APPENDIX H
VALIDATION REPORTS

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

Anchor QEA, LLC
1423 3rd Avenue, Suite 300
Seattle, WA 98101-2226
ATTN: Ms. Joy Dunay

April 15, 2009

SUBJECT: Port of Olympia, Data Validation

Dear Ms. Dunay,

Enclosed is the final validation report for the fraction listed below. This SDG was received on March 27, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20531:

SDG #	Fraction
P1158	Dioxins/Dibenzofurans

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Diobenzofurans Data Review, September 2005

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

Sincerely,

Stella Cuenco

Stella S. Cuenco
Data Validation Operations Manager/Senior Chemist

Attachment 1

EDD 408 Pages-EX 90/10

LDC #20531 (Anchor Environmental-Seattle WA / Port of Olympia)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Dioxins (1613B)																															
Matrix:	Waste/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	P1158	03/27/09	04/17/09	0	4																														
Total	T/SC			0	3	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	3

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS, MSD, or DUP's.

Port of Olympia
Data Validation Reports
LDC# 20531

Dioxins/Dibenzofurans

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Port of Olympia
Collection Date:	September 26, 2008
LDC Report Date:	April 9, 2009
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	Analytical Perspectives
Sample Delivery Group (SDG):	P1158

Sample Identification

PO-BA-24-SS-A-090226
PO-BA-25-SS-A-090226
PO-BA-26-SS-A-090226
PO-BA-27B-SS-A-090226

Introduction

This data review covers 4 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

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.

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.

EMPC Estimated Maximum Possible Concentration

A Indicates the finding is based upon technical validation criteria.

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

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

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. HRGC/LRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

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 unlabeled compounds and less than or equal to 35.0% for labeled compounds.

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

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were within the QC limits.

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

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
6630-MB001	3/4/09	Total HpCDD	0.0981 pg/g	PO-BA-24-SS-A-090226 PO-BA-25-SS-A-090226
6682-MB001	3/20/09	Total TCDD	0.0973 pg/g	PO-BA-26-SS-A-090226 PO-BA-27B-SS-A-090226

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.

VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VII. Ongoing Precision Recovery (OPR)

Ongoing precision recovery samples were reviewed for each matrix as applicable. Percent recoveries (%R) 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

Raw data were not reviewed for this SDG.

XI. Compound Quantitation and CRQLs

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

Sample	Compound	Finding	Criteria	Flag	A or P
PO-BA-24-SS-A-090226 PO-BA-25-SS-A-090226 PO-BA-26-SS-A-090226	OCDD	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	P
All samples in SDG P1158	2,3,7,8-TCDF	2nd column confirmation was not performed for this compound.	This compound must be confirmed on the 2nd column per the method.	None	P

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method with the exception noted in Section XI. No data were qualified due to this laboratory oversight.

No results were rejected in this SDG.

JD 4/6/09

Due to compound quantitation problems, OCDD was qualified as estimated in ~~four~~ three samples.

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) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Port of Olympia
Dioxins/Dibenzofurans - Data Qualification Summary - SDG P1158

SDG	Sample	Compound	Flag	A or P	Reason
P1158	PO-BA-24-SS-A-090226 PO-BA-25-SS-A-090226 PO-BA-26-SS-A-090226	OCDD	J (all detects)	P	Compound quantitation and CRQLs
P1158	PO-BA-24-SS-A-090226 PO-BA-25-SS-A-090226 PO-BA-26-SS-A-090226 PO-BA-27B-SS-A-090226	2,3,7,8-TCDF	None	P	Compound quantitation and CRQLs (2nd column)

Port of Olympia
Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG P1158

No Sample Data Qualified in this SDG

Sample ID: PO-BA-24-SS-A-090226

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1158	Date Received:	27 Feb 09
Project ID:	080166-01	Weight/Volume:	10.08 g	Sample ID:	P1158_6630_001	Date Extracted:	04 Mar 09
Date Collected:	26 Feb 09	% Solids:	24.6 %	QC Batch No.:	6630	Date Analyzed:	11 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	19:50:04

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	EMPC	[Ra=0.633]	0.836		13C-2,3,7,8-TCDD	53.2	
1,2,3,7,8-PeCDD	5.36				13C-1,2,3,7,8-PeCDD	50.1	
1,2,3,4,7,8-HxCDD	10.5				13C-1,2,3,4,7,8-HxCDD	53.1	
1,2,3,6,7,8-HxCDD	52.6				13C-1,2,3,6,7,8-HxCDD	51.9	
1,2,3,7,8,9-HxCDD	21.8				13C-1,2,3,7,8,9-HxCDD	53.7	
1,2,3,4,6,7,8-HpCDD	1,770				13C-1,2,3,4,6,7,8-HpCDD	65.5	
OCDD	18,000	J>B			13C-OCDD	77.2	
2,3,7,8-TCDF	3.76				13C-2,3,7,8-TCDF	52.8	
1,2,3,7,8-PeCDF	3.93				13C-1,2,3,7,8-PeCDF	48.6	
2,3,4,7,8-PeCDF	7.95				13C-2,3,4,7,8-PeCDF	45.3	
1,2,3,4,7,8-HxCDF	18.9				13C-1,2,3,4,7,8-HxCDF	55.7	
1,2,3,6,7,8-HxCDF	8.5				13C-1,2,3,6,7,8-HxCDF	52.2	
2,3,4,6,7,8-HxCDF	12.6				13C-2,3,4,6,7,8-HxCDF	57.3	
1,2,3,7,8,9-HxCDF	3.7				13C-1,2,3,7,8,9-HxCDF	56.3	
1,2,3,4,6,7,8-HpCDF	298				13C-1,2,3,4,6,7,8-HpCDF	57.7	
1,2,3,4,7,8,9-HpCDF	12.5				13C-1,2,3,4,7,8,9-HpCDF	70.1	
OCDF	673				13C-OCDF	64.8	
Totals						**CS Recoveries**	
TCDDs	36.3		41		37Cl-2,3,7,8-TCDD	59.5	
PeCDDs	80		81.2		13C-1,2,3,4,7-PeCDD	53.3	
HxCDDs	737				13C-1,2,3,4,6-PeCDF	56.8	
HpCDDs	8,060				13C-1,2,3,4,6,9-HxCDF	62.6	
					13C-1,2,3,4,6,8,9-HpCDF	76.5	
TCDFs	57.3		58.8				
PeCDFs	91.7					**AS Recoveries**	
HxCDFs	367				13C-1,3,6,8-TCDD	52.4	
HpCDFs	871				13C-1,3,6,8-TCDF	56.6	
Total PCDD/Fs	**29,000**		**29,000**				
ITEF TEQs							
TEQ: ND=0	59.6		60.5				
TEQ: ND=DL/2	59.7		60.5				
TEQ: ND=DL	59.7		60.5				

ANALYTICAL PERSPECTIVES

2714 Exchange Drive
Wilmington, NC 28405
USA

Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919

info@ultratrace.com
www.ultratrace.com

Checkcode: 4320

Reviewer .....
Date .....

Sample ID: PO-BA-25-SS-A-090226

Method 161

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1158	Date Received:	27 Feb 09
Project ID:	080166-01	Weight/Volume:	10.93 g	Sample ID:	P1158_6630_002	Date Extracted:	04 Mar 09
Date Collected:	26 Feb 09	% Solids:	28.8 %	QC Batch No.:	6630	Date Analyzed:	11 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	20:40:22

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.998	[Ra=0.85]			13C-2,3,7,8-TCDD	66.3	
1,2,3,7,8-PeCDD	4.88				13C-1,2,3,7,8-PeCDD	64.9	
1,2,3,4,7,8-HxCDD	9.72				13C-1,2,3,4,7,8-HxCDD	55.8	
1,2,3,6,7,8-HxCDD	55				13C-1,2,3,6,7,8-HxCDD	54.6	
1,2,3,7,8,9-HxCDD	21.7				13C-1,2,3,7,8,9-HxCDD	56.9	
1,2,3,4,6,7,8-HpCDD	1,420				13C-1,2,3,4,6,7,8-HpCDD	73.8	
OCDD	13,600	J2o		*	13C-OCDD	74.5	
2,3,7,8-TCDF	3.86				13C-2,3,7,8-TCDF	59.2	
1,2,3,7,8-PeCDF	4.22				13C-1,2,3,7,8-PeCDF	57.5	
2,3,4,7,8-PeCDF	8.94				13C-2,3,4,7,8-PeCDF	54.5	
1,2,3,4,7,8-HxCDF	21.1				13C-1,2,3,4,7,8-HxCDF	59.8	
1,2,3,6,7,8-HxCDF	9.06				13C-1,2,3,6,7,8-HxCDF	58.7	
2,3,4,6,7,8-HxCDF	13.6				13C-2,3,4,6,7,8-HxCDF	62.9	
1,2,3,7,8,9-HxCDF	4.35				13C-1,2,3,7,8,9-HxCDF	60.4	
1,2,3,4,6,7,8-HpCDF	335				13C-1,2,3,4,6,7,8-HpCDF	59.1	
1,2,3,4,7,8,9-HpCDF	12.7				13C-1,2,3,4,7,8,9-HpCDF	81.5	
OCDF	686				13C-OCDF	65.4	
Totals						**CS Recoveries**	
TCDDs	32.1		33.3		37Cl-2,3,7,8-TCDD	72.2	
PeCDDs	68.9		70		13C-1,2,3,4,7-PeCDD	62.4	
HxCDDs	597				13C-1,2,3,4,6-PeCDF	68.1	
HpCDDs	5,190				13C-1,2,3,4,6,9-HxCDF	65.3	
					13C-1,2,3,4,6,8,9-HpCDF	86.1	
TCDFs	55		56.3				
PeCDFs	97.4		97.6			**AS Recoveries**	
HxCDFs	410				13C-1,3,6,8-TCDD	58.7	
HpCDFs	950				13C-1,3,6,8-TCDF	60.3	
Total PCDD/Fs	**21,700**		**21,700**				
ITEF TEQs							
TEQ: ND=0	53.9		53.9				
TEQ: ND=DL/2	53.9		53.9				
TEQ: ND=DL	53.9		53.9				

ANALYTICAL PERSPECTIVES

2714 Exchange Drive
Wilmington, NC 28405
USA

Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919

info@ultratrace.com
www.ultratrace.com

Checkcode: 4282

AP 2008 Rev. H

Reviewer .....

