49	

LDC#: 14847A4
SDG#: JB01/JB22

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: M

METHOD: Metals (EPA Method 6010B/7000)

(Y)N NA Were field duplicate pairs identified in this SDG?
(Y)N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		RPD	
	7	9		
Arsenic	13	13	0	
Cadmium	0.8	0.8	0	
Chromium	37.7	34.1	10	
Cobalt	9.3	9.0	3	
Copper	51.0	48.4	5	
Lead	33	42	24	
Mercury	0.30	0.30	0	
Molybdenum	1.2	1.2	0	
Nickel	19	18	5	
Silver	2.2	1.7	26	
Vanadium	69.5	70.3	1	
Zinc	94	98	4	

LDC #: 14847B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/19/06

SDG #: JB20 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: M

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/10/06
II.	Calibration	SW	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	3 Not Utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC6-0-2	11	LDW-SC10-2-4	21		31	
2	LDW-SC6-2-4.5	12	LDW-SC6-0-2MS	22		32	
3	LDW-SC8-0-1	13	LDW-SC6-0-2DUP	23		33	
4	LDW-SC8-1-2	14	PB	24		34	
5	LDW-SC8-2-4	15		25		35	
6	LDW-SC7-0-1	16		26		36	
7	LDW-SC7-1-1.7	17		27		37	
8	LDW-SC7-1.7-4	18		28		38	
9	LDW-SC10-0-1	19		29		39	
10	LDW-SC10-1-2	20		30		40	

Notes:

LDC #: 14847B4
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: n

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-11	Sediment	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
2-12,13	b	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: [✓ Mercury by CVAA if performed]

LDC #: 148473B4
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Calibration

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?
Y N N/A Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%) and cyanide (85-115%)?

LEVEL IV ONLY:

Y N N/A Was a midrange cyanide standard distilled?
Y N N/A Are all correlation coefficients ≥0.995?
Y N N/A Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

#	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data
1	2/27/06	CRI	Zn	159.0 (70-130)	1-11, 12	No qual (All > 2X RL.)

Comments:

LDC #: 148784
SDG #: JK20

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: AL

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

Y N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	12	Sediment	Sb	18.5	1-11, 13	J/UJ/A (post spike 95.7)
			~~Zn~~	~~71.9~~	↓	↓ ~~C J 85.6~~

Comments:

MS.4S2

LDC #: 14847C4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/19/06
SDG #: JB96 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/18/06
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	3 L.I.T utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed.
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(1, 4), (2, 5), (3, 6)
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC34-0-1	11	LDW-SC34-0-1DUP	21		31	
2 ✓	LDW-SC34-1-2	12	PB	22		32	
3	LDW-SC34-2-4	13		23		33	
4 ✓	LDW-SC203-0-1	14		24		34	
5 ✓	LDW-SC203-1-2	15		25		35	
6 ✓	LDW-SC203-2-4	16		26		36	
7 ✓	LDW-SC25-0-1	17		27		37	
8 ✓	LDW-SC25-1-2	18		28		38	
9 ✓	LDW-SC25-2-4	19		29		39	
10	LDW-SC34-0-1MS	20		30		40	

Notes:

LDC #: 14847C4
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: 4

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-9	Sediment	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu] Fe [✓ Pb] Mg, Mn, [✓ Hg, Ni] K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
~ 10, 11	↓	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb] Mg, Mn, [✓ Hg, Ni,] K, [✓ Se, Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Analysis Method
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co,] [✓ Cu] Fe [✓ Pb] Mg, Mn, Hg, [✓ Ni] K, [✓ Se, Ag,] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: [✓ Mercury by CVAA if performed]

ELEMENTS.4

LDC #: 14847 C4
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: 100X (1g → 50ml, 2x)
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 2, ~~3~~ 4-9 (>10X)

Analyte	Maximum PB* (mg/Kg)	Maximum PB* (ug/L)	Maximum ICB/CCB* (ug/L)	Blank Action Limit	Sample Identification										
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Cc															Co
Cu			2.2												Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 14847c4
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MM
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Were ICP interference check samples performed as required?
(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/7/06	ICSA	Cr	6.2 ug/L (RL = 5 ug/L)	2; 4-9	No qual (> 10x ICSA)
2	3/8/06	ICSA	Cr	6.9 ug/L (RL = 5 ug/L)	1, 3, 11	

Comments:

LDC #: 48474c4
SDG #: JB96

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MM
2nd Reviewer: K

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	10	Sediment	Sb	18.4	1-9, 11	J/UJ/A (post spike 98.8)

Comments:

LDC#: 14847c4
SDG#: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: AC

METHOD: Metals (EPA Method 6010B/7000)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg) 1	Concentration (mg/kg) 4	(≤30) RPD	
Arsenic	20	20	0	
Cadmium	0.4U	0.6	NC ~~200~~	
Chromium	35	39.5	12	
Cobalt	10.5	8.9	16	
Copper	79.9	102	24	
Lead	55	78	35	
Mercury	0.28	0.23	20	
Molybdenum	1	2.8	95	
Nickel	27	29	7	
Vanadium	69.4	67.1	3	
Zinc	188	204	8	

V:\FIELD DUPLICATES\FD_inorganic\14847C4.wpd

Compound	Concentration (mg/kg) 2	Concentration (mg/kg) 5	(≤30) RPD	
Arsenic	20	20	0	
Cadmium	0.9	0.7	25	
Chromium	50	41	20	
Cobalt	8.9	9.8	10	
Copper	91.4	88.1	4	

LDC#: 14847c4
SDG#: J1396

VALIDATION FINDINGS WORKSHEET
Field Duplicates

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

METHOD: Metals (EPA Method 6010B/7000)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/kg)		(≤30) RPD	
	2	5		
Lead	87	68	25	
Mercury	0.25	0.2	22	
Molybdenum	4	3	29	
Nickel	29	28	4	
Vanadium	65.7	73.1	11	
Zinc	253	225	12	

V:\FIELD DUPLICATES\FD_inorganic\14847C4.wpd

Compound	Concentration (mg/kg)		(≤30) RPD	
	3	6		
Arsenic	15	15	0	
Chromium	30.9	32.0	3	
Cobalt	8.6	8.9	3	
Copper	51.3	66.9	26	
Lead	78	58	29	
Mercury	0.12	0.17	34	
Molybdenum	1.3	1.3	0	
Nickel	33	27	20	
Vanadium	60.4	61.8	2	
Zinc	136	137	1	

V:\FIELD DUPLICATES\FD_inorganic\14847C4.wpd

LDC #: 14865A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/19/06

SDG #: JB46/JC05 Level III Page: 1 of 1

Laboratory: Analytical Resources, Inc. Reviewer: MM

2nd Reviewer: M

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/10/06 - 2/14/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Unit Mitigated
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	SW	RB = LDW-SC-RB2

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: Sediment

1	LDW-SC22-0-1.1	11	LDW-SC5-2.2-4	21		31	
2	LDW-SC22-1.1-2	12	LDW-SC22-0-1.1MS	22		32	
3	LDW-SC22-2-4	13	LDW-SC22-0-1.1DUP	23		33	
4	LDW-SC16-0-2	14	~~LDW-SC-RB2MS~~	24		34	
5	LDW-SC16-2-4	15	~~LDW-SC-RB2DUP~~	25		35	
6	~~LDW-SC-RB2~~	16	LDW-SC5-0-1MS	26		36	
7	LDW-SC27-0-2	17	LDW-SC5-0-1DUP	27		37	
8	LDW-SC27-2-4.5	18	PB	28		38	
9	LDW-SC5-0-1	19		29		39	
10	LDW-SC5-1-2.2	20		30		40	

Notes: _____

LDC #: 14865A4
SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET

Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: d

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-5, 7-11	Sediment	Al, [✓ Sb, As], Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg, Ni] K, [✓ Se, Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN⁻, ___ ___
or 12,13,16,17	✓	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se], [✓ Ag] Na, [✓ Tl, V, Zn, Mo], B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb] Mg, Mn, Hg, [✓ Ni] K, [✓ Se, Ag] Na, [✓ Tl] [✓ V, Zn, Mo] B, Si, CN⁻, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: [✓ Mercury by CVAA if performed]

ELEMENTS.4

LDC #: 14865A4
SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MM
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Were ICP interference check samples performed as required?

(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/8/06	ICSA	Cr	6.9 ug/L (RL = 5.0 ug/L)	9-11, 17	No qual (All > 10X ICSA)

Comments:

LDC #: 14865A4
SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MM
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70 - 130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	12	Sediment	Sb	35.3	1-5, 7, 8, 13	J/uJ/A (post spike 99.0)
2	16	Sediment	Sb	18.0	9-11, 17	J/uJ/A (post spike 100%)

Comments:

LDC #: 14865A4
SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Reviewer: MM
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (≤30 Limits)	Difference (Limits)	Associated Samples	Qualifications
1	13	Sediment	Cu	67.2		1-5, 7, 8, 13	J+ UJ/A
			Pb	30.4		↓	↓
			Ni	47.1			

Comments:

LDC #: 14865A4
SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: MH
2nd reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Sample: LOW-SC-RB2 Field Blank / Trip Blank / Rinsate / Other_____(circle one)

Analyte	Concentration Units (mg/L)
Cu	0.004
Zn	0.012

Sample: _____ Field Blank / Trip Blank / Rinsate / Other_____ (circle one)

Analyte	Concentration Units ( )

LDC #: 14865B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/19/06
SDG #: JB98/JC10 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: M

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/17/06 - 2/21/06
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	3 not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC15-0-1	11	LDW-SC24-1-2	21	LDW-SC31-2.8-4DUP	31	
2	LDW-SC15-1-2	12	LDW-SC24-2-4	22	LDW-SC45-0-1MS	32	
3	LDW-SC15-2-4	13	LDW-SC45-0-1	23	LDW-SC45-0-1DUP	33	
4	LDW-SC18-0-1	14	LDW-SC45-1-2	24	FB	34	
5	LDW-SC18-1-2	15	LDW-SC45-2-4	25		35	
6	LDW-SC18-2-4	16	LDW-SC38-0-1	26		36	
7	LDW-SC31-0-1	17	LDW-SC38-1-2	27		37	
8	LDW-SC31-1-2.8	18	LDW-SC38-2-3	28		38	
9	LDW-SC31-2.8-4	19	LDW-SC38-3-3.3	29		39	
10	LDW-SC24-0-1	20	LDW-SC31-2.8-4MS	30		40	

Notes:

LDC #: 14865B4
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET

Sample Specific Element Reference

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

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-19	Sediment	Al, [✓ Sb, As], Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg, Ni] K, [✓ Se, Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
20-23	↓	Al, [✓ Sb, As] Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni], K, [✓ Se, Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb] Mg, Mn, Hg, [✓ Ni] K, [✓ Se, Ag] Na, [✓ Tl], [✓ V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: [✓ Mercury by CVAA if performed]

ELEMENTS.4

LDC #: 14865B4
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1
Reviewer: MH
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: 100X (1g → 50mL, 2X)
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 1-3 (>10X).

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit											
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Co															Co
Cu			2.1												Cu
Fe															Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 14865B4
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Were ICP interference check samples performed as required?
(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/7/06	ICSA	Cr	6.2 ug/L (RL = 10 ug/L)	1-12, 13	No qual (> 10X ICSA)
2	3/9/06	ICSA	Cr	7.0 ug/L (RL = 10 ug/L)	13-19, 23	↓

Comments:

ICS.4SW

LDC #: 14865B4
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 70-130 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	20	Sediment	Sb	36.3	1-12, 21	J/UJ/A (post spike 101%)
2	22	Sediment	Sb	16.8	13-19, 23	J/UJ/A (↓ 98.6%)

Comments:

LDC #: 14876A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/27/06
SDG #: JC21 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: M

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/22/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Unit Wt digest
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	SW	RB = LDW-SC-RB3

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: Sediment

1	~~LDW-SC-RB3~~	11	~~LDW-SC-RB3DUP~~	21		31	
2	LDW-SC51-0-2	12	LDW-SC37-1-2MS	22		32	
3	LDW-SC51-2-3.8	13	LDW-SC37-1-2DUP	23		33	
4	LDW-SC37-0-1	14	FB	24		34	
5	LDW-SC37-1-2	15		25		35	
6	LDW-SC37-2-4	16		26		36	
7	LDW-SC26-0-1	17		27		37	
8	LDW-SC26-1-2	18		28		38	
9	LDW-SC26-2-4	19		29		39	
10	~~LDW-SC-RB3MS~~	20		30		40	

Notes: _____

LDC #: 14876A4
SDG #: JC24

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: K

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
2-9	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
Dct2, 13	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN⁻, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: Mercury by CVAA if performed

LDC #: 48764
SDG #: JC24

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Page: 1 of 1
Reviewer: MM
2nd Reviewer: K

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Were ICP interference check samples performed as required?