Date .....

Sample ID: PO-BA-26-SS-A-090226 — Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1158	Date Received:	27 Feb 09
Project ID:	080166-01	Weight/Volume:	10.37 g	Sample ID:	P1158_6682_003	Date Extracted:	20 Mar 09
Date Collected:	26 Feb 09	% Solids:	29.0 %	QC Batch No.:	6682	Date Analyzed:	24 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	0:38:35

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.979	[Ra=0.808]			13C-2,3,7,8-TCDD	89.3	
1,2,3,7,8-PeCDD	5.43				13C-1,2,3,7,8-PeCDD	86.5	
1,2,3,4,7,8-HxCDD	9.67				13C-1,2,3,4,7,8-HxCDD	82.4	
1,2,3,6,7,8-HxCDD	56.8				13C-1,2,3,6,7,8-HxCDD	77.5	
1,2,3,7,8,9-HxCDD	20.7				13C-1,2,3,7,8,9-HxCDD	82.2	
1,2,3,4,6,7,8-HpCDD	1,640				13C-1,2,3,4,6,7,8-HpCDD	99	
OCDD	13,800	J20			13C-OCDD	103	
2,3,7,8-TCDF	3.71				13C-2,3,7,8-TCDF	107	
1,2,3,7,8-PeCDF	4.25				13C-1,2,3,7,8-PeCDF	105	
2,3,4,7,8-PeCDF	9.24				13C-2,3,4,7,8-PeCDF	102	
1,2,3,4,7,8-HxCDF	23.3				13C-1,2,3,4,7,8-HxCDF	81.8	
1,2,3,6,7,8-HxCDF	8.94				13C-1,2,3,6,7,8-HxCDF	76.6	
2,3,4,6,7,8-HxCDF	13.7				13C-2,3,4,6,7,8-HxCDF	81.1	
1,2,3,7,8,9-HxCDF	4.58				13C-1,2,3,7,8,9-HxCDF	82.2	
1,2,3,4,6,7,8-HpCDF	315				13C-1,2,3,4,6,7,8-HpCDF	84.2	
1,2,3,4,7,8,9-HpCDF	12.8				13C-1,2,3,4,7,8,9-HpCDF	92.2	
OCDF	690				13C-OCDF	89.5	
Totals						**CS Recoveries**	
TCDDs	31.2		31.8		37Cl-2,3,7,8-TCDD	93.1	
PeCDDs	70		72.9		13C-1,2,3,4,7-PeCDD	89.5	
HxCDDs	680				13C-1,2,3,4,6-PeCDF	114	
HpCDDs	6,530				13C-1,2,3,4,6,9-HxCDF	88.5	
					13C-1,2,3,4,6,8,9-HpCDF	103	
TCDFs	50.8						
PeCDFs	103					**AS Recoveries**	
HxCDFs	410		411		13C-1,3,6,8-TCDD	75.9	
HpCDFs	908		915		13C-1,3,6,8-TCDF	97.7	
Total PCDD/Fs	**23,300**		**23,300**				
ITEF TEQs							
TEQ: ND=0	56.9		56.9				
TEQ: ND=DL/2	56.9		56.9				
TEQ: ND=DL	56.9		56.9				

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Checkcode: 0311

AP 2[illegible] Rev. H

ok 24 March 09

8/4/09

24 March 09

Reviewer .....

Date .....

Sample ID: PO-BA-27B-SS-A-090226

Method 161

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1158	Date Received:	27 Feb 09
Project ID:	080166-01	Weight/Volume:	10.26 g	Sample ID:	P1158_6682_004	Date Extracted:	20 Mar 09
Date Collected:	26 Feb 09	% Solids:	27.6 %	QC Batch No.:	6682	Date Analyzed:	24 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	1:28:40

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	EMPC	[Ra=0.904]	0.739		13C-2,3,7,8-TCDD	88.7	
1,2,3,7,8-PeCDD	4.16				13C-1,2,3,7,8-PeCDD	86.3	
1,2,3,4,7,8-HxCDD	7.97				13C-1,2,3,4,7,8-HxCDD	87.9	
1,2,3,6,7,8-HxCDD	43				13C-1,2,3,6,7,8-HxCDD	83.3	
1,2,3,7,8,9-HxCDD	16.3				13C-1,2,3,7,8,9-HxCDD	86.9	
1,2,3,4,6,7,8-HpCDD	922				13C-1,2,3,4,6,7,8-HpCDD	108	
OCDD	7,340				13C-OCDD	120	
2,3,7,8-TCDF	3.31				13C-2,3,7,8-TCDF	105	
1,2,3,7,8-PeCDF	3.55				13C-1,2,3,7,8-PeCDF	101	
2,3,4,7,8-PeCDF	7.3				13C-2,3,4,7,8-PeCDF	99.1	
1,2,3,4,7,8-HxCDF	16.1				13C-1,2,3,4,7,8-HxCDF	86.4	
1,2,3,6,7,8-HxCDF	7.12				13C-1,2,3,6,7,8-HxCDF	80.2	
2,3,4,6,7,8-HxCDF	10.5				13C-2,3,4,6,7,8-HxCDF	87.6	
1,2,3,7,8,9-HxCDF	3.91				13C-1,2,3,7,8,9-HxCDF	87.3	
1,2,3,4,6,7,8-HpCDF	247				13C-1,2,3,4,6,7,8-HpCDF	91.9	
1,2,3,4,7,8,9-HpCDF	8.66				13C-1,2,3,4,7,8,9-HpCDF	104	
OCDF	433				13C-OCDF	104	
Totals						**CS Recoveries**	
TCDDs	30.7		32.8		37Cl-2,3,7,8-TCDD	91.7	
PeCDDs	59.4		60.3		13C-1,2,3,4,7-PeCDD	88.7	
HxCDDs	354				13C-1,2,3,4,6-PeCDF	112	
HpCDDs	2,350				13C-1,2,3,4,6,9-HxCDF	90.2	
					13C-1,2,3,4,6,8,9-HpCDF	111	
TCDFs	43.6		45.8				
PeCDFs	85.7		85.9			**AS Recoveries**	
HxCDFs	319				13C-1,3,6,8-TCDD	86.8	
HpCDFs	673				13C-1,3,6,8-TCDF	101	
Total PCDD/Fs	**11,700**		**11,700**				
ITEF TEQs							
TEQ: ND=0	36.3		37				
TEQ: ND=DL/2	36.3		37				
TEQ: ND=DL	36.3		37				

ANALYTICAL PERSPECTIVES

2714 Exchange Drive
Wilmington, NC 28405
USA

Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919

info@ultratrace.com
www.ultratrace.com

Checkcode: 2589

AP 2008 Rev. H

8/14/09

Reviewer

Date

LDC #: 20531A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/9/09
SDG #: P1158 Level III/~~IV~~ Page: 1 of 1
Laboratory: Analytical Perspectives 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: 2/26/09
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	20/35 %
IV.	Routine calibration/~~ICV~~	A	qc limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates	N	qs
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	~~A~~N	Not reviewed for Level III validation.
XI.	Compound quantitation and CRQLs	SW~~A~~	Not reviewed for Level III validation.
XII.	System performance	~~A~~N	Not reviewed for Level III validation.
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	W	

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 sediment 9

1	PO-BA-24-SS-A-090226	11	6630 - MB001	21	3/4	31	
2	PO-BA-25-SS-A-090226	12	6682 - MB001	22	3/28	32	
3	PO-BA-26-SS-A-090226	13		23		33	
4	PO-BA-27B-SS-A-090226	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 #: 2 3/421

SDG #: see cover

VALIDATION FINDINGS WORKSHEET

e: 1 of 1

Reviewer: P

2nd Reviewer:

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method ~~8290~~ 1613B)

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 #: 20531 A21
SDG #: P1158

VALIDATION FINDINGS WORKSHEET
Blanks

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

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".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 3/4/09 **Blank analysis date:** 3/11/09 **Associated samples:** 1, 2 (75%)

Conc. units: pg/g

Compound	Blank ID	Sample Identification								
	6630-MB001									
U	0.0981									

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 #: 53|A21
SDG #: 158

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 6f 1
Reviewer: 17
2nd Reviewer:

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".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 3/20/09 **Blank analysis date:** 3/23/09 **Associated samples:** 3, 4 7SX

Conc. units: pg/g

Compound	Blank ID	Sample Identification								
	6682-MB001									
R	0.0973									

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 #: 20531A21
SDG #: P1168

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

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

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".

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		~~All~~ 1-3	6 > web range		Identity/P
		All	# not confirmed on 2nd column		text

Comments: See sample calculation verification worksheet for recalculations

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

Anchor QEA, LLC
1423 3rd Avenue, Suite 300
Seattle, WA 98101-2226
ATTN: Ms. Joy Dunay

May 1, 2009

SUBJECT: Port of Olympia, Data Validation

Dear Ms. Dunay,

Enclosed is the final validation report for the fraction listed below. This SDG was received on April 8, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20577:

SDG #	Fraction
580-13052-1	Wet Chemistry

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004

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

Sincerely,

Stella S. Cuenco
Data Validation Operations Manager/Senior Chemist

Attachment 1

EDD 63 Pages-EX 90/10 **LDC #20577 (Anchor Environmental-Seattle WA / Port of Olympia)**

LDC	SDG#	DATE REC'D	(3) DATE DUE	TOC (PSEP)		Grain Size (PSEP)		% Solids		Moist. Content (D2216)																									
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	580-13052-1	04/08/09	04/29/09	0	11	0	11	0	11	0	11																								
Total	T/SC			0	11	0	11	0	11	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS, MSD, or DUP's.

Port of Olympia
Data Validation Reports
LDC# 20577

Wet Chemistry

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Port of Olympia

Collection Date: March 13 through March 16, 2009

LDC Report Date: April 28, 2009

Matrix: Sediment

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): 580-13052-1

Sample Identification

PO-BA-24-SS-A-090313
PO-BA-25-SS-A-090316
PO-BA-26-SS-A-090316
PO-BA-27B-SS-A-090313
PO-UP-20-SS-A-090313
PO-UP-21-SS-A-090313
PO-UP-22-SS-A-090313
PO-UP-23B-SS-A-090313
PO-AM-28-SS-A-090313
B1-C16-SS-A-090313
B1-S37-SS-A-090313
PO-BA-24-SS-A-090313MS
PO-BA-24-SS-A-090313MSD
PO-BA-24-SS-A-090313DUP
PO-BA-25-SS-A-090316MS
PO-BA-25-SS-A-090316MSD
PO-BA-25-SS-A-090316DUP
B1-S37-SS-A-090313DUP

Introduction

This data review covers 18 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per ASTM Method D2216-90 for Moisture Content, PSEP Method for Grain Size and Total Organic Carbon and Percent Moisture Method for Percent Solids.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

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.

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.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

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) 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.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results 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.

Percent recoveries (%R) of the standard reference material were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control reviewed, other than those discussed above, were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

Port of Olympia
Wet Chemistry - Data Qualification Summary - SDG 580-13052-1

No Sample Data Qualified in this SDG

Port of Olympia
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 580-13052-1

No Sample Data Qualified in this SDG

General Chemistry

Client Sample ID: PO-BA-24-SS-A-090313

Lab Sample ID: 580-13052-1 Date Sampled: 03/13/2009 1530
Client Matrix: Solid Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	900	J	mg/Kg	610	2000	1.0	9060_PSEP
Anly Batch: 580-41961	Date Analyzed 03/27/2009 1202					DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	15		%	0.010	0.010	1.0	D2216-90
Anly Batch: 580-42015	Date Analyzed 03/31/2009 1121					DryWt Corrected: N	
Percent Solids	87		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						
Percent Moisture	13		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						

Client Sample ID: PO-BA-25-SS-A-090316

Lab Sample ID: 580-13052-2 Date Sampled: 03/16/2009 1320
Client Matrix: Solid Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	700	J	mg/Kg	610	2000	1.0	9060_PSEP
Anly Batch: 580-41986	Date Analyzed 03/30/2009 1906					DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	14		%	0.010	0.010	1.0	D2216-90
Anly Batch: 580-42015	Date Analyzed 03/31/2009 1121					DryWt Corrected: N	
Percent Solids	89		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						
Percent Moisture	11		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						

General Chemistry

Client Sample ID: PO-BA-26-SS-A-090316

Lab Sample ID: 580-13052-3 Date Sampled: 03/16/2009 1205
Client Matrix: Solid Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	ND		mg/Kg	610	2000	1.0	9060_PSEP
Anly Batch: 580-41986	Date Analyzed 03/30/2009 1906					DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	18		%	0.010	0.010	1.0	D2216-90
Anly Batch: 580-42015	Date Analyzed 03/31/2009 1121					DryWt Corrected: N	
Percent Solids	86		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						
Percent Moisture	14		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						

Client Sample ID: PO-BA-27B-SS-A-090313

Lab Sample ID: 580-13052-4 Date Sampled: 03/13/2009 1616
Client Matrix: Solid Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	ND		mg/Kg	610	2000	1.0	9060_PSEP
Anly Batch: 580-41961	Date Analyzed 03/27/2009 1202					DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	14		%	0.010	0.010	1.0	D2216-90
Anly Batch: 580-42015	Date Analyzed 03/31/2009 1121					DryWt Corrected: N	
Percent Solids	90		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						
Percent Moisture	10		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						

4/3/09

General Chemistry

Client Sample ID: PO-UP-20-SS-A-090313

Lab Sample ID: 580-13052-5 Date Sampled: 03/13/2009 1255
Client Matrix: Solid Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	45000		mg/Kg	610	2000	1.0	9060_PSEP
	Anly Batch: 580-41961		Date Analyzed	03/27/2009 1202			DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	250		%	0.010	0.010	1.0	D2216-90
	Anly Batch: 580-42015		Date Analyzed	03/31/2009 1121			DryWt Corrected: N
Percent Solids	27		%	0.10	0.10	1.0	PercentMoisture
	Anly Batch: 580-41722		Date Analyzed	03/23/2009 1103			
Percent Moisture	73		%	0.10	0.10	1.0	PercentMoisture
	Anly Batch: 580-41722		Date Analyzed	03/23/2009 1103			

Client Sample ID: PO-UP-21-SS-A-090313

Lab Sample ID: 580-13052-6 Date Sampled: 03/13/2009 1235
Client Matrix: Solid Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	35000		mg/Kg	610	2000	1.0	9060_PSEP
	Anly Batch: 580-41961		Date Analyzed	03/27/2009 1202			DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	210		%	0.010	0.010	1.0	D2216-90
	Anly Batch: 580-42015		Date Analyzed	03/31/2009 1121			DryWt Corrected: N
Percent Solids	32		%	0.10	0.10	1.0	PercentMoisture
	Anly Batch: 580-41722		Date Analyzed	03/23/2009 1103			
Percent Moisture	68		%	0.10	0.10	1.0	PercentMoisture
	Anly Batch: 580-41722		Date Analyzed	03/23/2009 1103			

4/3/09

General Chemistry

Client Sample ID: PO-UP-22-SS-A-090313

Lab Sample ID: 580-13052-7
Client Matrix: Solid

Date Sampled: 03/13/2009 1220
Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	42000		mg/Kg	610	2000	1.0	9060_PSEP
Anly Batch: 580-41961	Date Analyzed 03/27/2009 1202					DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	300		%	0.010	0.010	1.0	D2216-90
Anly Batch: 580-42015	Date Analyzed 03/31/2009 1121					DryWt Corrected: N	
Percent Solids	25		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						
Percent Moisture	75		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						

Client Sample ID: PO-UP-23B-SS-A-090313

Lab Sample ID: 580-13052-8
Client Matrix: Solid

Date Sampled: 03/13/2009 1147
Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	51000		mg/Kg	610	2000	1.0	9060_PSEP
Anly Batch: 580-41961	Date Analyzed 03/27/2009 1202					DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	280		%	0.010	0.010	1.0	D2216-90
Anly Batch: 580-42015	Date Analyzed 03/31/2009 1121					DryWt Corrected: N	
Percent Solids	26		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						
Percent Moisture	74		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						

4/5/09

General Chemistry

Client Sample ID: PO-AM-28-SS-A-090313

Lab Sample ID: 580-13052-9
Client Matrix: Solid

Date Sampled: 03/13/2009 0840
Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	37000		mg/Kg	610	2000	1.0	9060_PSEP
Anly Batch: 580-41961	Date Analyzed 03/27/2009 1202					DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	290		%	0.010	0.010	1.0	D2216-90
Anly Batch: 580-42015	Date Analyzed 03/31/2009 1121					DryWt Corrected: N	
Percent Solids	26		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						
Percent Moisture	74		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						

Client Sample ID: B1-C16-SS-A-090313

Lab Sample ID: 580-13052-10
Client Matrix: Solid

Date Sampled: 03/13/2009 0955
Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	35000		mg/Kg	610	2000	1.0	9060_PSEP
Anly Batch: 580-41961	Date Analyzed 03/27/2009 1202					DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	240		%	0.010	0.010	1.0	D2216-90
Anly Batch: 580-42015	Date Analyzed 03/31/2009 1121					DryWt Corrected: N	
Percent Solids	27		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						
Percent Moisture	73		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed 03/23/2009 1103						

4/3/09

General Chemistry

Client Sample ID: B1-S37-SS-A-090313

Lab Sample ID: 580-13052-11
Client Matrix: Solid

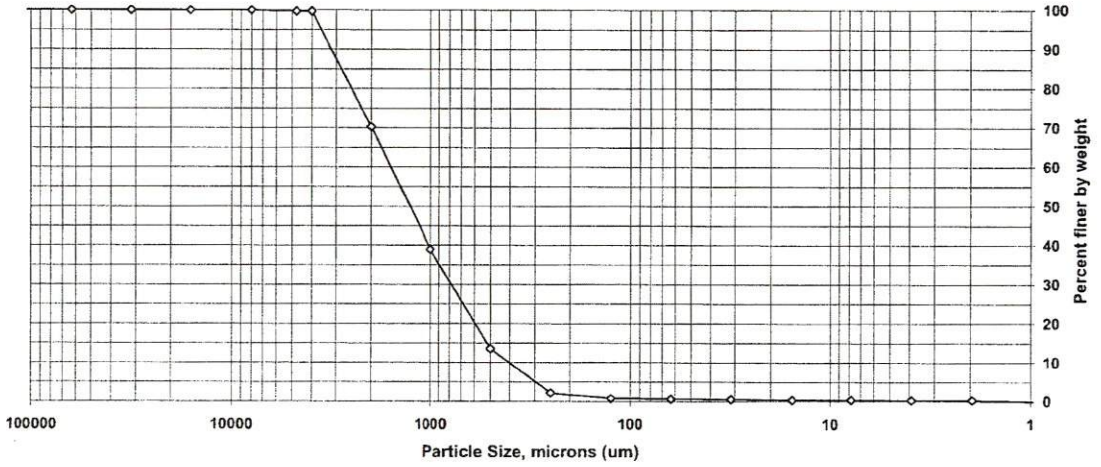
Date Sampled: 03/13/2009 0915
Date Received: 03/16/2009 1540