(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/19/06	ICSA	Cr	7.2 ug/L (RL = 5.0 ug/L)	2-9, 13	No qual. (>10X ICSA)

Comments:

LDC #: 14876 A4
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~ 70-130? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	12	sediment	Sb	22.2	2-9, 13	J/UJ/A (post spike: 107)
			Pb	194	↓	~~J~~ UJ/A (↓ 89.7)

Comments:

LDC #: 14876A4
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Reviewer: MH
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits) ≤30	Difference (Limits)	Associated Samples	Qualifications
1	13	Sediment	Pb	45.3		2-9, 13	J/nJ/A
			Hg	44.4		↓	↓

Comments:

LDC #: 14876A4
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: MH
2nd reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Sample: LDW-SC-RB3 Field Blank / Trip Blank / Rinsate / Other RB (circle one)

Analyte	Concentration Units (mg/L)
Cu	0.003
Zn	0.010

Sample: _____ Field Blank / Trip Blank / Rinsate / Other _____ (circle one)

Analyte	Concentration Units ( )

LDC #: 14894A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/28/06
SDG #: JC32 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: A

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/23/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC43-0-2	11	PB	21		31	
2	LDW-SC43-2-4	12		22		32	
3	LDW-SC54-0-2	13		23		33	
4	LDW-SC54-2-4	14		24		34	
5	LDW-SC47-0-1	15		25		35	
6	LDW-SC47-1-2	16		26		36	
7	LDW-SC47-2-3	17		27		37	
8	LDW-SC47-3-4	18		28		38	
9	LDW-SC43-0-2MS	19		29		39	
10	LDW-SC43-0-2DUP	20		30		40	

Notes:

LDC #: 14894A4
SDG #: JC32

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: a

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-8	Sediment	Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg] [✓ Ni] K, [✓ Se] [✓ Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
Dr 9,10	↓	Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg] [✓ Ni] K, [✓ Se] [✓ Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, Hg, [✓ Ni] K, [✓ Se] [✓ Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: Mercury by CVAA if performed

ELEMENTS.4

LDC #: 14894A4
SDG #: JC32

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MM
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Were ICP interference check samples performed as required?

Y N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/15/06	ICSA	Cr	8.2 ug/L (RL = 5.0 ug/L)	1-8, 10	No qual (>1.X ICSA)

Comments:

LDC #: 14894A4
SDG #: JC32

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 70-130 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	9	Sediment	Sb	22.3	1-8, 10	J/UJ/A (post spike: 94.1%)

Comments:

LDC #: 14894B4

SDG #: JC42

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III IV

Date: 4/28/06

Page: 1 of 1

Reviewer: MM

2nd Reviewer: AC

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/24/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N/A	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Solids

1	LDW-SC40-0-1.3	11	LDW-SC46-0-1	21		31	
2	LDW-SC40-1.3-2	12	LDW-SC46-1-2	22		32	
3	LDW-SC40-2-4	13	LDW-SC46-2-4	23		33	
4	LDW-SC17-0-1	14	LDW-SC40-2-4MS	24		34	
5	LDW-SC17-1-2	15	LDW-SC40-2-4DUP	25		35	
6	LDW-SC17-2-4	16	PB	26		36	
7	LDW-SC50-0-1	17		27		37	
8	LDW-SC50-1-2	18		28		38	
9	LDW-SC50-2-2.8	19		29		39	
10	LDW-SC50-2.8-4	20		30		40	

Notes: _____

LDC #: 148943B4
SDG #: JC4P

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: MM
2nd Reviewer: AV

Method: Metals (EPA SW 846 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. ICP Interference Check Sample (ICS) Analysis				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
V. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.	✓			
VI. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VII. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	

LDC #: 14894B4
SDG #: JC42

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
VIII. ICP Serial Dilutions				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
XII. Internal Standards (EPA SW-846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall Assessment of Data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field Duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field Blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 14894B4
SDG #: JC42

VALIDATION FINDINGS WORKSHEET

Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: A

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-13	Sediment	Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN⁻, ___ ___
044,15	b	Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ ~~Cr~~, Co, Cu], Fe, [✓ Pb] Mg, Mn, [✓ Hg, Ni] K, [✓ ~~Se~~, Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___

Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, Hg, [✓ Ni] K, [✓ Se] [✓ Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN⁻, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: [✓ Mercury by CVAA if performed]

LDC #: 14894B4
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MM
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

Y N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	14	Sediment	Sb	48.7	1-13, 15	J/nJ/A (post spike = 102.8%)

Comments:

LDC #: 14894B4
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MJ
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Sb	2138	2000	106.9	106.9	Y
	GFAA (Initial calibration)						
ICV	CVAA (Initial calibration)	Hg	8.06	8.0	100.8	100.8	Y
CCV	ICP (Continuing calibration)	Tl	1994	2000	99.7	99.7	↓
	GFAA (Continuing calibration)						
CCV	CVAA (Continuing calibration)	Hg	3.76	4.0	94.0	94.0	Y
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

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

LDC #: 14894B4
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Ag	1066	1000	106.6	106.6	Y
LCS	Laboratory control sample	Cu	52.6	50	105	105	↓
14	Matrix spike	V	(SSR-SR) 52.3	58.6	89.3	88.9	↓
15	Duplicate	V	12.4	11.4	8.4	8.4	↓
MB	ICP serial dilution						

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

LDC #: 48764
SDG #: JC24

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Page: 1 of 1
Reviewer: MM
2nd Reviewer: K

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Were ICP interference check samples performed as required?

(Y) N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/19/06	ICSA	Cr	7.2 ug/L (RL = 5.0 ug/L)	2-9, 13	No qual. (>10X ICSA)

Comments:

LDC #: 14876 A4
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~ 70-130? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	12	sediment	Sb	22.2	2-9, 13	J/UJ/A (post spike: 107)
			Pb	194	↓	~~J~~ UJ/A (↓ 89.7)

Comments:

LDC #: 14876A4
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Reviewer: MH
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits) ≤30	Difference (Limits)	Associated Samples	Qualifications
1	13	Sediment	Pb	45.3		2-9, 13	J/nJ/A
			Hg	44.4		↓	↓

Comments:

LDC #: 14894A4
SDG #: JC32

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MM
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Were ICP interference check samples performed as required?

Y N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/15/06	ICSA	Cr	8.2 ug/L (RL = 5.0 ug/L)	1-8, 10	No qual (>1.X ICSA)

Comments:

LDC #: 14894A4
SDG #: JC32

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 70-130 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	9	Sediment	Sb	22.3	1-8, 10	J/UJ/A (post spike: 94.1%)

Comments:

LDC #: 14894B4
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Reviewer: MM
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

Y N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	14	Sediment	Sb	48.7	1-13, 15	J/nJ/A (post spike = 102.8%)

Comments:

LDC #: 14894B4
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MJ
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Sb	2138	2000	106.9	106.9	Y
	GFAA (Initial calibration)						
ICV	CVAA (Initial calibration)	Hg	8.06	8.0	100.8	100.8	Y
CCV	ICP (Continuing calibration)	Tl	1994	2000	99.7	99.7	↓
	GFAA (Continuing calibration)						
CCV	CVAA (Continuing calibration)	Hg	3.76	4.0	94.0	94.0	Y
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

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

LDC #: 14894B4
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Ag	1066	1000	106.6	106.6	Y
LCS	Laboratory control sample	Cu	52.6	50	105	105	↓
14	Matrix spike	V	(SSR-SR) 52.3	58.6	89.3	88.9	↓
15	Duplicate	V	12.4	11.4	8.4	8.4	↓
MB	ICP serial dilution						

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

LDC #: 14894C4
SDG #: JC448

VALIDATION FINDINGS CHECKLIST

Reviewer: LM
2nd Reviewer: AL

Validation Area	Yes	No	NA	Findings/Comments
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 14894c4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	Sediment	Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg, Ni] K, [✓ Se] [✓ Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
m-4.5	↓	Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni] K, [✓ Se, Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___

Analysis Method

ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, Hg, [✓ Ni] K, [✓ Se] [✓ Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___

Comments: [✓ Mercury by CVAA if performed]

LDC #: 14894C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MM
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Were ICP interference check samples performed as required?
Y N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/15/06	ICSA	Cr	8.2 ug/L (RL = 5 ug/L	1-3, 5	No qual (> 10x ICSA)

Comments:

LDC #: 14876C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	4a	Sediment	Sb	13.1	1-3, 5	J/UJ/A (post spike: 95.7%)

Comments:

LDC #: 14876c4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits) ≤30	Difference (Limits)	Associated Samples	Qualifications
1	5	Solvent	Mo	39.6		1-3, 5	J/uJ/A

Comments:

LDC #: 14894 cy
SDG #: JC418

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MJ
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Pb	1940	2000	97.0	97.0	Y
	GFAA (Initial calibration)						
ICV	CVAA (Initial calibration)	Hg	8.39	8.0	104.9	104.9	Y
CCV	ICP (Continuing calibration)	Mo	959	1000	95.9	95.9	↓
	GFAA (Continuing calibration)						
CCV	CVAA (Continuing calibration)	Hg	3.90	4.0	97.5	97.5	Y
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

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

LDC #: 14894C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MM
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Se	983.9	1000	98.4	98.4	Y
LCS	Laboratory control sample	Cd	47.9	50	95.8	95.8	
4	Matrix spike	Ni	(SSR-SR) 94.4	87.7	84.8	84.4	
5	Duplicate	Zn	404	405	0.2	0.2	
NA	ICP serial dilution						

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

LDC #: 14894B4
SDG #: JC142

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MV
2nd reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for 1, 11 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

#1

$$As = \frac{0.05303\ mg/L \times 0.051 \times 2 \times 1000\ g/kg}{1.018\ g \times 0.956}$$

$$= 6.89\ mg/kg$$

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	As	7	6.9	Y
	Cr	14.4	14.3	
	Co	4.3	4.3	
	Cu	20.9	20.9	
	Pb	18	18	
	Hg	0.05	0.05	
	Mo	1.0	1.0	
	Ni	10	9.5	
	V	45.5	45.5	
	Zn	47.4	47.4	↓
11	As	16	16	Y
	Cr	33.3	33.3	
	Co	7.9	7.9	
	Cu	54.9	54.8	
	Pb	29	29	
	Hg	0.13	0.13	
	Mo	1.1	1.1	
	Ni	21	21	
	V	61.1	61.1	
	Zn	118	118	↓

LDC #: 14876C4 (qa)

VALIDATION COMPLETENESS WORKSHEET

Level III/IV

Date: 4/28/06

SDG #: JC48

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: MH

2nd Reviewer: M

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/25/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	SW	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM.
VIII.	Internal Standard (ICP-MS)	N	Not utilized.
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	AN	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC28-0-1	11		21		31	
2	LDW-SC28-1-2	12		22		32	
3	LDW-SC28-2-4	13		23		33	
4	LDW-SC28-0-1MS	14		24		34	
5	LDW-SC28-0-1DUP	15		25		35	
6	PB	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 14876C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	4a	Sediment	Sb	13.1	1-3, 5	J/UJ/A (post spike: 95.7%)

Comments:

LDC #: 14876c4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits) ≤30	Difference (Limits)	Associated Samples	Qualifications
1	5	Solvent	Mo	39.6		1-3, 5	J/uJ/A

Comments:

LDC #: 14894 cy
SDG #: JC418

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MJ
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Pb	1940	2000	97.0	97.0	Y
	GFAA (Initial calibration)						
ICV	CVAA (Initial calibration)	Hg	8.39	8.0	104.9	104.9	Y
CCV	ICP (Continuing calibration)	Mo	959	1000	95.9	95.9	↓
	GFAA (Continuing calibration)						
CCV	CVAA (Continuing calibration)	Hg	3.90	4.0	97.5	97.5	Y
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

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

LDC #: 14894C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MM
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Se	983.9	1000	98.4	98.4	Y
LCS	Laboratory control sample	Cd	47.9	50	95.8	95.8	
4	Matrix spike	Ni	(SSR-SR) 94.4	87.7	84.8	84.4	
5	Duplicate	Zn	404	405	0.2	0.2	
NA	ICP serial dilution						

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

LDC #: 14894C4
SDG #: JC448

VALIDATION FINDINGS CHECKLIST

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

Method: Metals (EPA SW 846 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients > 0.995? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. ICP Interference Check Samples				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
V. Matrix Spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.		✓		
VI. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VII. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	

LDC #: 14894C4
SDG #: JC448

VALIDATION FINDINGS CHECKLIST

Reviewer: LM
2nd Reviewer: AL

Validation Area	Yes	No	NA	Findings/Comments
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 14894c4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: 1

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	Sediment	Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg,] [✓ Ni,] K, [✓ Se,] [✓ Ag,] Na, [✓ Tl, V, Zn, Mo,] B, Si, CN⁻, ___ ___
m-4.5	↓	Al, [✓ Sb, As,] Ba, Be, [✓ Cd,] Ca, [✓ Cr, Co, Cu,] Fe, [✓ Pb], Mg, Mn, [✓ Hg, Ni,] K, [✓ Se, Ag,] Na, [✓ Tl, V, Zn, Mo,] B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
ICP Trace		Al, [✓ Sb, As,] Ba, Be, [✓ Cd,] Ca, [✓ Cr, Co, Cu,] Fe, [✓ Pb,] Mg, Mn, Hg, [✓ Ni,] K, [✓ Se,] [✓ Ag,] Na, [✓ Tl, V, Zn, Mo,] B, Si, CN⁻, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN⁻,

Comments: [✓ Mercury by CVAA if performed]

ELEMENTS.4

LDC #: 14894C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MM
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Were ICP interference check samples performed as required?
Y N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/15/06	ICSA	Cr	8.2 ug/L (RL = 5 ug/L	1-3, 5	No qual (> 10x ICSA)

Comments:

LDC #: 14876C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	4a	Sediment	Sb	13.1	1-3, 5	J/UJ/A (post spike: 95.7%)

Comments:

LDC #: 14876c4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits) ≤30	Difference (Limits)	Associated Samples	Qualifications
1	5	Solvent	Mo	39.6		1-3, 5	J/uJ/A

Comments:

LDC #: 14894 cy
SDG #: JC418

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MJ
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Pb	1940	2000	97.0	97.0	Y
	GFAA (Initial calibration)						
ICV	CVAA (Initial calibration)	Hg	8.39	8.0	104.9	104.9	Y
CCV	ICP (Continuing calibration)	Mo	959	1000	95.9	95.9	↓
	GFAA (Continuing calibration)						
CCV	CVAA (Continuing calibration)	Hg	3.90	4.0	97.5	97.5	Y
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

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

LDC #: 14894C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MM
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Se	983.9	1000	98.4	98.4	Y
LCS	Laboratory control sample	Cd	47.9	50	95.8	95.8	
4	Matrix spike	Ni	(SSR-SR) 94.4	87.7	84.8	84.4	
5	Duplicate	Zn	404	405	0.2	0.2	
NA	ICP serial dilution						

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

LDC #: 14894C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for 1 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

$$Cu = \frac{1.192\ mg/L \times 0.05\ L \times 2 \times 1000\ g/kg}{0.535 \times 1.088\ g} = 208.7\ mg/kg$$

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	Sb	26	26.	Y
	As	119	119	
	Cd	0.6	0.6	
	Cr	37.6	37.6	
	Co	14.1	14.1	
	Cu	209	209	
	Pb	113	113	
	Hg	0.42	0.43	
	Mo	11.8	11.8	
	Ni	23	23	
	V	68.9	68.9	
	Zn	405	405	↓

LDC #: 14894D4

SDG #: JC95

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/28/06

Page: 1 of 1

Reviewer: MM

2nd Reviewer: M

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/21/06 - 2/24/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Smt utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC41-0-1	11	LDW-SC19-1-2	21		31	
2	LDW-SC41-1-2	12	LDW-SC19-2-4	22		32	
3	LDW-SC41-2-4	13	LDW-SC41-0-1MS	23		33	
4	LDW-SC44-0-2	14	LDW-SC41-0-1DUP	24		34	
5	LDW-SC44-2-3.2	15	PB	25		35	
6	LDW-SC44-3.2-4	16		26		36	
7	LDW-SC29-0-1	17		27		37	
8	LDW-SC29-1-2	18		28		38	
9	LDW-SC29-2-3.6	19		29		39	
10	LDW-SC19-0-1	20		30		40	

Notes: _____

LDC #: 1489404
SDG #: JC95

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: A

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-12	Sediment	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
QC13,14	↓	Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As], Ba, Be, [✓ Cd], Ca, [✓ Cr, Co, Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl, V, Zn, Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: [✓ Mercury by CVAA if performed]

LDC #: 1489404
SDG #: JC95

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: AL

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 70-130 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	13	Sediment	Sb	19.8	1-12, 14	J+ J/A (post spike 106.1%)

Comments:

Inorganics
Worksheets

LDC #: 14728A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/16/06
SDG #: JC17 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: km
2nd Reviewer: a

METHOD: Salinity (Method SM2520B)

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: 2/22/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Not required
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS / SRM
VII.	Sample result verification	A	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC50-2-4	11		21	
2	LDW-SC50-0-2	12		22	
3	LDW-SC49-0-2	13		23	
4	LDW-SC49-2-4	14		24	
5	LDW-SC49-4-6	15		25	
6	LDW-SC49-6-8	16		26	
7	LDW-SC49-8-10	17		27	
8	LDW-SC49-10-12	18		28	
9	LDW-SC49-4-6DUP	19		29	
10	MB	20		30	

LDC #: 14928B6
SDG #: JU17

VALIDATION FINDINGS CHECKLIST

Reviewer: MY
2nd Reviewer:

Method: Inorganics (EPA Method SM3120B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?			✓	
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			Dup only
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 14728A6
SDG #: JC17

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [signature]

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 14728A6
SDG #: JC17

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MY
2nd Reviewer: K

METHOD: Inorganics, Method SM 2540B

The correlation coefficient (r) for the calibration of _____ was recalculated. Calibration date: _____

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		_____(units)	_____ (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration		Blank					
Calibration verification		Standard 1					
		Standard 2					
		Standard 3					
		Standard 4					
		Standard 5					
		Standard 6					
		Standard 7					NA
Calibration verification ICV	Salinity	1.000	998		99.8	99.8	Y
Calibration verification							
Calibration verification							

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

LDC #: 14728A6
SDG #: JC17

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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

METHOD: Inorganics, Method SM 2520B

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Salinity	32.7	35.0	93.4	93.4	Y
MA	Matrix spike sample		(SSR-SR)				
9	Duplicate sample	Salinity	25.3	25.3	0	0	Y

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

LDC #: 14894C4
SDG #: JC448

VALIDATION FINDINGS CHECKLIST

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

Method: Metals (EPA SW 846 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients > 0.995? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. ICP Interference Check Samples				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
V. Matrix Spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.		✓		
VI. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VII. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	

LDC #: 14894C4
SDG #: JC448

VALIDATION FINDINGS CHECKLIST

Reviewer: LM
2nd Reviewer: AL

Validation Area	Yes	No	NA	Findings/Comments
VII. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
VIII. Internal Standards (EPA SW 846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 14894c4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: 1

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	Sediment	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
m4.5	↓	Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___

Analysis Method

ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb], [✓ As], Ba, Be, [✓ Cd], Ca, [✓ Cr], [✓ Co], [✓ Cu], Fe, [✓ Pb], Mg, Mn, Hg, [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl], [✓ V], [✓ Zn], [✓ Mo], B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: [✓ Mercury by CVAA if performed]

ELEMENTS.4

LDC #: 14894C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
ICP Interference Check Sample

Reviewer: MM
2nd Reviewer: A

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Were ICP interference check samples performed as required?
Y N N/A Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
1	3/15/06	ICSA	Cr	8.2 ug/L (RL = 5 ug/L	1-3, 5	No qual (> 10x ICSA)

Comments:

LDC #: 14876C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. 70-130

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	4a	Sediment	Sb	13.1	1-3, 5	J/UJ/A (post spike: 95.7%)

Comments:

LDC #: 14876c4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits) ≤30	Difference (Limits)	Associated Samples	Qualifications
1	5	Solvent	Mo	39.6		1-3, 5	J/uJ/A

Comments:

LDC #: 14894 cy
SDG #: JC418

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MJ
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Pb	1940	2000	97.0	97.0	Y
	GFAA (Initial calibration)						
ICV	CVAA (Initial calibration)	Hg	8.39	8.0	104.9	104.9	Y
CCV	ICP (Continuing calibration)	Mo	959	1000	95.9	95.9	↓
	GFAA (Continuing calibration)						
CCV	CVAA (Continuing calibration)	Hg	3.90	4.0	97.5	97.5	Y
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

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

LDC #: 14894C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MM
2nd Reviewer: AC

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Se	983.9	1000	98.4	98.4	Y
LCS	Laboratory control sample	Cd	47.9	50	95.8	95.8	
4	Matrix spike	Ni	(SSR-SR) 94.4	87.7	84.8	84.4	
5	Duplicate	Zn	404	405	0.2	0.2	
NA	ICP serial dilution						

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

LDC #: 14894C4
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for 1 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

$$Cu = \frac{1.192\ mg/L \times 0.05\ L \times 2 \times 1000\ g/kg}{0.535 \times 1.088\ g} = 208.7\ mg/kg$$

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
1	Sb	26	26.	Y
	As	119	119	
	Cd	0.6	0.6	
	Cr	37.6	37.6	
	Co	14.1	14.1	
	Cu	209	209	
	Pb	113	113	
	Hg	0.42	0.43	
	Mo	11.8	11.8	
	Ni	23	23	
	V	68.9	68.9	
	Zn	405	405	↓

LDC #: 14894D4

SDG #: JC95

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/28/06

Page: 1 of 1

Reviewer: MM

2nd Reviewer: M

METHOD: Metals (EPA SW 846 Method 6010B/7000)

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: 2/21/06 - 2/24/06
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	SW	
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS, SRM
VIII.	Internal Standard (ICP-MS)	N	Smt utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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: Sediment

1	LDW-SC41-0-1	11	LDW-SC19-1-2	21		31	
2	LDW-SC41-1-2	12	LDW-SC19-2-4	22		32	
3	LDW-SC41-2-4	13	LDW-SC41-0-1MS	23		33	
4	LDW-SC44-0-2	14	LDW-SC41-0-1DUP	24		34	
5	LDW-SC44-2-3.2	15	PB	25		35	
6	LDW-SC44-3.2-4	16		26		36	
7	LDW-SC29-0-1	17		27		37	
8	LDW-SC29-1-2	18		28		38	
9	LDW-SC29-2-3.6	19		29		39	
10	LDW-SC19-0-1	20		30		40	

Notes: _____

LDC #: 14894D4
SDG #: JC95

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: A

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-12	Sediment	Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg], [✓ Ni], K, [✓ Se], [✓ Ag], Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
QC 3,14	↓	Al, [✓ Sb, As], Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, [✓ Hg] [✓ Ni] K, [✓ Se] [✓ Ag], Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
ICP Trace		Al, [✓ Sb, As] Ba, Be, [✓ Cd] Ca, [✓ Cr, Co, Cu] Fe, [✓ Pb] Mg, Mn, Hg, [✓ Ni] K, [✓ Se] [✓ Ag] Na, [✓ Tl, V, Zn, Mo] B, Si, CN^-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN^-,

Comments: [✓ Mercury by CVAA if performed]

LDC #: 1489404
SDG #: JC95

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: AL

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 70-130 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	13	Sediment	Sb	19.8	1-12, 14	J+ J/A (post spike 106.1%)

Comments:

Inorganics
Worksheets

LDC #: 14728A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/16/06
SDG #: JC17 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: km
2nd Reviewer: dl

METHOD: Salinity (Method SM2520B)

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: 2/22/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	lab replicate
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS / SRM.
VII.	Sample result verification	A	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC50-2-4	11		21	
2	LDW-SC50-0-2	12		22	
3	LDW-SC49-0-2	13		23	
4	LDW-SC49-2-4	14		24	
5	LDW-SC49-4-6	15		25	
6	LDW-SC49-6-8	16		26	
7	LDW-SC49-8-10	17		27	
8	LDW-SC49-10-12	18		28	
9	LDW-SC49-4-6DUP	19		29	
10	MB	20		30	

LDC #: 14928B6
SDG #: JU17

VALIDATION FINDINGS CHECKLIST

Reviewer: MY
2nd Reviewer:

Method: Inorganics (EPA Method SM3120B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?			✓	
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			Dup only
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 14728A6
SDG #: JC17

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [signature]

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 14728A6
SDG #: JC17

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MY
2nd Reviewer: K

METHOD: Inorganics, Method SM 2540B

The correlation coefficient (r) for the calibration of _____ was recalculated. Calibration date: _____

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		_____(units)	_____ (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration		Blank					
Calibration verification		Standard 1					
		Standard 2					
		Standard 3					
		Standard 4					
		Standard 5					
		Standard 6					
		Standard 7					NA
Calibration verification ICV	Salinity	1.000	998		99.8	99.8	Y
Calibration verification							
Calibration verification							

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

LDC #: 14728A6
SDG #: JC17

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

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

METHOD: Inorganics, Method SM 2520B

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Salinity	32.7	35.0	93.4	93.4	Y
MA	Matrix spike sample		(SSR-SR)				
9	Duplicate sample	Salinity	25.3	25.3	0	0	Y

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

LDC #: 14728A6
SDG #: J617

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd reviewer:

METHOD: Inorganics, Method SM 2520B

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1 reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

From the raw data
#1. Salinity = 26.2 ppt.