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Total Organic Carbon	35000		mg/Kg	610	2000	1.0	9060_PSEP
Anly Batch: 580-41961	Date Analyzed	03/27/2009 1202				DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Moisture Content	250		%	0.010	0.010	1.0	D2216-90
Anly Batch: 580-42015	Date Analyzed	03/31/2009 1121				DryWt Corrected: N	
Percent Solids	28		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed	03/23/2009 1103					
Percent Moisture	72		%	0.10	0.10	1.0	PercentMoisture
Anly Batch: 580-41722	Date Analyzed	03/23/2009 1103					

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	PO-BA-24-SS-A-090313	**Percent Solids:**	87.09748%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-1	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	99.7	0.3
#5	4000	99.7	0.0
#10	2000	70.3	29.4
#18	1000	39.0	31.3
#35	500	13.6	25.4
#60	250	2.1	11.5
#120	125	0.8	1.3
#230	63	0.8	0.1
Phi Size 4	63	0.6	0.1
Phi Size 5	31.42	0.6	0.1
Phi Size 6	15.6	0.5	0.1
Phi Size 7	7.8	0.4	0.1
Phi Size 8	3.9	0.4	0.0
Phi Size 9	1.95	0.4	0.0
Phi Size 10	0.98	0.0	0.4
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	**0.0**
Gravel	**29.7**
Sand	**69.7**
Very Coarse Sand	31.3
Coarse Sand	25.4
Medium Sand	11.5
Fine Sand	1.3
Very Fine Sand	0.2
Silt	**0.2**
Coarse Silt	0.1
Medium Silt	0.1
Fine Silt	0.1
Very Fine Silt	0.0
Clay	**0.4**
Coarse Clay	0.0
Medium Clay	0.4

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Received	3/16/2009
Client Sample ID	PO-BA-24-SS-A-090313	Start Date	3/24/2009
Lab Sample ID	580-13052-A-1	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	12.90252 %

Default Soil Gravity 2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			830.3451
Sample Weight (dry)			717.5918

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			712.7428
Sample <#230			4.849
% Passing #230			0.676

SHMP test

Standard ID	3/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	2.9
Weight of aliquot 5 (mg)	2.5
Average Weight (mg)	2.42

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	2.1583	2.1583 g	99.7	Gravel	
#5	4000	0	0	0 g	99.7	Gravel	
#10	2000	0	211.0181	211.0181 g	70.3	Gravel	
#18	1000	0	224.8823	224.8823 g	39.0	Sand	Coarse
#35	500	0	182.5036	182.5036 g	13.6	Sand	Medium
#60	250	0	82.2244	82.2244 g	2.1	Sand	Medium
#120	125	0	9.5022	9.5022 g	0.8	Sand	Fine
#230	63	0	0.4539	0.4539 g	0.8	Sand	Fine
				0 g	0.8	Sand	Fine
				0 g	0.8		
Remainder				0 g			

Number of aliquots SHMP used 1

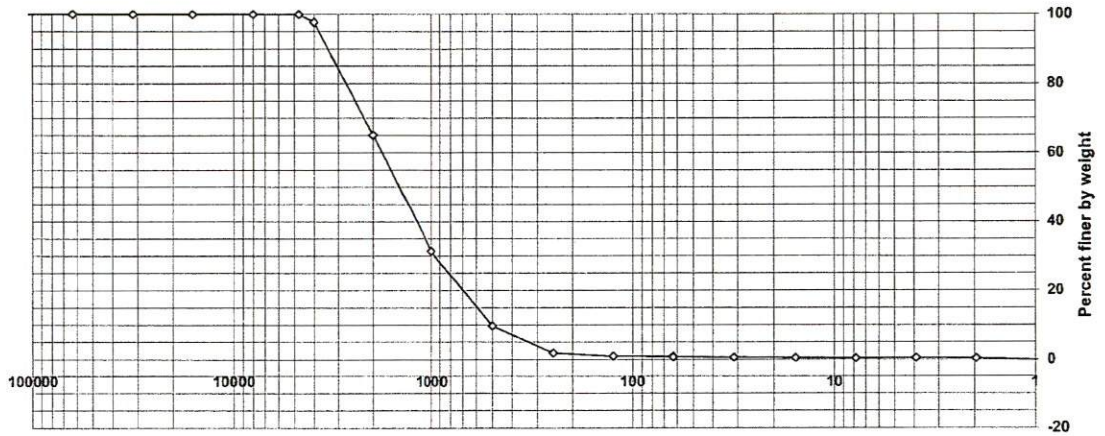
Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	57.9008	58.0002	0.09698	0.415	0.057832322	0.6181677	Sand	Very Fine
5	31.42	20	00:01:54	10	53.4974	53.5885	0.08868	0.45	0.062709747	0.5554579	Silt	Coarse
6	15.6	20	00:07:36	10	57.8609	57.943	0.07968	0.735	0.10242592	0.453032	Silt	Medium
7	7.8	20	00:30:26	10	52.7686	52.836	0.06498	0.385	0.053651672	0.3993803	Silt	Fine
8	3.9	20	02:02:00	10	57.0668	57.1265	0.05728	0.075	0.010451624	0.3889287	Silt	Very Fine
9	1.95	20	08:06:00	10	56.8901	56.9483	0.05578	-0.015	-0.002090325	0.391019	Clay	Coarse
10	0.98	20	32:28:00	10	58.5161	58.5746	0.05608	2.804	0.390751399	0.0002676	Clay	Medium
			not defined	10								

4/3/09

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	PO-BA-25-SS-A-090316	**Percent Solids:**	88.34537%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-2	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	97.7	2.3
#10	2000	65.1	32.6
#18	1000	31.4	33.7
#35	500	9.7	21.7
#60	250	1.9	7.8
#120	125	0.9	0.9
#230	63	0.8	0.1
Phi Size 4	63	0.7	0.2
Phi Size 5	31.42	0.6	0.1
Phi Size 6	15.6	0.4	0.2
Phi Size 7	7.8	0.4	0.0
Phi Size 8	3.9	0.4	0.0
Phi Size 9	1.95	0.4	0.0
Phi Size 10	0.98	0.0	0.4
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	**0.0**
Gravel	**34.9**
Sand	**64.4**
Very Coarse Sand	33.7
Coarse Sand	21.7
Medium Sand	7.8
Fine Sand	0.9
Very Fine Sand	0.3
Silt	**0.2**
Coarse Silt	0.1
Medium Silt	0.2
Fine Silt	0.0
Very Fine Silt	0.0
Clay	**0.4**
Coarse Clay	0.0
Medium Clay	0.4

4/2/09

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Received	3/16/2009
Client Sample ID	PO-BA-25-SS-A-090316	Start Date	3/24/2009
Lab Sample ID	580-13052-A-2	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	11.65463 %

Default Soil Gravity 2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			662.4243
Sample Weight (dry)			575.1439

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			570.9499
Sample <#230			4.194
% Passing #230			0.729

SHMP test

Standard ID	3/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	2.9
Weight of aliquot 5 (mg)	2.5
Average Weight (mg)	2.42

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample		% Finer	Classification	Sub Class
5 inch	125000	0	0	0	g	100.0	Cobbles	
2.5 inch	63000	0	0	0	g	100.0	Cobbles	
1.25 inch	31500	0	0	0	g	100.0	Gravel	
5/8 inch	16000	0	0	0	g	100.0	Gravel	
5/16 inch	8000	0	0	0	g	100.0	Gravel	
#4	4750	0	0	0	g	100.0	Gravel	
#5	4000	0	13.395	13.395	g	97.7	Gravel	
#10	2000	0	187.7708	187.7708	g	65.1	Gravel	
#18	1000	0	193.9957	193.9957	g	31.4	Sand	Coarse
#35	500	0	124.9822	124.9822	g	9.7	Sand	Medium
#60	250	0	44.8715	44.8715	g	1.9	Sand	Medium
#120	125	0	5.4409	5.4409	g	0.9	Sand	Fine
#230	63	0	0.4938	0.4938	g	0.8	Sand	Fine
				0	g	0.8	Sand	Fine
				0	g	0.8		
Remainder				0	g			