#	Sample ID	Analyte	Reported Concentration (ppt)	Calculated Concentration (ppt)	Acceptable (Y/N)
1	1	Salinity	26.2	26.2	Y

Note:

LDC #: 14827A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/20/06
SDG #: JA36/JA64/JA90/JB00 Level IV Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MH
2nd Reviewer: N

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb),

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: 2/6/06 - 2/9/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS.
V	Duplicates	A	Triplicates + Duplicates
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	A	Not reviewed for Level III validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

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: Solid

1	LDW-SC55-0-1	11	LDW-SC52-0-1	21	LDW-SC55-0-1DUP	31	LDW-SC55-0-1TRP
2	LDW-SC55-1-2	12	LDW-SC52-1-2	22	LDW-SC53-0-2MS	32	MS
3	LDW-SC55-2-3	13	LDW-SC52-2-4	23	LDW-SC53-0-2DUP	33	
4	LDW-SC49-0-1	14	LDW-SC42-0-1	24	LDW-SC42-2-4MS	34	
5	LDW-SC49-1-2	15	LDW-SC42-1-2	25	LDW-SC42-2-4DUP	35	
6	LDW-SC49-2-4	16	LDW-SC42-2-4	26	LDW-SC3-0-2MS	36	
7	LDW-SC53-0-2	17	LDW-SC48-0-1	27	LDW-SC3-0-2DUP	37	
8	LDW-SC53-2-4	18	LDW-SC48-1-2	28	LDW-SC53-0-2TRP	38	
9	LDW-SC56-0-2	19	LDW-SC3-0-2	29	LDW-SC42-2-4TRP	39	
10	LDW-SC56-2-4	20	LDW-SC3-2-4	30	LDW-SC3-0-2TRP	40	

Notes:

LDC #: 14827A6
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: a

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-16,19,20	Sediment	[✓ TS] TOC [✓ Grain Size] Gravity Density Porosity Moisture Atterberg
1-8,11-16,19,20		TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg
1-9,12-14,16-20		TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg]
21		[✓ TS] TOC Grain Size Gravity Density Porosity Moisture Atterberg
23, 28		[✓ TS] [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg
22		TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg
25, 29		[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg
24		TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg
27,30		[✓ TS] [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg
26		TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg
21,31		TS TOC [✓ Grain Size] Gravity Density Porosity Moisture Atterberg
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:

LDC #: 14897A6
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: MY
2nd Reviewer: [illegible]

Method: Inorganics (EPA Method see cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)				
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were < 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 14879A6
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 1
Reviewer: MM
2nd Reviewer: JV

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 14829A6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

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

METHOD: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of _____ was recalculated. Calibration date: _____

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		_____(units)	_____ (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration		Blank					
Calibration verification		Standard 1					
		Standard 2					
	Mo	Standard 3					
		Standard 4					
		Standard 5					
		Standard 6					
		Standard 7					
Calibration verification CCV	Tot	5000	5114		102.28	102.28	Y
Calibration verification CCV	Tot	5000	5292		105.84	105.84	↓
Calibration verification							

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

LDC #: 14827A6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: AA

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	TOC	0.5059	0.500	101.2	101.2	Y
22	Matrix spike sample	↓	(SSR-SR) 2.47	3.27 ~~5.70~~	75.5	75.5	↓
21	Duplicate sample	TS	55.8	58.9	5.4	5.4	↓

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

LDC #: 46827A6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 2
Reviewer: MM
2nd reviewer: M

METHOD: Inorganics, Method See cover

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

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1 reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

$TS = \frac{\text{Dry wt} \times 100\%}{\text{wt wt.}}$

$TS = \frac{7.760}{13.3190 - 0.9813} = 58.9$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	1	TS (%)	58.9	58.9	Y
		T-C ↓	1.50	1.5	
		Specific Gravity	2.69	2.67	
		Wet Density (lb/ft³)	128.6	128.6	
		Moisture Content (%)	31.22	31.22	
		Dry Density (lb/ft³)	98.0	98.0	
		Porosity (unit)	0.42	0.42	↓
		% Finer than Indicated Size			
		Phi Size 0	99.5	99.5	Y
		1	98.1	98.1	
		2	94.3	94.3	
		3	77.6	77.7	
		4	47.6	47.6	
		5	28.2	28.2	
		6	16.7	17.0	
		7	11.1	11.8	
		8	7.2	7.9	
		9	4.9	5.7	
		10	3.4	4.2	↓

Note:

LDC #: 14857A6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: Inorganics, Method See cover

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

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1, 12 reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

$$T{\cdot}C = \frac{(T{\cdot}C \times T{\cdot}C\,TS) \times 100\% \times 10^{-6}}{\%\,TS}$$

$$T{\cdot}C = \frac{26258 \times 10^{-4} \times 63.49}{61.0}$$

$$= 2.73\ \%$$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
2	12	TS (%)	61.00	61.0	Y
		T·C ↓	2.73	2.73	↓
		Specific Gravity	2.60	2.60	
		Wet density (lb/ft³)	99.7	99.7	
		Moisture Content	58.16	58.16	
		Dry density (lb/ft³)	63.0	63.0	
		porosity	0.61	0.61	
		Plasticity Index	13.7	13.65	
		Liquid limit	54.9	54.6	
		plastic limit	41.1	41.1	
		% Finer than Indicated Size			
		phi size -2	99.8	99.8	
		-1	98.8	98.8	
		0	97.7	97.7	
		1	96.2	96.2	
		2	92.5	92.5	
		3	90.5	90.5	
		4	80.1	80.1	
		5	66.5	66.5	
		6	45.3	45.1	
		7	25.9	25.1	
		8	15.4	14.9	
		9	11.7	11.2	
		10	7.9	7.44	↓

Note:

LDC #: 14827B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB30 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: R

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 3/13/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	3MS / Triplicates *
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

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: 22 limit

1	LDW-SC13-0-2	11		21		31	
2	LDW-SC13-2-4	12		22		32	
3	LDW-SC9-0-1	13		23		33	
4	LDW-SC9-1-2.6	14		24		34	
5	LDW-SC9-2.6-4	15		25		35	
6	MS	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 14827B6
SDG #: JB36

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

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

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-5	sediment	(TS) (TOC) (Grain Size) Gravity Density Porosity Moisture Atterberg ____ ____ ____
1-4	↓	TS TOC Grain Size (Gravity) (Density) (Porosity) (Moisture) (Atterberg) ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:________________________________

LDC #: 14827C6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/16
SDG #: JB31 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: W

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/13/16
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	3 MS, Triplicates.
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS, LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC32-0-1	11	LDW-SC14-0-1.4MS	21		31	
2	LDW-SC32-1-2	12	LDW-SC14-0-1.4DUP	22		32	
3	LDW-SC32-2-4	13	LDW-SC14-1.4-2DUP	23		33	
4	LDW-SC14-0-1.4	14	LDW-SC14-0-1.4 TRP	24		34	
5	LDW-SC14-1.4-2	15	LDW-SC14-1.4-2 TRP	25		35	
6	LDW-SC14-2-4.1	16	MB	26		36	
7	LDW-SC11-0-0.8	17		27		37	
8	LDW-SC11-0.8-2	18		28		38	
9	LDW-SC11-2-3.4	19		29		39	-
10	LDW-SC11-3.4-4.1	20		30		40	

Notes:

LDC #: 14827C6
SDG #: JB31

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: N

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-10	Sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
2,3,4,6,8	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
QC 11		TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
12,14		~~TS~~ [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
13,15		[✓ TS] TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:______________________________

LDC #: 14827D6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB47/JB64/JB80/JB90 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/7/06 – 2/15/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Duplicates + Triplicates.
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Solids

1	LDW-SC30-0-2.5	11	LDW-SC56-2-4	21	LDW-SC20-0-2 TRP	31	
2	LDW-SC30-2.5-4	12	LDW-SC48-0-1	22	LDW-SC56-0-2 TRP	32	
3	LDW-SC21-0-1	13	LDW-SC48-1-2	23	LDW-SC21-2-4 Dup	33	
4	LDW-SC21-1-2	14	LDW-SC48-2-4	24	↓ TRP	34	
5	LDW-SC21-2-4	15	LDW-SC1-0-2	25	~~LDW-SC5~~	35	
6	LDW-SC35-0-2	16	LDW-SC1-2-4	26	MB	36	
7	LDW-SC35-2-4	17	LDW-SC20-0-2MS	27		37	
8	LDW-SC20-0-2	18	LDW-SC20-0-2DUP	28		38	
9	LDW-SC20-2-4	19	LDW-SC56-0-2MS	29		39	
10	LDW-SC56-0-2	20	LDW-SC56-0-2DUP	30		40	

Notes: _____

LDC #: 14827D6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: R

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-16	Sediment	[✓ TS] [✓ TOC] [✓ ~~Grain Size~~] Gravity Density Porosity Moisture Atterberg ____ ____ ____
1,2,4-9,15,16	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
[illegible] 17		TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
18,21		[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
19		TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
20		[✓ TS] [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
21	↓	[✓ TS] TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
↓ 23,24	↓	TS TOC [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
12,13	Sediment	TS TOC Grain Size Gravity Density Porosity [✓ Moisture] [✓ Atterberg] ____ ____ ____
1-9,12-16	↓	TS TOC [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments: *Samples in SDG JB90 were frozen. Sizing on hold.

LDC #: 14827E6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB91 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: M

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/17/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS
V	Duplicates	A	Duplicates + Triplicates
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC23-0-2	11		21		31	
2	LDW-SC23-2-4	12		22		32	
3	MB	13		23		33	
4		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	

Notes:

LDC #: 14827B6
SDG #: JB91

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MH
2nd reviewer: h

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1, 2	Sediment	(TS) (TOC) (Grain Size) (Gravity) (Density) (Porosity) (Moisture) (Atterberg) ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments: ____________________

LDC #: 14827F6

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/21/06

SDG #: JB82

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: MM

2nd Reviewer: M

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/16/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(1,4), (2,5) (3,6)
X	Field blanks	N	

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: Solvent

1	LDW-SC36-0-1	11	LDW-SC12-2-4	21		31	
2	LDW-SC36-1-2	12	LDW-SC39-0-1MS	22		32	
3	LDW-SC36-2-4	13	LDW-SC39-0-1DUP	23		33	
4	LDW-SC202-0-1	14	↓ TRP	24		34	
5	LDW-SC202-1-2	15	MM	25		35	
6	LDW-SC202-2-4	16		26		36	
7	LDW-SC39-0-1	17		27		37	
8	LDW-SC39-1-2	18		28		38	
9	LDW-SC39-2-4	19		29		39	
10	LDW-SC12-0-2	20		30		40	

Notes: _____

LDC #: 14827F6
SDG #: JB82

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: a

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-11	Sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
3,6,8-11	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
2, 12	↓	TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
13, 14	↓	[✓ TS] [✓ TOC] ~~Grain Size~~ Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments: ____________________

LDC#: 14827F6
SDG#: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MH
2nd Reviewer: [illegible]

Inorganics, Method see cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (%)		RPD	
	1	4		
Total Solids	61.30	56.70	8	(≤20)
TOC	1.42	1.27	11	(≤30)

Analyte	Concentration (%)		RPD	
	2	5		
Total Solids	64.40	61.30	5	(≤20)
TOC	1.46	1.75	18	(≤30)

Analyte	Concentration (%)		RPD	
	3	6		
Total Solids	66.30	68.30	3	(≤20)
TOC	1.32	1.24	6	(≤30)

LDC#: 14827F6
SDG#: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: [illegible]

Grain Size, Method PSEP

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(≤30) RPD	
	1	4		
-1	99.9	100	0	
0	99.5	99.9	0	
1	98.4	99.0	1	
2	96.9	97.9	1	
3	94.6	95.2	1	
4	83.9	77.9	7	
5	67.4	56.2	18	
6	45.8	39.5	15	
7	28.1	23.2	19	
8	17.7	15.0	17	
9	11.9	12.2	2	
10	8.2	7.3	12	

LDC#: 14827F6
SDG#: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: [illegible]

Grain Size, Method PSEP

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(≤30) RPD	
	2	5		
-2	96.4	100	4	
-1	95.8	99.9	4	
0	95.0	99.6	5	
1	92.8	98.8	6	
2	92.7	97.8	5	
3	85.5	96.1	12	
4	76.8	84.2	9	
5	60.7	65.3	7	
6	40.3	43.2	7	
7	25.7	24.2	6	
8	16.6	15.4	8	
9	11.3	10.7	5	
10	7.7	7.5	3	

LDC#: 14827F6
SDG#: JB82

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: K

Grain Size, Method PSEP

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(≤30) RPD	
	3	6		
-1	100	99.9	0	
0	99.9	99.6	0	
1	99.4	97.9	2	
2	97.9	95.1	3	
3	79.9	81.3	2	
4	49.0	53.4	9	
5	33.1	35.0	6	
6	21.4	22.8	6	
7	12.8	14.1	10	
8	8.1	8.9	9	
9	5.6	5.9	5	
10	4.0	4.2	5	

LDC #: 14847A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB01/JB22 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/9/06 - 2/11/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	3 MS / Triplicate from SBG, JC21 + JA90
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC4-0-1	11		21		31	
2	LDW-SC4-1-2	12		22		32	
3	LDW-SC4-2-4	13		23		33	
4	LDW-SC2-0-2	14		24		34	
5	LDW-SC2-2-4	15		25		35	
6	LDW-SC33-0-2	16		26		36	
7	LDW-SC33-2-4	17		27		37	
8	LDW-SC201-0-1.5	18		28		38	
9	LDW-SC201-1.5-4	19		29		39	
10	MB	20		30		40	

Notes:

LDC #: 14847A6
SDG #: JB01/JB22

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: ____
2nd reviewer: ____

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-9	Sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
1,2,5-7	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments: ____

LDC #: 14847B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB20 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: ~

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/10/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	3 MS/Triplicates. Only JA90
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC6-0-2	11	LDW-SC10-2-4	21		31	
2	LDW-SC6-2-4.5	12	LDW-SC7-0-1DUP	22		32	
3	LDW-SC8-0-1	13	↓ TRP	23		33	
4	LDW-SC8-1-2	14	~~DUP~~ LDW-SC6-0-2 DUP	24		34	
5	LDW-SC8-2-4	15	↓ TRP	25		35	
6	LDW-SC7-0-1	16	MB	26		36	
7	LDW-SC7-1-1.7	17		27		37	
8	LDW-SC7-1.7-4	18		28		38	
9	LDW-SC10-0-1	19		29		39	
10	LDW-SC10-1-2	20		30		40	

Notes:

LDC #: 14847B6
SDG #: JB20

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer:
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-11	Sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
1,2,3,5,6,8,9,11	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
QC 12,13	↓	[✓ TS] TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
↓ 14,15	↓	TS TOC [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:

LDC #: 14847C6

SDG #: JB96

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/21/06

Page: 1 of 1

Reviewer: MM

2nd Reviewer: K

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/18/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS) from SDG JB90, JB98
V	Duplicates	A	Duplicates + Triplicates ~~JB90 + JB98~~
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(1,4), (2,5) (3,6)
X	Field blanks	N	

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: Sediment

1	LDW-SC34-0-1	11		21		31	
2	LDW-SC34-1-2	12		22		32	
3	LDW-SC34-2-4	13		23		33	
4	LDW-SC203-0-1	14		24		34	
5	LDW-SC203-1-2	15		25		35	
6	LDW-SC203-2-4	16		26		36	
7	LDW-SC25-0-1	17		27		37	
8	LDW-SC25-1-2	18		28		38	
9	LDW-SC25-2-4	19		29		39	
10	MB	20		30		40	

Notes: _____

LDC #: 14847c6
SDG #: JB96

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer:
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-9	Sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
5,6,8,9	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:

LDC#: 14847 c6
SDG#: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: A

Inorganics, Method See cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (%)		RPD	
	1	4		
Total Solids	46.10	45.50	1	(≤20)
TOC	2.90	3.27	12	(≤30)

Analyte	Concentration (%)		RPD	
	2	5		
Total Solids	50.00	47.30	6	(≤20)
TOC	3.02	2.91	4	(≤30)

Analyte	Concentration (%)		RPD	
	3	6		
Total Solids	59.90	52.90	12	(≤20)
TOC	2.05	2.59	23	(≤30)

LDC#: 14847c6
SDG#: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: [illegible]

Grain Size, Method PSEP

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(<20) RPD	
	1	4		
-2	100	99.2	1	
-1	98.6	97.0	2	
0	97.0	95.4	2	
1	93.4	92.4	1	
2	87.1	87.9	1	
3	79.4	85.5	7	
4	71.7	71.7	0	
5	61.8	61.2	1	
6	46.1	44.6	3	
7	30.4	25.8	16	
8	20.8	18.0	14	
9	14.2	12.9	10	
10	10.5	9.0	15	

LDC#: 14847C6
SDG#: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MM
2nd Reviewer: [illegible]

Grain Size, Method PSEP

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(≤20) RPD	
	2	5		
-2	99.5	99.1	0	
-1	97.6	97.3	0	
0	95.0	94.7	0	
1	92.3	92.0	0	
2	89.2	88.8	0	
3	84.5	84.2	0	
4	75.8	74.0	2	
5	65.7	59.6	10	
6	43.7	37.5	15	
7	19.8	18.1	9	
8	13.7	12.7	8	
9	10.0	9.3	7	
10	7.7	7.0	10	

V:\FIELD DUPLICATES\FD_inorganic\14847C6grain.wpd

LDC#: 14847C6
SDG#: JB96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: MY
2nd Reviewer: M

Grain Size, Method PSEP

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Phi Size	% Finer (%)		(≤30) RPD	
	3	6		
-2	97.4	97.0	0	
-1	94.2	95.7	2	
0	90.1	92.7	3	
1	78.7	84.0	7	
2	61.7	71.1	14	
3	55.4	64.6	15	
4	50.2	59.1	16	
5	43.6	52.5	19	
6	31.7	36.9	15	
7	15.4	17.4	12	
8	10.2	11.6	13	
9	7.5	8.6	14	
10	5.2	5.9	13	

V:\FIELD DUPLICATES\FD_inorganic\14847C6grain.wpd

LDC #: 14865A6

SDG #: JB46/JC05

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/21/06

Page: 1 of 1

Reviewer: MM

2nd Reviewer: R

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/10/06 – 2/14/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	3 MS/ Triplicates.
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC22-0-1.1	11	LDW-SC16-2-4MS	21		31	
2	LDW-SC22-1.1-2	12	LDW-SC16-2-4DUP	22		32	
3	LDW-SC22-2-4	13	↓ TRP	23		33	
4	LDW-SC16-0-2	14	LDW-SC5-0-1Dup	24		34	
5	LDW-SC16-2-4	15	↓ TRP	25		35	
6	LDW-SC27-0-2	16		26		36	
7	LDW-SC27-2-4.5	17		27		37	
8	LDW-SC5-0-1	18		28		38	
9	LDW-SC5-1-2.2	19		29		39	
10	LDW-SC5-2.2-4	20		30		40	

Notes: Samples in SDG JC05 were frozen twice on Hold.

LDC #: 14865A6
SDG #: JB46/JC05

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer:
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-10	Sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
1,2,4,5-8,10	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
~ 11	|	TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
↓12,13	|	[✓ TS] [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
↓14,15	↓	TS TOC [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:

LDC #: 14865B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/21/06
SDG #: JB98/JC10 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MH
2nd Reviewer: VC

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/17/06 – 2/21/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	~~No MS/Dup for TOC #13 & #19. Test~~
V	Duplicates	A	~~No Dup for TS #13 & #19~~ (no client Samples).
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment.

1	LDW-SC15-0-1	11	LDW-SC24-1-2	21	LDW-SC31-2.8-4DUP	31	
2	LDW-SC15-1-2	12	LDW-SC24-2-4	22	↓ TRP	32	
3	LDW-SC15-2-4	13	LDW-SC45-0-1	23	LDW-SC45-1-2 Dup	33	
4	LDW-SC18-0-1	14	LDW-SC45-1-2	24	↓ TRP	34	
5	LDW-SC18-1-2	15	LDW-SC45-2-4	25	MB	35	
6	LDW-SC18-2-4	16	LDW-SC38-0-1	26		36	
7	LDW-SC31-0-1	17	LDW-SC38-1-2	27		37	
8	LDW-SC31-1-2.8	18	LDW-SC38-2-3	28		38	
9	LDW-SC31-2.8-4	19	LDW-SC38-3-3.3	29		39	
10	LDW-SC24-0-1	20	LDW-SC31-2.8-4MS	30		40	

Notes:

LDC #: 14865B6
SDG #: JB98/JC10

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-19	Sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
1,3,5-8,10,12,14-16	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
or 20		TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
↓21, 22	↓	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
↓23, 24	↓	TS TOC [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:

LDC #: 14876A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/27/06
SDG #: JC21 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MH
2nd Reviewer: M

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/22/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates.
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC51-0-2	11	LDW-SC37-1-2TRP	21		31	
2	LDW-SC51-2-3.8	12	LDW-SC37-2-4 Dup	22		32	
3	LDW-SC37-0-1	13	↓ TRP	23		33	
4	LDW-SC37-1-2	14	MB	24		34	
5	LDW-SC37-2-4	15		25		35	
6	LDW-SC26-0-1	16		26		36	
7	LDW-SC26-1-2	17		27		37	
8	LDW-SC26-2-4	18		28		38	
9	LDW-SC37-1-2MS	19		29		39	
10	LDW-SC37-1-2DUP	20		30		40	

Notes: _____

LDC #: 14876A6
SDG #: JC21

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MY
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-8	Sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
1-3,5,7,8	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
9	↓	TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
PD 10,11	↓	[✓ TS] [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
↓ 12,13	↓	TS TOC [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:

LDC #: 14894A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/27/06
SDG #: JC32 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MM
2nd Reviewer: AC

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/23/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS from SDG JC42
V	Duplicates	A	Triplicates from SDG JC42
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Solid

1	LDW-SC43-0-2	11		21		31	
2	LDW-SC43-2-4	12		22		32	
3	LDW-SC54-0-2	13		23		33	
4	LDW-SC54-2-4	14		24		34	
5	LDW-SC47-0-1	15		25		35	
6	LDW-SC47-1-2	16		26		36	
7	LDW-SC47-2-3	17		27		37	
8	LDW-SC47-3-4	18		28		38	
9	MB	19		29		39	
10		20		30		40	

Notes:

LDC #: 14894
SDG #: JC32

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MY
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-8	Sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
1-4, 6, 7	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:

LDC #: 14894B6

SDG #: JC42

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III IV

Date: 4/28/06

Page: 1 of 1

Reviewer: MM

2nd Reviewer: a

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Atterberg Limits (ASTM D4318), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/24/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates.
VI.	Laboratory control samples	A	LCS SRM
VII.	Sample result verification	A/N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC40-0-1.3	11	LDW-SC46-0-1	21		31	
2	LDW-SC40-1.3-2	12	LDW-SC46-1-2	22		32	
3	LDW-SC40-2-4	13	LDW-SC46-2-4	23		33	
4	LDW-SC17-0-1	14	LDW-SC40-2-4MS	24		34	
5	LDW-SC17-1-2	15	LDW-SC40-2-4DUP	25		35	
6	LDW-SC17-2-4	16	LDW-SC46-0-1DUP	26		36	
7	LDW-SC50-0-1	17	LDW-SC40-2-4TRP	27		37	
8	LDW-SC50-1-2	18	LDW-SC46-0-1TRP	28		38	
9	LDW-SC50-2-2.8	19		29		39	
10	LDW-SC50-2.8-4	20		30		40	

Notes:

LDC #: 14894B6
SDG #: JC42

VALIDATION FINDINGS CHECKLIST

Reviewer: MH
2nd Reviewer: A

Method: Inorganics (EPA Method See way

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.				
IV. Matrix Spike/Matrix Spike Duplicate and Duplicate				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 14894 B6
SDG #: JC42