Number of aliquots SHMP used 1

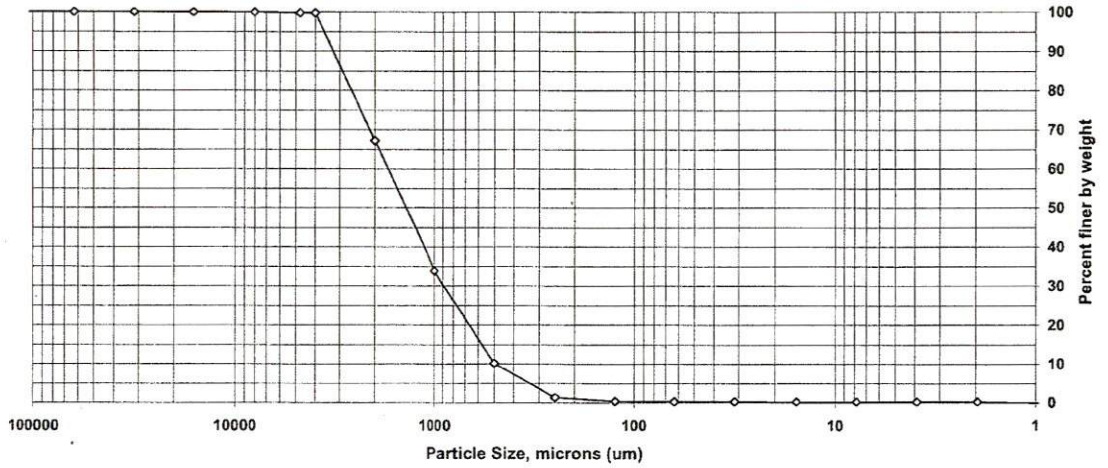
Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	59.1089	59.1952	0.08388	0.32	0.05563825	0.6733618	Sand	Very Fine
5	31.42	20	00:01:54	10	55.4559	55.5358	0.07748	0.31	0.053899555	0.6194622	Silt	Coarse
6	15.6	20	00:07:36	10	59.3683	59.442	0.07128	1.025	0.178216269	0.4412459	Silt	Medium
7	7.8	20	00:30:26	10	58.5713	58.6245	0.05078	0.17	0.02955782	0.4116881	Silt	Fine
8	3.9	20	02:02:00	10	60.6932	60.743	0.04738	-0.135	-0.023472387	0.4351605	Silt	Very Fine
9	1.95	20	08:06:00	10	59.5496	59.6021	0.05008	0.085	0.01477891	0.4203816	Clay	Coarse
10	0.98	20	32:28:00	10	58.0696	58.1204	0.04838	2.419	0.420590395	-0.0002088	Clay	Medium
			not defined	10								

4/3/2009

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	PO-BA-26-SS-A-090316	**Percent Solids:**	84.8391%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-3	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	99.8	0.2
#5	4000	99.8	0.0
#10	2000	67.3	32.5
#18	1000	33.9	33.4
#35	500	10.2	23.7
#60	250	1.4	8.9
#120	125	0.5	0.9
#230	63	0.4	0.0
Phi Size 4	63	0.4	0.0
Phi Size 5	31.42	0.4	0.0
Phi Size 6	15.6	0.3	0.1
Phi Size 7	7.8	0.3	0.0
Phi Size 8	3.9	0.3	0.0
Phi Size 9	1.95	0.3	0.0
Phi Size 10	0.98	0.0	0.3
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	**0.0**
Gravel	**32.7**
Sand	**66.9**
Very Coarse Sand	33.4
Coarse Sand	23.7
Medium Sand	8.9
Fine Sand	0.9
Very Fine Sand	0.1
Silt	**0.1**
Coarse Silt	0.0
Medium Silt	0.1
Fine Silt	0.0
Very Fine Silt	0.0
Clay	**0.3**
Coarse Clay	0.0
Medium Clay	0.3

4/2/2009

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Received	3/16/2009
Client Sample ID	PO-BA-26-SS-A-090316	Start Date	3/24/2009
Lab Sample ID	580-13052-A-3	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0	g
Wet Sample + Tin	0	g
Dry Sample + Tin	0	g
% Moisture	15.1609	%

Default Soil Gravity 2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			662.4243
Sample Weight (dry)			640.8801

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			638.4411
Sample <#230			2.439
% Passing #230			0.381

SHMP test

Standard ID	3/27/2009	
Weight of aliquot 1 (mg)	1.9	
Weight of aliquot 2 (mg)	2.5	
Weight of aliquot 3 (mg)	2.3	
Weight of aliquot 4 (mg)	2.9	
Weight of aliquot 5 (mg)	2.5	
Average Weight (mg)	2.42	

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	1.3594	1.3594 g	99.8	Gravel	
#5	4000	0	0	0 g	99.8	Gravel	
#10	2000	0	208.2302	208.2302 g	67.3	Gravel	
#18	1000	0	214.3585	214.3585 g	33.9	Sand	Coarse
#35	500	0	151.8758	151.8758 g	10.2	Sand	Medium
#60	250	0	56.7373	56.7373 g	1.4	Sand	Medium
#120	125	0	5.691	5.691 g	0.5	Sand	Fine
#230	63	0	0.1889	0.1889 g	0.4	Sand	Fine
				0 g	0.4	Sand	Fine
				0 g	0.4		
Remainder				0 g			

Number of aliquots SHMP used 1

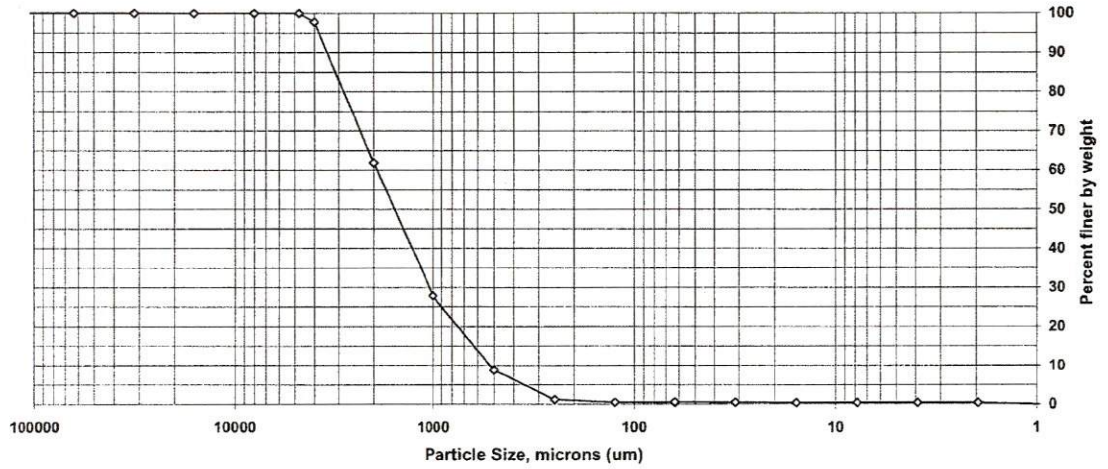
Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	58.591	58.6422	0.04878	-0.07	-0.01092248	0.3919225	Sand	Very Fine
5	31.42	20	00:01:54	10	57.9832	58.0358	0.05018	0.18	0.028086377	0.3638361	Silt	Coarse
6	15.6	20	00:07:36	10	58.8126	58.8616	0.04658	0.655	0.102203205	0.2616329	Silt	Medium
7	7.8	20	00:30:26	10	58.08	58.1159	0.03348	-0.235	-0.036668325	0.2983012	Silt	Fine
8	3.9	20	02:02:00	10	52.1677	52.2083	0.03818	-0.05	-0.007801771	0.306103	Silt	Very Fine
9	1.95	20	08:06:00	10	55.0015	55.0431	0.03918	0.195	0.030426908	0.2756761	Clay	Coarse
10	0.98	20	32:28:00	10	57.8464	57.8841	0.03528	1.764	0.275246493	0.0004296	Clay	Medium
			not defined	10								

8/04/2009

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	PO-BA-27B-SS-A-090313	**Percent Solids:**	87.85544%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-4	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	97.8	2.2
#10	2000	61.9	35.9
#18	1000	27.9	34.0
#35	500	8.8	19.1
#60	250	1.2	7.6
#120	125	0.5	0.7
#230	63	0.5	0.0
Phi Size 4	63	0.5	-0.1
Phi Size 5	31.42	0.5	0.0
Phi Size 6	15.6	0.4	0.1
Phi Size 7	7.8	0.4	0.0
Phi Size 8	3.9	0.4	0.0
Phi Size 9	1.95	0.4	0.0
Phi Size 10	0.98	0.0	0.4
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	**0.0**
Gravel	**38.1**
Sand	**61.4**
Very Coarse Sand	34.0
Coarse Sand	19.1
Medium Sand	7.6
Fine Sand	0.7
Very Fine Sand	0.0
Silt	**0.1**
Coarse Silt	0.0
Medium Silt	0.1
Fine Silt	0.0
Very Fine Silt	0.0
Clay	**0.4**
Coarse Clay	0.0
Medium Clay	0.4

4/3/09

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Receved	3/16/2009
Client Sample ID	PO-BA-27B-SS-A-090313	Start Date	3/24/2009
Lab Sample ID	580-13052-A-4	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	12.14456 %

Default Soil Gravity	2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			662.4243
Sample Weight (dry)			676.7673

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			673.0533
Sample <#230			3.714
% Passing #230			0.549

SHMP test

Standard ID	3/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	2.9
Weight of aliquot 5 (mg)	2.5
Average Weight (mg)	2.42

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	0	0 g	100.0	Gravel	
#5	4000	0	14.5932	14.5932 g	97.8	Gravel	
#10	2000	0	242.6387	242.6387 g	61.9	Gravel	
#18	1000	0	230.306	230.306 g	27.9	Sand	Coarse
#35	500	0	129.033	129.033 g	8.8	Sand	Medium
#60	250	0	51.439	51.439 g	1.2	Sand	Medium
#120	125	0	4.8113	4.8113 g	0.5	Sand	Fine
#230	63	0	0.2321	0.2321 g	0.5	Sand	Fine
				0 g	0.5	Sand	Fine
				0 g	0.5		
Remainder				0 g			