VALIDATION FINDINGS CHECKLIST

Reviewer: MH
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 14894B6
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MV
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-13	Sdmt	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg
2,3,5,6,8,9,12,13	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg]
14	↓	TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg
15,17	↓	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg
↓ 16,18	↓	[✓ TS] TOC Grain Size Gravity Density Porosity Moisture Atterberg
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg
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Comments:

LDC #: 14894B6
SDG #: JL42

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MY
2nd Reviewer: N

METHOD: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of _____ was recalculated. Calibration date: _____

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		_____(units)	_____ (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration		Blank					
Calibration verification		Standard 1					
		Standard 2					
		Standard 3					
		Standard 4					
		Standard 5					
		Standard 6					
		Standard 7					
Calibration verification CCV	TOC	5000	5183		103.7	103.7	Y
Calibration verification * CCV	TOC	5000 ~~4940~~	4940		98.8	98.8	↓
Calibration verification							

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

LDC #: 14894B6
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = $\frac{\text{Found}}{\text{True}}$ x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = $\frac{|S-D|}{(S+D)/2}$ x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Tc	0.512	0.50	102.4	102.4	Y
14	Matrix spike sample	↓	(SSR-SR) 0.629	0.606	103.5	103.4	
15, 17. 4x	Duplicate sample Triplicate	Tc	82.2 82.2	81.7	0.4	0.4	↓

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

LDC #: 14894B6
SDG #: JC47

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd reviewer: M

METHOD: Inorganics, Method See cover

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

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 2 reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

$$TS = \frac{(\text{Dry wt} - \text{Tare wt}) \times 100}{(\text{Sampl wt} - \text{Tare wt})}$$

$$TS = \frac{(5.5959 - 1.0038) \times 100}{6.6989 - 1.0038} = 80.6$$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	2	TS (%)	80.6	80.6	Y
		TOC ↓	0.328	0.328	↓
		Wet Density (lb/ft3)	120.4	120.4	
		Dry Density ↓	92.4	92.4	
		Moisture Content (%)	30.31	30.31	
		Specific Gravity (dry)	2.70	2.71	
		Porosity ↓	0.45	0.45	↓
		% Finer than indicated size			
		Phi Size -2	96.5	96.5	Y
		-1	95.0	95.0	
		0	94.3	94.3	
		1	67.8	67.8	
		2	9.8	9.8	
		3	2.8	2.8	
		4	1.8	1.8	
		5	1.0	1.0	
		6	0.9	0.9	
		7	0.8	0.8	
*		8	0.7	0.7	↓
		9	0.6	0.6	
		10	0.6	0.6	

Note:

LDC #: 14894B6
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: Inorganics, Method See cover

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

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 10 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$$TOC = \frac{TOC_{Reading} \times TOC\ \%\ Solid \times 10^{6} \times 100\%}{\%\ Solid}$$

Recalculation:

$$TOC = \frac{1132 \times 10^{-4} \times 95.06}{83.1}$$

$$= 0.129\ (\%)$$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
2	10	TS (%)	83.10	83.0	Y
		TOC ↓	0.129	0.129	↓
		% Finer than indicated size			
		Phi Size -2	99.5	99.6	Y
		-1	98.5	98.5	
		0	92.1	92.1	
		1	50.7	50.4	
		2	9.1	8.7	
		3	2.0	1.6	
		4	1.3	0.83	
		5	1.1	0.7	
		6	1.0	0.6	
		7	0.8	0.4	
		8	0.7	0.3	
		9	0.7	0.3	
		10	0.6	0.3	↓

Note:

LDC #: 14894C6 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/28/06
SDG #: JC48 Level III Page: 1 of 1
Laboratory: Analytical Resources, Inc. Reviewer: MH
2nd Reviewer: AL

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/25/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	
V	Duplicates	A	Triplicates
VI.	Laboratory control samples	A	LCS. SRM.
VII.	Sample result verification	A/N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: Sediment

1	LDW-SC28-0-1	11		21		31	
2	LDW-SC28-1-2	12		22		32	
3	LDW-SC28-2-4	13		23		33	
4	LDW-SC28-0-1MS	14		24		34	
5	LDW-SC28-0-1DUP	15		25		35	
6	↓ TRP	16		26		36	
7	MB	17		27		37	
8	LDW-SC28-2-4 Dup	18		28		38	
9	LDW-SC28-2-4 TRP	19		29		39	
10		20		30		40	

Notes:

LDC #: 14894c6
SDG #: JL48

VALIDATION FINDINGS CHECKLIST

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

Method: Inorganics (EPA Method See comp

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			Samples were frozen during on-hold.
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 148964
SDG #: JC48

VALIDATION FINDINGS CHECKLIST

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

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 14894c6
SDG #: JC48

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MY
2nd reviewer: a

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-3	Sdmt	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
2,3	↓	TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg] ____ ____ ____
ac 4	↓	TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
↓ 5,6	↓	[✓ TS] [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
↓ 8,9	↓	TS TOC [✓ Grain Size] Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
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		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg ____ ____ ____
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg

Comments:____

LDC #: 14894C6
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MY
2nd Reviewer: AC

METHOD: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of _____ was recalculated. Calibration date: _____

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		_____(units)	_____ (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration		Blank					
Calibration verification		Standard 1					
		Standard 2					
		Standard 3					
		Standard 4					
		Standard 5					
		Standard 6					
		Standard 7					
Calibration verification CCV	TOC	5000	4910		98.2	98.2	Y
Calibration verification *							
Calibration verification							

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

LDC #: 14894c6
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: K

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Toc	0.5098	0.500	102	102.0	Y
4	Matrix spike sample	↓	(SSR-SR) 2.51	2.79 ~~2.55~~	90.0	89.6	↓
5.6	Duplicate sample	↓	2.59 2.13	2.81 ~~2.67~~	13.8	14.0	↓

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

LDC #: 14894C6
SDG #: JC98

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: Inorganics, Method See cover

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

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 2 reported with a positive detect were recalculated and verified using the following equation:

Concentration = (%) $TOC = \frac{(TOC\ reading \times TOC\%\ solid) \times 10^{4}}{\%\ solid}$

Recalculation: $TOC = \frac{(1963 \times 10^{-4}) \times 53.79}{52.4} = 2.066\ (\%)$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	2	TS (%)	52.4	52.4	Y
		TOC ↓	2.07	2.07	↓
		Wet Density (lb/(ft3)	99.0	99.0	
		Dry Density ↓	52.7	52.7	
		Moisture Content (%)	87.77	87.77	
		Specific Gravity	2.64	2.64	
		Porosity	0.68	0.68	
		Atterberg limit, Plasticity Index	32.3	32.3	
		liquid limit	67.7	67.7	
		Plastic limit	35.4	35.4	
	% Finer	Phi Size -2	99.2	99.2	
		-1	98.7	98.7	
		0	98.3	98.3	
		1	96.7	96.7	
		2	93.6	93.6	
		3	91.6	91.6	
		4	81.9	81.9	
		5	64.4	64.4	
		6	46.0	45.0	
		7	29.9	29.9	
		8	19.6	19.6	
		9	13.3	13.3	
		10	8.5	8.4	✓

Note:

LDC #: 14894D6

SDG #: JC95

Laboratory: Analytical Resources, Inc.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 4/28/06

Page: 1 of 1

Reviewer: LW

2nd Reviewer: [illegible]

METHOD: Wet Density (ASTM D2937), Dry Density (CalcDD), Moisture Content (ASTM D2216), Porosity (Method CalcPor), Grain Size (PSEP), Specific Gravity (ASTM D854), Total Solids (EPA Method 160.3), TOC (Plumb)

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: 2/21/06 - 2/24/06
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS
V	Duplicates	A	Triplicates
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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: sediment

1	LDW-SC41-0-1	11	LDW-SC19-1-2	21		31	
2	LDW-SC41-1-2	12	LDW-SC19-2-4	22		32	
3	LDW-SC41-2-4	13	LDW-SC41-0-1MS	23		33	
4	LDW-SC44-0-2	14	LDW-SC41-0-1DUP	24		34	
5	LDW-SC44-2-3.2	15	↓ TRP	25		35	
6	LDW-SC44-3.2-4	16		26		36	
7	LDW-SC29-0-1	17		27		37	
8	LDW-SC29-1-2	18		28		38	
9	LDW-SC29-2-3.6	19		29		39	
10	LDW-SC19-0-1	20		30		40	

Notes: * Samples were frozen during on hold.

LDC #: 14894D6
SDG #: JC95

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer:
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-12	sediment	[✓ TS] [✓ TOC] [✓ Grain Size] Gravity Density Porosity Moisture Atterberg
2,3,4,5,7,12		TS TOC Grain Size [✓ Gravity] [✓ Density] [✓ Porosity] [✓ Moisture] [✓ Atterberg]
13		TS [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg
↓ 14, 15	↓	[✓ TS] [✓ TOC] Grain Size Gravity Density Porosity Moisture Atterberg
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg
		TS TOC Grain Size Gravity Density Porosity Moisture Atterberg
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Comments:

HRGC/HRMS Dioxins/Dibenzofurans
Worksheets

LDC #: 14842A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/24/06
SDG #: DPWG18883/WG18543 Level IV Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer: 9
2nd Reviewer: 1

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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: 2/22-25/06
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	%RSD ≤ 20/35.
IV.	Routine calibration	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates	N	Text
VII.	Laboratory control samples	SW	OPR. CRM CRM
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	A	
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	A	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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:
MS only

1	LDW-SC26-1-2	11	LDW-SC28-2-4	21	WG18543-101	31	
2	LDW-SC26-2-4	12	LDW-SC40-2-4DUP	22		32	
3	LDW-SC40-0-1.3	13		23		33	
4	LDW-SC40-1.3-2	14		24		34	
5	LDW-SC40-2-4	15		25		35	
6	LDW-SC19-0-1	16		26		36	
7	LDW-SC19-1-2	17		27		37	
8	LDW-SC19-2-4	18		28		38	
9	LDW-SC28-0-1	19		29		39	
10	LDW-SC28-1-2	20		30		40	

Notes: _____

LDC #: 14842A21
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Page: 1 of 3
Reviewer: 9
2nd Reviewer: R

Method: Dioxins/Dibenzofurans (EPA SW 846 Method ~~8290~~ 1613B)

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				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Was the chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomers ≤ 25% ?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
Was the presence of 1,2,8,9-TCDD and 1,3,4,6,8-PeCDF verified?	✓			
III. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20% for unlabeled standards and ≤ 30% for labeled standards?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?	✓			
IV. Continuing calibration				
Was a routine calibration performed at the beginning and end of each 12 hour period?	✓			
Were all percent differences (%D) ≤ 20% for unlabeled standards and ≤ 30% for labeled standards?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet?	✓			
VI. 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.		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 48432A21
SDG #: see Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: A

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
IX. Internal standards				
Were internal standard recoveries within the 40-135% criteria?	✓			
Was the minimum S/N ratio of all internal standard peaks $\geq$ 10?	✓			
X. Target compound identification				
For 2,3,7,8 substituted congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For 2,3,7,8 substituted congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For non-2,3,7,8 substituted congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	✓			
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	✓			
Was the signal to noise ratio for each target compound and labeled standard $\geq$ 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within $\pm$ 2 seconds (includes labeled standards)?	✓			
For PCDF identification, was any signal (S/N $\geq$ 2.5, at $\pm$ seconds RT) detected in the corresponding PCDPE channel?	✓			
Was an acceptable lock mass recorded and monitored?	✓			
XI. 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?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		

LDC #: 48427A21
SDG #: See cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		✓
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 14894B6
SDG #: JL42

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MY
2nd Reviewer: N

METHOD: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of _____ was recalculated. Calibration date: _____

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		_____(units)	_____ (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration		Blank					
Calibration verification		Standard 1					
		Standard 2					
		Standard 3					
		Standard 4					
		Standard 5					
		Standard 6					
		Standard 7					
Calibration verification CCV	TOC	5000	5183		103.7	103.7	Y
Calibration verification * CCV	TOC	5000 ~~4940~~	4940		98.8	98.8	↓
Calibration verification							

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

LDC #: 14894B6
SDG #: JC42

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: M

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = $\frac{\text{Found}}{\text{True}}$ x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = $\frac{|S-D|}{(S+D)/2}$ x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Tc	0.512	0.50	102.4	102.4	Y
14	Matrix spike sample	↓	(SSR-SR) 0.629	0.606	103.5	103.4	
15, 17. 4x	Duplicate sample Triplicate	Tc	82.2 82.2	81.7	0.4	0.4	↓

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

LDC #: 14894C6
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MY
2nd Reviewer: AC

METHOD: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of _____ was recalculated. Calibration date: _____

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte		_____(units)	_____ (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration		Blank					
Calibration verification		Standard 1					
		Standard 2					
		Standard 3					
		Standard 4					
		Standard 5					
		Standard 6					
		Standard 7					
Calibration verification CCV	TOC	5000	4910		98.2	98.2	Y
Calibration verification *							
Calibration verification							

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

LDC #: 14894c6
SDG #: JC48

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: K

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Toc	0.5098	0.500	102	102.0	Y
4	Matrix spike sample	↓	(SSR-SR) 2.51	2.79 ~~2.55~~	90.0	89.6	↓
5.6	Duplicate sample	↓	2.59 2.13	2.81 ~~2.67~~	13.8	14.0	↓

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

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:_____

LDC #: 43423

SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 8290)

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

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/17/06 **Blank analysis date:** 3/25/06

Conc. units: ng/kg Associated Samples: NA

Compound	Blank ID	Sample Identification								
WF	85430	5	others		11					
F	0.074	0.309/U			0.307/U					
G	0.152	(2.93)	> 5 X		2.91					
J	0.058	-			-					

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 43423

SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 8290)

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

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/17/06 **Blank analysis date:** 3/25/06

Conc. units: ng/kg Associated Samples: NA

Compound	Blank ID	Sample Identification								
WF	85430	5	others		11					
F	0.074	0.309/U			0.307/U					
G	0.152	(2.93)	> 5 X		2.91					
J	0.058	-			-					

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 43823A2
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		All	H on DB-5	All	R/D

Comments: _____

LDC #: 14843A21
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

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, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard
S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported RRF (CS3 std)	Recalculated RRF (CS3 std)	Reported %RSD	Recalculated %RSD
1	ICAL	3/24/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.34	1.34	1.32	1.32	6.29	6.26
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.15	1.15	1.16	1.16	7.13	7.06
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	0.98	0.98	0.95	0.95	9.47	9.41
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.13	1.13	1.09	1.09	8.74	8.58
			OCDF (^{13}C-OCDD)	1.10	1.10	1.61	1.61	5.60	5.63
2	ICAL	1/28/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.08	1.08	1.12	1.12	5.42	5.37
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDD)						
3			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)						
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDD)						

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 #: 14842A21
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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~~ Amt (CC)	Recalculated ~~RRF~~ Amt (CC)	Reported %D	Recalculated %D
1	DX62_130	3/25/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.34	9.40	9.39		
	S=1		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.15	9.72	9.70		
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	0.98	47.6	47.8		
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.13	47.5	47.3		
			OCDF (^{13}C-OCDD)	1.10	92.2	92.4		
2	DB63_080	3/29/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.08	8.68	8.75		
	S=2		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)					
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)					
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)					
			OCDF (^{13}C-OCDD)					
3	DX62-B1	3/26/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.34	9.73	9.71		
	S=1		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.15	10.1	10.1		
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	0.98	48.0	48.2		
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.13	46.6	46.4		
			OCDF (^{13}C-OCDD)	1.10	90.7	91.0		

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

LDC #: 48426a1
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: 9
2nd Reviewer: a

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

The percent difference (%D) of the initial calibration average Relative 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
$RRF = (A_x)(C_s)/(A_s)(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_s = Area of associated internal standard
C_x = Concentration of compound, C_s = 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	DX62.142	3/31/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.34	9.57	9.57		
	S=1		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.15	9.80	9.79		
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	0.98	49.1	49.2		
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.13	46.9	46.7		
			OCDF (^{13}C-OCDD)	1.10	89.2	89.0		
2	DB63081	3/30/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.08	8.87	8.92		
	S=2		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)					
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)					
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)					
			OCDF (^{13}C-OCDD)					
3			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)					
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)					
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)					
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)					
			OCDF (^{13}C-OCDD)					

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

LDC #: 48423-1
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

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: WG18543-102

Compound	Spike Added (ng/ml)		Spiked Sample Concentration (ng/ml)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
2,3,7,8-TCDD	10		9.92		99.2	99.2				
1,2,3,7,8-PeCDD	50		47.0		94.0	94.0				
1,2,3,4,7,8-HxCDD	↓		46.1		92.3	92.2				
1,2,3,6,7,8-HxCDD										
1,2,3,7,8,9-HxCDD										
1,2,3,4,6,7,8-HpCDD										
OCDD										
2,3,7,8-TCDF										
1,2,3,7,8-PeCDF										
2,3,4,7,8-PeCDF										
1,2,3,4,7,8-HxCDF										
1,2,3,6,7,8-HxCDF										
2,3,4,6,7,8-HxCDF										
1,2,3,7,8,9-HxCDF										
1,2,3,4,6,7,8-HpCDF										
1,2,3,4,7,8,9-HpCDF	50		45.7		91.5	91.4				
OCDF	100		82.7		82.7	82.7				

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.

Ions Monitored for HRGC/HRMS Analysis of PCDDs/PCDFs

Descriptor	Accurate mass[a]	Ion ID	Elemental Composition	Analyte	Descriptor	Accurate Mass[a]	Ion ID	Elemental Composition	Analyte
1	303.9016	M	$C_{12}H_4{}^{35}Cl_4O$	TCDF	4	407.7818	M+2	$C_{12}H^{35}Cl_6{}^{37}ClO$	HpCDF
	305.8987	M+2	$C_{12}H_4{}^{35}Cl_3{}^{37}C10$	TCDF		409.7788	M+4	$C_{12}H^{35}Cl_5{}^{37}Cl_2O$	HpCDF
	315.9419	M	$^{13}C_{12}H_4{}^{35}Cl_4O$	TCDF (S)		417.8250	M	$^{13}C_{12}H^{35}Cl_7O$	HpCDF (S)
	317.9389	M+2	$^{13}C_{12}H_4{}^{35}Cl_3{}^{37}ClO$	TCDF (S)		419.8220	M+2	$^{13}C_{12}H^{35}Cl_6{}^{37}ClO$	HpCDF
	319.8965	M	$C_{12}H_4{}^{35}Cl_4O_2$	TCDD		423.7767	M+2	$C_{12}H^{35}Cl_6{}^{37}ClO_2$	HpCDD
	321.8936	M+2	$C_{12}H_4{}^{35}Cl_3{}^{37}C10_2$	TCDD		425.7737	M+4	$C_{12}H^{35}Cl_5{}^{37}Cl_2O_2$	HpCDD
	331.9368	M	$^{13}C_{12}H_4{}^{35}Cl_4O_2$	TCDD (S)		435.8169	M+2	$^{13}C_{12}H^{35}Cl_6{}^{37}ClO_2$	HpCDD (S)
	333.9338	M+2	$^{13}C_{12}H_4{}^{35}Cl_3{}^{37}ClO_2$	TCDD (S)		437.8140	M+4	$^{13}C_{12}H^{35}Cl_5{}^{37}Cl_2O_2$	HpCDD (S)
	375.8364	M+2	$C_{12}H_4{}^{35}Cl_5{}^{37}ClO$	HxCDPE		479.7165	M+4	$C_{12}H^{35}Cl_7{}^{37}Cl_2O$	NCDPE
	[354.9792]	LOCK	C_9F_{13}	PFK		[430.9728]	LOCK	C_9F_{17}	PFK
2	339.8597	M+2	$C_{12}H_3{}^{35}Cl_4{}^{37}ClO$	PeCDF	5	441.7428	M+2	$C_{12}{}^{35}Cl_7{}^{37}ClO$	OCDF
	341.8567	M+4	$C_{12}H_3{}^{35}Cl_3{}^{37}Cl_2O$	PeCDF		443.7399	M+4	$C_{12}{}^{35}Cl_6{}^{37}Cl_2O$	OCDF
	351.9000	M+2	$^{13}C_{12}H_3{}^{35}Cl_4{}^{37}C10$	PeCDF (S)		457.7377	M+2	$C_{12}{}^{35}Cl_7{}^{37}ClO_2$	OCDD
	353.8970	M+4	$^{13}C_{12}H_3{}^{35}Cl_3{}^{37}Cl_2O$	PeCDF (S)		459.7348	M+4	$C_{12}{}^{35}Cl_6{}^{37}Cl_2O_2$	OCDD
	355.8546	M+2	$C_{12}H_3{}^{35}Cl_4{}^{37}ClO_2$	PeCDD		469.7780	M+2	$^{13}C_{12}{}^{35}Cl_7{}^{37}ClO_2$	OCDD (S)
	357.8516	M+4	$C_{12}H_3{}^{35}Cl_3{}^{37}Cl_2O_2$	PeCDD		471.7750	M+4	$^{13}C_{12}{}^{35}Cl_6{}^{37}Cl_2O_2$	OCDD (S)
	367.8949	M+2	$^{13}C_{12}H_3{}^{35}Cl_4{}^{37}ClO_2$	PeCDD (S)		513.6775	M+4	$C_{12}{}^{35}Cl_8{}^{37}Cl_2O$	DCDPE
	369.8919	M+4	$^{13}C_{12}H_3{}^{35}Cl_3{}^{37}Cl_2O_2$	PeCDD (S)		[422.9278]	LOCK	$C_{10}F_{17}$	PFK
	409.7974	M+2	$C_{12}H_3{}^{35}Cl_6{}^{37}ClO$	HpCDPE					
	[354.9792]	LOCK	C_9F_{13}	PFK					
3	373.8208	M+2	$C_{12}H_2{}^{35}Cl_5{}^{37}ClO$	HxCDF					
	375.8178	M+4	$C_{12}H_2{}^{35}Cl_4{}^{37}Cl_2O$	HxCDF					
	383.8639	M	$^{13}C_{12}H_2{}^{35}Cl_6O$	HxCDF (S)					
	385.8610	M+2	$^{13}C_{12}H_2{}^{35}Cl_5{}^{37}ClO$	HxCDF (S)					
	389.8156	M+2	$C_{12}H_2{}^{35}Cl_5{}^{37}ClO_2$	HxCDD					
	391.8127	M+4	$C_{12}H_2{}^{35}Cl_4{}^{37}Cl_2O_2$	HxCDD					
	401.8559	M+2	$^{13}C_{12}H_2{}^{35}Cl_5{}^{37}ClO_2$	HxCDD (S)					
	403.8529	M+4	$^{13}C_{12}H_2{}^{35}Cl_4{}^{37}Cl_2O_2$	HxCDD (S)					
	445.7555	M+4	$C_{12}H_2{}^{35}Cl_8{}^{37}Cl_2O$	OCDPE					
	[430.9728]	LOCK	C_9F_{17}	PFK					

(a) The following nuclidic masses were used:

H = 1.007825	O = 15.994915
C = 12.000000	^{35}Cl = 34.968853
^{13}C = 13.003355	^{37}Cl = 36.965903
F = 18.9984	

S = internal/recovery standard

LDC #: 48428A21
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: M

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

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)

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

RRF = Relative Response Factor (average) from the initial calibration

Df = Dilution Factor.