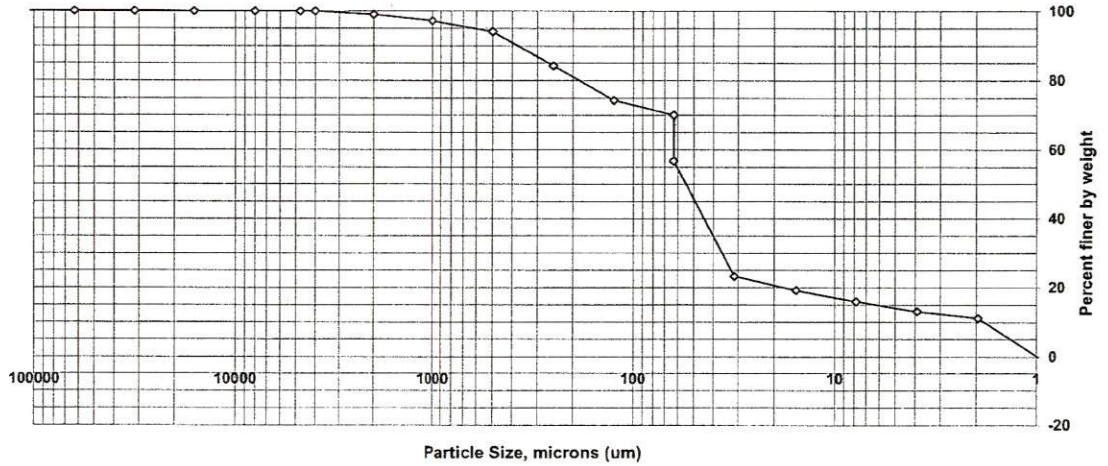
Number of aliquots SHMP used 1

Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	56.9211	56.9978	0.07428	-3.55271E-13	-5.24954E-14	0.549	Sand	Very Fine
5	31.42	20	00:01:54	10	55.2095	55.2862	0.07428	0.105	0.015514934	0.5334851	Silt	Coarse
6	15.6	20	00:07:36	10	59.6056	59.6802	0.07218	0.685	0.101216474	0.4322686	Silt	Medium
7	7.8	20	00:30:26	10	58.7978	58.8587	0.05848	0.225	0.033246287	0.3990223	Silt	Fine
8	3.9	20	02:02:00	10	58.0811	58.1375	0.05398	-0.14	-0.020686579	0.4197089	Silt	Very Fine
9	1.95	20	08:06:00	10	58.2201	58.2793	0.05678	-0.03	-0.004432838	0.4241417	Clay	Coarse
10	0.98	20	32:28:00	10	57.2925	57.3523	0.05738	2.869	0.423927102	0.0002146	Clay	Medium
			not defined	10								

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	PO-UP-20-SS-A-090313	**Percent Solids:**	28.55497%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-5	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	99.0	1.0
#18	1000	97.2	1.8
#35	500	94.1	3.1
#60	250	84.3	9.8
#120	125	74.3	10.0
#230	63	70.1	4.2
Phi Size 4	63	56.8	13.3
Phi Size 5	31.42	23.3	33.5
Phi Size 6	15.6	19.2	4.1
Phi Size 7	7.8	15.9	3.3
Phi Size 8	3.9	13.1	2.8
Phi Size 9	1.95	11.2	2.0
Phi Size 10	0.98	0.0	11.2
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	**0.0**
Gravel	**1.0**
Sand	**42.2**
Very Coarse Sand	1.8
Coarse Sand	3.1
Medium Sand	9.8
Fine Sand	10.0
Very Fine Sand	17.5
Silt	**43.6**
Coarse Silt	33.5
Medium Silt	4.1
Fine Silt	3.3
Very Fine Silt	2.8
Clay	**13.2**
Coarse Clay	2.0
Medium Clay	11.2

4/2/09

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Receved	3/16/2009
Client Sample ID	PO-UP-20-SS-A-090313	Start Date	3/24/2009
Lab Sample ID	580-13052-A-5	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	71.44503 %

	Tare	Pan+Samp	Samp
Sample Weights			
Sample Weight (Wet)			99.645
Sample Weight (dry)			22.1596

	Tare	Pan+Samp	Samp
Sample Split			
Sample >=#230			6.5956
Sample <#230			15.564
% Passing #230			70.2

Default Soil Gravity	2.65

SHMP test

Standard ID	3/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	2.9
Weight of aliquot 5 (mg)	2.5
Average Weight (mg)	2.42

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	0	0 g	100.0	Gravel	
#5	4000	0	0	0 g	100.0	Gravel	
#10	2000	0	0.2176	0.2176 g	99.0	Gravel	
#18	1000	0	0.3878	0.3878 g	97.2	Sand	Coarse
#35	500	0	0.6785	0.6785 g	94.1	Sand	Medium
#60	250	0	2.1629	2.1629 g	84.3	Sand	Medium
#120	125	0	2.2146	2.2146 g	74.3	Sand	Fine
#230	63	0	0.9342	0.9342 g	70.1	Sand	Fine
				0 g	70.1	Sand	Fine
				0 g	70.1		
Remainder				0 g			

Number of aliquots SHMP used 1

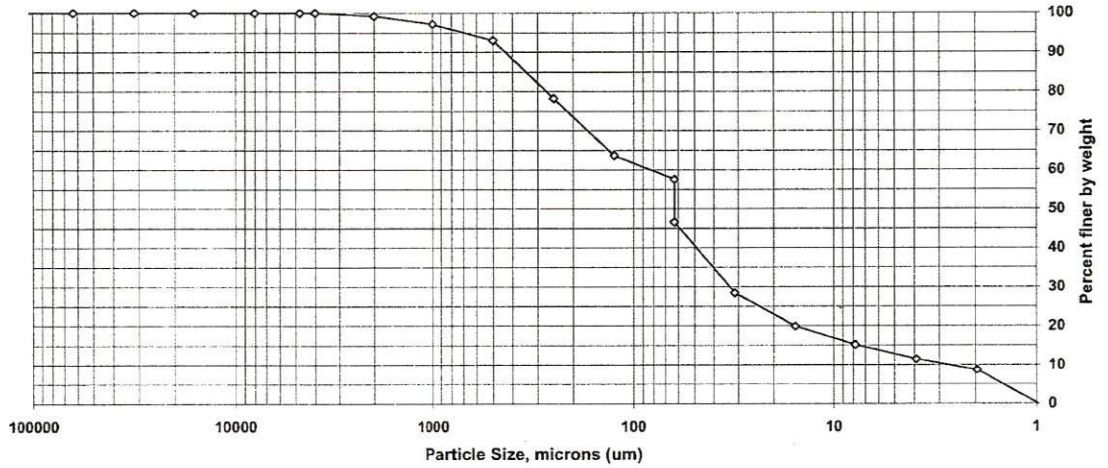
Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Residue weight - Tare Weight	Residue weight - Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	56.7029	57.0166	0.31128	2.975	13.42533259	56.774667	Sand	Very Fine
5	31.42	20	00:01:54	10	55.953	56.2072	0.25178	7.42	33.48435892	23.290308	Silt	Coarse
6	15.6	20	00:07:36	10	54.6113	54.7171	0.10338	0.9	4.061445152	19.228863	Silt	Medium
7	7.8	20	00:30:26	10	57.1881	57.2759	0.08538	0.73	3.29428329	15.93458	Silt	Fine
8	3.9	20	02:02:00	10	52.4719	52.5451	0.07078	0.62	2.797884438	13.136696	Silt	Very Fine
9	1.95	20	08:06:00	10	56.254	56.3148	0.05838	0.435	1.963031824	11.173664	Clay	Coarse
10	0.98	20	32:28:00	10	58.1026	58.1547	0.04968	2.484	11.20958862	-0.0359248	Clay	Medium
			not defined	10								

4/24/09

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	PO-UP-21-SS-A-090313	**Percent Solids:**	32.20359%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-6	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	99.2	0.8
#18	1000	97.2	2.0
#35	500	93.0	4.2
#60	250	78.2	14.8
#120	125	63.7	14.5
#230	63	57.6	6.1
Phi Size 4	63	46.6	11.0
Phi Size 5	31.42	28.5	18.1
Phi Size 6	15.6	19.9	8.5
Phi Size 7	7.8	15.2	4.8
Phi Size 8	3.9	11.5	3.7
Phi Size 9	1.95	8.7	2.8
Phi Size 10	0.98	0.0	8.7
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	0.0
Gravel	0.8
Sand	52.6
Very Coarse Sand	2.0
Coarse Sand	4.2
Medium Sand	14.8
Fine Sand	14.5
Very Fine Sand	17.1
Silt	35.1
Coarse Silt	18.1
Medium Silt	8.5
Fine Silt	4.8
Very Fine Silt	3.7
Clay	11.4
Coarse Clay	2.8
Medium Clay	8.7

4/3/09

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Receved	3/16/2009
Client Sample ID	PO-UP-21-SS-A-090313	Start Date	3/24/2009
Lab Sample ID	580-13052-A-6	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	67.79641 %

Default Soil Gravity 2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			100.2367
Sample Weight (dry)			29.8652

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			12.6712
Sample <#230			17.194
% Passing #230			57.6

SHMP test

Standard ID	3/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	2.9
Weight of aliquot 5 (mg)	2.5
Average Weight (mg)	2.42

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	0	0 g	100.0	Gravel	
#5	4000	0	0	0 g	100.0	Gravel	
#10	2000	0	0.2534	0.2534 g	99.2	Gravel	
#18	1000	0	0.5919	0.5919 g	97.2	Sand	Coarse
#35	500	0	1.2586	1.2586 g	93.0	Sand	Medium
#60	250	0	4.4098	4.4098 g	78.2	Sand	Medium
#120	125	0	4.3413	4.3413 g	63.7	Sand	Fine
#230	63	0	1.8162	1.8162 g	57.6	Sand	Fine
				0 g	57.6	Sand	Fine
				0 g	57.6		
Remainder				0 g			

Number of aliquots SHMP used 1

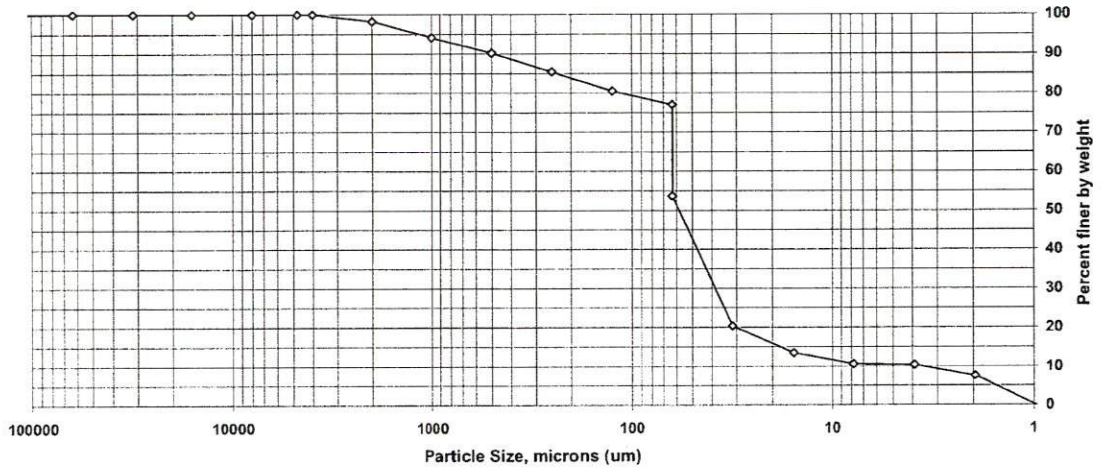
Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	55.0374	55.3837	0.34388	3.29	11.01616597	46.583834	Sand	Very Fine
5	31.42	20	00:01:54	10	57.9595	58.24	0.27808	5.415	18.13147074	28.452363	Silt	Coarse
6	15.6	20	00:07:36	10	53.887	54.0592	0.16978	2.54	8.504881936	19.947481	Silt	Medium
7	7.8	20	00:30:26	10	54.1449	54.2663	0.11898	1.42	4.754697775	15.192784	Silt	Fine
8	3.9	20	02:02:00	10	57.3745	57.4675	0.09058	1.11	3.716700374	11.476083	Silt	Very Fine
9	1.95	20	08:06:00	10	56.8852	56.956	0.06838	0.825	2.76241244	8.7136708	Clay	Coarse
10	0.98	20	32:28:00	10	58.0354	58.0897	0.05188	2.594	8.685694387	0.0279764	Clay	Medium
			not defined	10								

4/5/09

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	PO-UP-22-SS-A-090313	**Percent Solids:**	25.15368%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-7	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	98.3	1.7
#18	1000	94.2	4.1
#35	500	90.3	3.9
#60	250	85.5	4.8
#120	125	80.5	5.0
#230	63	77.1	3.4
Phi Size 4	63	53.7	23.4
Phi Size 5	31.42	20.3	33.4
Phi Size 6	15.6	13.5	6.8
Phi Size 7	7.8	10.6	2.9
Phi Size 8	3.9	10.4	0.2
Phi Size 9	1.95	7.6	2.8
Phi Size 10	0.98	0.0	7.6
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	0.0
Gravel	1.7
Sand	44.6
Very Coarse Sand	4.1
Coarse Sand	3.9
Medium Sand	4.8
Fine Sand	5.0
Very Fine Sand	26.8
Silt	43.3
Coarse Silt	33.4
Medium Silt	6.8
Fine Silt	2.9
Very Fine Silt	0.2
Clay	10.4
Coarse Clay	2.8
Medium Clay	7.6

8/04/2009

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Receved	3/16/2009
Client Sample ID	PO-UP-22-SS-A-090313	Start Date	3/24/2009
Lab Sample ID	580-13052-A-7	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	74.84632 %

Default Soil Gravity 2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			99.4388
Sample Weight (dry)			22.8116

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			5.2476
Sample <#230			17.564
% Passing #230			.77

SHMP test

Standard ID	3/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	2.9
Weight of aliquot 5 (mg)	2.5
Average Weight (mg)	2.42

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	0	0 g	100.0	Gravel	
#5	4000	0	0	0 g	100.0	Gravel	
#10	2000	0	0.398	0.398 g	98.3	Gravel	
#18	1000	0	0.9414	0.9414 g	94.2	Sand	Coarse
#35	500	0	0.8988	0.8988 g	90.3	Sand	Medium
#60	250	0	1.0921	1.0921 g	85.5	Sand	Medium
#120	125	0	1.1345	1.1345 g	80.5	Sand	Fine
#230	63	0	0.7828	0.7828 g	77.1	Sand	Fine
				0 g	77.1	Sand	Fine
				0 g	77.1		
Remainder				0 g			

Number of aliquots SHMP used 1

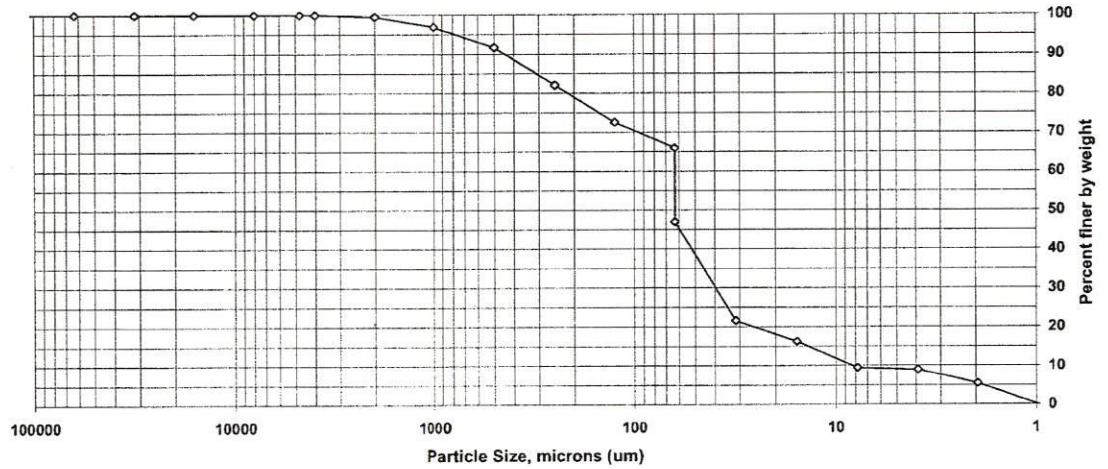
Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	54.5428	54.8965	0.35128	5.31	23.27763068	53.722369	Sand	Very Fine
5	31.42	20	00:01:54	10	55.1933	55.4408	0.24508	7.615	33.38213891	20.34023	Silt	Coarse
6	15.6	20	00:07:36	10	61.3796	61.4748	0.09278	1.55	6.794788616	13.545442	Silt	Medium
7	7.8	20	00:30:26	10	61.4886	61.5528	0.06178	0.665	2.915183503	10.630258	Silt	Fine
8	3.9	20	02:02:00	10	62.2752	62.3261	0.04848	0.05	0.21918673	10.411072	Silt	Very Fine
9	1.95	20	08:06:00	10	59.2805	59.3304	0.04748	0.64	2.805590138	7.6054814	Clay	Coarse
10	0.98	20	32:28:00	10	62.7002	62.7373	0.03468	1.734	7.601395781	0.0040856	Clay	Medium
			not defined	10								

4/24/09

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	PO-UP-23B-SS-A-090313	**Percent Solids:**	26.17669%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-8	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	99.5	0.5
#18	1000	97.0	2.5
#35	500	91.7	5.3
#60	250	82.1	9.6
#120	125	72.6	9.5
#230	63	66.0	6.6
Phi Size 4	63	47.0	19.0
Phi Size 5	31.42	21.6	25.4
Phi Size 6	15.6	16.3	5.3
Phi Size 7	7.8	9.5	6.8
Phi Size 8	3.9	9.0	0.5
Phi Size 9	1.95	5.4	3.5
Phi Size 10	0.98	0.0	5.4
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	**0.0**
Gravel	**0.5**
Sand	**52.5**
Very Coarse Sand	2.5
Coarse Sand	5.3
Medium Sand	9.6
Fine Sand	9.5
Very Fine Sand	25.6
Silt	**38.0**
Coarse Silt	25.4
Medium Silt	5.3
Fine Silt	6.8
Very Fine Silt	0.5
Clay	**8.9**
Coarse Clay	3.5
Medium Clay	5.4

4/3/09

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Receved	3/16/2009
Client Sample ID	PO-UP-23B-SS-A-090313	Start Date	3/24/2009
Lab Sample ID	580-13052-A-8	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	73.82331 %

Default Soil Gravity 2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			98.6895
Sample Weight (dry)			22.7562

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			7.7472
Sample <#230			15.009
% Passing #230			66