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

Example:

Sample I.D. 1, A:

Conc. = $\frac{(3.00E+05)(2000)(1)}{(9.76E+07)(1.15)(10.2)(\quad)}$

= 0.524 ng/kg

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

LDC #: 14896A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/28/06
SDG #: DPWG18912/WG18542 Level IV Page: 1 of 1
Laboratory: AXYS Analytical Services Ltd. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

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: 2/15 - 21/06
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	%RSD ≤ 20/35
IV.	Routine calibration	A	RC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates/DUP	N/A	
VII.	Laboratory control samples	SW	LCS. CRM (Rext)
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	A	
XI.	Compound quantitation and CRQLs	A	
XII.	System performance	A	
XIII.	Overall assessment of data	SW	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

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: All soils

1	LDW-SC20-0-2	11	LDW-SC41-2-4	21	WG18542-10	31	
2	LDW-SC20-2-4	12	LDW-SC26-0-1	22		32	
3	LDW-SC39-0-1	13	LDW-SC29-2-3.6DUP	23		33	
4	LDW-SC39-1-2	14		24		34	
5	LDW-SC39-2-4	15		25		35	
6	LDW-SC29-0-1	16		26		36	
7	LDW-SC29-1-2	17		27		37	
8	LDW-SC29-2-3.6	18		28		38	
9	LDW-SC41-0-1	19		29		39	
10	LDW-SC41-1-2	20		30		40	

Notes: _____

LDC #: 14896A21
SDG #: see Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: A
2nd Reviewer: A

Method: Dioxins/Dibenzofurans (EPA SW 846 Method ~~8290~~ 1613B)

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				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Was the chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomers ≤ 25% ?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
Was the presence of 1,2,8,9-TCDD and 1,3,4,6,8-PeCDF verified?	✓			
III. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20% for unlabeled standards and ≤ 30% for labeled standards?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?	✓			
IV. Continuing calibration				
Was a routine calibration performed at the beginning and end of each 12 hour period?	✓			
Were all percent differences (%D) ≤ 20% for unlabeled standards and ≤ 30% for labeled standards?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet?	✓			
VI. 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.		✓		DUP
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 48962
SDG #: see Cover

VALIDATION FINDINGS CHECKLIST

Reviewer: a
2nd Reviewer: a

Validation Area	Yes	No	NA	Findings/Comments
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
IX. Internal standards				
Were internal standard recoveries within the ~~40-135%~~ 25-150 criteria?	✓			
Was the minimum S/N ratio of all internal standard peaks $\geq$ 10?	✓			
X. Target compound identification				
For 2,3,7,8 substituted congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For 2,3,7,8 substituted congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For non-2,3,7,8 substituted congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	✓			
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?	✓			
Was the signal to noise ratio for each target compound and labeled standard $\geq$ 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within $\pm$ 2 seconds (includes labeled standards)?	✓			
For PCDF identification, was any signal (S/N $\geq$ 2.5, at $\pm$ seconds RT) detected in the corresponding PCDPE channel?	✓			
Was an acceptable lock mass recorded and monitored?	✓			
XI. 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?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		

LDC #: 14896A21
SDG #: see cover

VALIDATION FINDINGS CHECKLIST

Reviewer: 4
2nd Reviewer: 4

Validation Area	Yes	No	NA	Findings/Comments
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target compounds were detected in the field blanks.			✓	

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes: _____

LDC #: 48962

SDG #: Seacaucus

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: f
2nd Reviewer: a

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method ~~8290~~ 1613)

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

(Y) N N/A Were all samples associated with a method blank?
(Y) N N/A Was a method blank analyzed for each matrix?
(Y) N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 3/15/06 **Blank analysis date:** 3/25/06

Conc. units: ng/kg Associated Samples: all

Compound	Blank ID	Sample Identification								
WG	8542-10	All								
F	0.078 *	> 5X								
G	0.193 *									
Q	0.084 *									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

* EMPC

LDC #: 14896A21
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Overall Assessment of Data

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 0

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

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 overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		All	H on DB-5	All	R/UJ

Comments: _____

LDC #: 41968B1
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: CO
2nd Reviewer: AC

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ — A_x = Area of compound, A_{is} = Area of associated internal standard
average RRF = sum of the RRFs/number of standards — C_x = Concentration of compound, C_{is} = Concentration of internal standard
%RSD = 100 * (S/X) — S = Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported RRF (CS3 std)	Recalculated RRF (CS3 std)	Reported %RSD	Recalculated %RSD
1	ICAL	3/24/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.34	1.34	1.32	1.32	6.29	6.26
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.15	1.15	1.16	1.16	7.13	7.06
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	0.98	0.98	0.95	0.95	9.47	9.41
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.13	1.13	1.09	1.09	8.74	8.58
			OCDF (^{13}C-OCDD)	1.70	1.70	1.61	1.61	5.60	
2			~~2,3,7,8-TCDF~~ OCDD (^{13}C-~~2,3,7,8-TCDF~~ OCDD)	1.20	1.20	1.17	1.17	7.73	7.89
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDD)						
3	ICAL	1/28/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.08	1.08	1.12	1.12	5.42	5.27
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDD)						

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 #: 14896A2
SDG #: 3rd Cerve

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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 Awt~~ (CC)	Recalculated ~~RRF Awt~~ (CC)	Reported %D	Recalculated %D
1	~~TCDF~~	3/24/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.34	9.73	9.71		
	DX62_131		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.15	10.1	10.1		
	S=1		1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	0.98	48.0	48.2		
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.13	46.6	46.4		
			OCDF (^{13}C-OCDD)	1.70	90.7	91.0		
2	DX62_132	3/26/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.34	9.64	961		
	S=1		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.15	9.81	9.79		
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	0.98	47.9	48.0		
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.13	46.2	46.1		
			OCDF (^{13}C-OCDD)	1.70	88.4	88.6		
3	DX62_141A	3/31/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)					
	S=1		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)					
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)					
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)					
			~~OCDF~~ (^{13}C-OCDD) OCDD	1.20	96.2	96.8		

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

LDC #: 14896A21
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: 4
2nd Reviewer: a

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

The percent difference (%D) of the initial calibration average Relative 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 calibration 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~~ Amt (CC)	Recalculated ~~RRF~~ Amt (CC)	Reported %D	Recalculated %D
1	DB63079	3/29/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.08	8.43	8.46		
	S=2		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)					
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)					
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)					
			OCDF (^{13}C-OCDD)					
2	DX62_140	3/30/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.34	9.63	9.64		
	S=1		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.15	10.1	10.0		
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	0.98	48.6	48.7		
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.13	46.6	46.5		
			OCDF (^{13}C-OCDD)	1.10	88.5	88.6		
3	DX62_14T	4/3/06	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)					
	S=1		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)					
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)					
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)					
			~~OCDF~~ (^{13}C-OCDD) OCDD	1.20	92.9	93.0		

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

LDC #: 48962A1
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

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: WG18972-102

Compound	Spike Added (ng/mL)		Spiked Sample Concentration (ng/mL)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
2,3,7,8-TCDD	10		9.24		92.4	92.4				
1,2,3,7,8-PeCDD	50		44.7		89.4	89.4				
1,2,3,4,7,8-HxCDD	V		43.3		86.6	86.6				
1,2,3,6,7,8-HxCDD										
1,2,3,7,8,9-HxCDD										
1,2,3,4,6,7,8-HpCDD										
OCDD										
2,3,7,8-TCDF										
1,2,3,7,8-PeCDF										
2,3,4,7,8-PeCDF										
1,2,3,4,7,8-HxCDF										
1,2,3,6,7,8-HxCDF										
2,3,4,6,7,8-HxCDF										
1,2,3,7,8,9-HxCDF										
1,2,3,4,6,7,8-HpCDF										
1,2,3,4,7,8,9-HpCDF	50		44.1		88.2	88.2				
OCDF	100		75.6		75.6	75.6				

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.

Ions Monitored for HRGC/HRMS Analysis of PCDDs/PCDFs

Descriptor	Accurate mass[a]	Ion ID	Elemental Composition	Analyte	Descriptor	Accurate Mass[a]	Ion ID	Elemental Composition	Analyte
1	303.9016	M	$C_{12}H_4{}^{35}Cl_4O$	TCDF	4	407.7818	M+2	$C_{12}H^{35}Cl_6{}^{37}ClO$	HpCDF
	305.8987	M+2	$C_{12}H_4{}^{35}Cl_3{}^{37}C10$	TCDF		409.7788	M+4	$C_{12}H^{35}Cl_5{}^{37}Cl_2O$	HpCDF
	315.9419	M	$^{13}C_{12}H_4{}^{35}Cl_4O$	TCDF (S)		417.8250	M	$^{13}C_{12}H^{35}Cl_7O$	HpCDF (S)
	317.9389	M+2	$^{13}C_{12}H_4{}^{35}Cl_3{}^{37}ClO$	TCDF (S)		419.8220	M+2	$^{13}C_{12}H^{35}Cl_6{}^{37}ClO$	HpCDF
	319.8965	M	$C_{12}H_4{}^{35}Cl_4O_2$	TCDD		423.7767	M+2	$C_{12}H^{35}Cl_6{}^{37}ClO_2$	HpCDD
	321.8936	M+2	$C_{12}H_4{}^{35}Cl_3{}^{37}C10_2$	TCDD		425.7737	M+4	$C_{12}H^{35}Cl_5{}^{37}Cl_2O_2$	HpCDD
	331.9368	M	$^{13}C_{12}H_4{}^{35}Cl_4O_2$	TCDD (S)		435.8169	M+2	$^{13}C_{12}H^{35}Cl_6{}^{37}ClO_2$	HpCDD (S)
	333.9338	M+2	$^{13}C_{12}H_4{}^{35}Cl_3{}^{37}ClO_2$	TCDD (S)		437.8140	M+4	$^{13}C_{12}H^{35}Cl_5{}^{37}Cl_2O_2$	HpCDD (S)
	375.8364	M+2	$C_{12}H_4{}^{35}Cl_5{}^{37}ClO$	HxCDPE		479.7165	M+4	$C_{12}H^{35}Cl_7{}^{37}Cl_2O$	NCDPE
	[354.9792]	LOCK	C_9F_{13}	PFK		[430.9728]	LOCK	C_9F_{17}	PFK
2	339.8597	M+2	$C_{12}H_3{}^{35}Cl_4{}^{37}ClO$	PeCDF	5	441.7428	M+2	$C_{12}{}^{35}Cl_7{}^{37}ClO$	OCDF
	341.8567	M+4	$C_{12}H_3{}^{35}Cl_3{}^{37}Cl_2O$	PeCDF		443.7399	M+4	$C_{12}{}^{35}Cl_6{}^{37}Cl_2O$	OCDF
	351.9000	M+2	$^{13}C_{12}H_3{}^{35}Cl_4{}^{37}C10$	PeCDF (S)		457.7377	M+2	$C_{12}{}^{35}Cl_7{}^{37}ClO_2$	OCDD
	353.8970	M+4	$^{13}C_{12}H_3{}^{35}Cl_3{}^{37}Cl_2O$	PeCDF (S)		459.7348	M+4	$C_{12}{}^{35}Cl_6{}^{37}Cl_2O_2$	OCDD
	355.8546	M+2	$C_{12}H_3{}^{35}Cl_4{}^{37}ClO_2$	PeCDD		469.7780	M+2	$^{13}C_{12}{}^{35}Cl_7{}^{37}ClO_2$	OCDD (S)
	357.8516	M+4	$C_{12}H_3{}^{35}Cl_3{}^{37}Cl_2O_2$	PeCDD		471.7750	M+4	$^{13}C_{12}{}^{35}Cl_6{}^{37}Cl_2O_2$	OCDD (S)
	367.8949	M+2	$^{13}C_{12}H_3{}^{35}Cl_4{}^{37}ClO_2$	PeCDD (S)		513.6775	M+4	$C_{12}{}^{35}Cl_8{}^{37}Cl_2O$	DCDPE
	369.8919	M+4	$^{13}C_{12}H_3{}^{35}Cl_3{}^{37}Cl_2O_2$	PeCDD (S)		[422.9278]	LOCK	$C_{10}F_{17}$	PFK
	409.7974	M+2	$C_{12}H_3{}^{35}Cl_6{}^{37}ClO$	HpCDPE					
	[354.9792]	LOCK	C_9F_{13}	PFK					
3	373.8208	M+2	$C_{12}H_2{}^{35}Cl_5{}^{37}ClO$	HxCDF					
	375.8178	M+4	$C_{12}H_2{}^{35}Cl_4{}^{37}Cl_2O$	HxCDF					
	383.8639	M	$^{13}C_{12}H_2{}^{35}Cl_6O$	HxCDF (S)					
	385.8610	M+2	$^{13}C_{12}H_2{}^{35}Cl_5{}^{37}ClO$	HxCDF (S)					
	389.8156	M+2	$C_{12}H_2{}^{35}Cl_5{}^{37}ClO_2$	HxCDD					
	391.8127	M+4	$C_{12}H_2{}^{35}Cl_4{}^{37}Cl_2O_2$	HxCDD					
	401.8559	M+2	$^{13}C_{12}H_2{}^{35}Cl_5{}^{37}ClO_2$	HxCDD (S)					
	403.8529	M+4	$^{13}C_{12}H_2{}^{35}Cl_4{}^{37}Cl_2O_2$	HxCDD (S)					
	445.7555	M+4	$C_{12}H_2{}^{35}Cl_6{}^{37}Cl_2O$	OCDPE					
	[430.9728]	LOCK	C_9F_{17}	PFK					

(a) The following nuclidic masses were used:

H = 1.007825	O = 15.994915
C = 12.000000	^{35}Cl = 34.968853
^{13}C = 13.003355	^{37}Cl = 36.965903
F = 18.9984	

S = internal/recovery standard

LDC #: 48962A21
SDG #: Seacrest

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: A
2nd reviewer: M

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 8290)

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)

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

RRF = Relative Response Factor (average) from the initial calibration

Df = Dilution Factor.

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

Example:

Sample I.D. 1, A:

Conc. = $\frac{(1.39e+06)(2000)(1)}{(1.22e+08)(1.15)(10.5)(\ )}$

= 1.887 ng/kg

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