SHMP test

Standard ID	3/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	2.9
Weight of aliquot 5 (mg)	2.5
Average Weight (mg)	2.42

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	0	0 g	100.0	Gravel	
#5	4000	0	0	0 g	100.0	Gravel	
#10	2000	0	0.1217	0.1217 g	99.5	Gravel	
#18	1000	0	0.576	0.576 g	97.0	Sand	Coarse
#35	500	0	1.2065	1.2065 g	91.7	Sand	Medium
#60	250	0	2.1901	2.1901 g	82.1	Sand	Medium
#120	125	0	2.1564	2.1564 g	72.6	Sand	Fine
#230	63	0	1.4965	1.4965 g	66.0	Sand	Fine
				0 g	66.0	Sand	Fine
				0 g	66.0		
Remainder				0 g			

Number of aliquots SHMP used 1

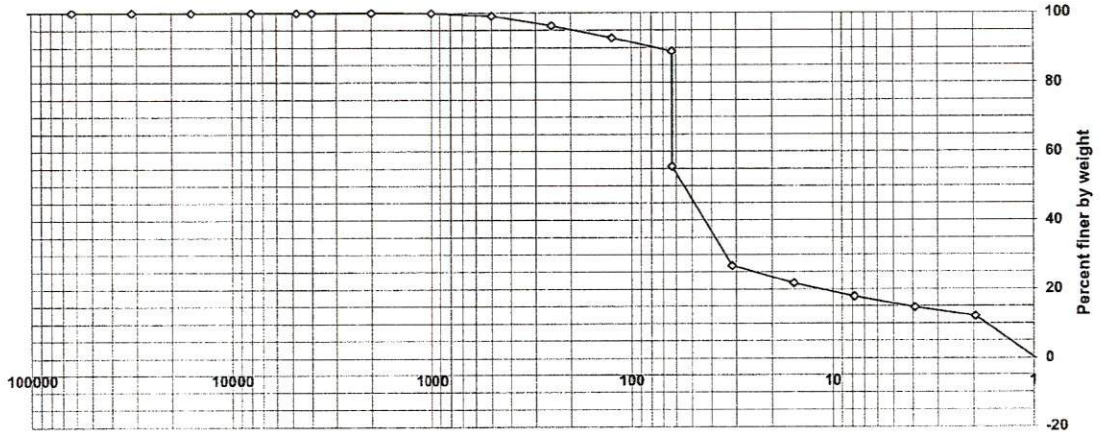
Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	61.1938	61.4964	0.30018	4.32	18.98383737	47.016163	Sand	Very Fine
5	31.42	20	00:01:54	10	60.9819	61.1981	0.21378	5.79	25.44361537	21.572547	Silt	Coarse
6	15.6	20	00:07:36	10	62.0444	62.1448	0.09798	1.2	5.273288159	16.299259	Silt	Medium
7	7.8	20	00:30:26	10	60.7791	60.8555	0.07398	1.55	6.811330538	9.4879286	Silt	Fine
8	3.9	20	02:02:00	10	60.8079	60.8533	0.04298	0.115	0.505356782	8.9825718	Silt	Very Fine
9	1.95	20	08:06:00	10	61.9768	62.0199	0.04068	0.805	3.537497473	5.4450743	Clay	Coarse
10	0.98	20	32:28:00	10	61.3393	61.3663	0.02458	1.229	5.400725956	0.0443484	Clay	Medium
			not defined	10								

8/24/09

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	PO-AM-28-SS-A-090313	**Percent Solids:**	25.91508%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-9	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	100.0	0.0
#18	1000	99.9	0.1
#35	500	99.1	0.8
#60	250	96.3	2.8
#120	125	92.8	3.5
#230	63	89.0	3.8
Phi Size 4	63	55.6	33.4
Phi Size 5	31.42	26.8	28.9
Phi Size 6	15.6	21.7	5.1
Phi Size 7	7.8	17.8	4.0
Phi Size 8	3.9	14.6	3.1
Phi Size 9	1.95	12.1	2.5
Phi Size 10	0.98	0.0	12.1
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	**0.0**
Gravel	**0.0**
Sand	**44.4**
Very Coarse Sand	0.1
Coarse Sand	0.8
Medium Sand	2.8
Fine Sand	3.5
Very Fine Sand	37.2
Silt	**41.0**
Coarse Silt	28.9
Medium Silt	5.1
Fine Silt	4.0
Very Fine Silt	3.1
Clay	**14.7**
Coarse Clay	2.5
Medium Clay	12.1

8/4/09

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Received	3/16/2009
Client Sample ID	PO-AM-28-SS-A-090313	Start Date	3/24/2009
Lab Sample ID	580-13052-A-9	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	74.08492 %

Default Soil Gravity 2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			101.4646
Sample Weight (dry)			23.523

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			2.559
Sample <#230			20.964
% Passing #230			89.1

SHMP test

Standard ID	3/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	2.9
Weight of aliquot 5 (mg)	2.5
Average Weight (mg)	2.42

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	0	0 g	100.0	Gravel	
#5	4000	0	0	0 g	100.0	Gravel	
#10	2000	0	0.006	0.006 g	100.0	Gravel	
#18	1000	0	0.0232	0.0232 g	99.9	Sand	Coarse
#35	500	0	0.1831	0.1831 g	99.1	Sand	Medium
#60	250	0	0.6477	0.6477 g	96.3	Sand	Medium
#120	125	0	0.8157	0.8157 g	92.8	Sand	Fine
#230	63	0	0.8833	0.8833 g	89.0	Sand	Fine
				0 g	89.0	Sand	Fine
				0 g	89.0		
Remainder				0 g			

Number of aliquots SHMP used 1

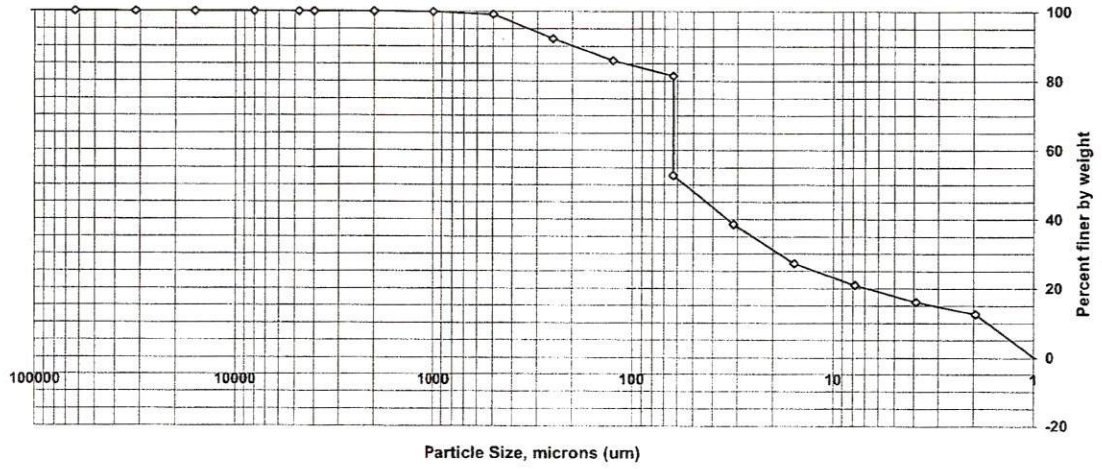
Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	50.7488	51.1705	0.41928	7.87	33.45661693	55.643383	Sand	Very Fine
5	31.42	20	00:01:54	10	55.2435	55.5078	0.26188	6.79	28.86536581	26.778017	Silt	Coarse
6	15.6	20	00:07:36	10	56.56	56.6885	0.12608	1.19	5.058876544	21.719139	Silt	Medium
7	7.8	20	00:30:26	10	52.8755	52.9802	0.10228	0.93	3.95357735	17.765561	Silt	Fine
8	3.9	20	02:02:00	10	53.3879	53.474	0.08368	0.735	3.124601454	14.64096	Silt	Very Fine
9	1.95	20	08:06:00	10	54.5362	54.6076	0.06898	0.595	2.529439272	12.111521	Clay	Coarse
10	0.98	20	32:28:00	10	54.9822	55.0417	0.05708	2.854	12.13280619	-0.0212856	Clay	Medium
			not defined	10								

8/4/2009

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	B1-C16-SS-A-090313	**Percent Solids:**	27.31967%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-10	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	100.0	0.0
#18	1000	99.9	0.1
#35	500	99.2	0.7
#60	250	92.2	7.0
#120	125	85.9	6.3
#230	63	81.5	4.4
Phi Size 4	63	52.8	28.7
Phi Size 5	31.42	38.6	14.1
Phi Size 6	15.6	27.3	11.4
Phi Size 7	7.8	21.0	6.2
Phi Size 8	3.9	16.1	4.9
Phi Size 9	1.95	12.6	3.5
Phi Size 10	0.98	0.0	12.6
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	**0.0**
Gravel	**0.0**
Sand	**47.2**
Very Coarse Sand	0.1
Coarse Sand	0.7
Medium Sand	7.0
Fine Sand	6.3
Very Fine Sand	33.1
Silt	**36.6**
Coarse Silt	14.1
Medium Silt	11.4
Fine Silt	6.2
Very Fine Silt	4.9
Clay	**16.2**
Coarse Clay	3.5
Medium Clay	12.6

4/1/2009

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Receved	3/16/2009
Client Sample ID	B1-C16-SS-A-090313	Start Date	3/24/2009
Lab Sample ID	580-13052-A-10	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	72.68033 %

Default Soil Gravity 2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			100.686
Sample Weight (dry)			24.6685

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			4.5535
Sample <#230			20.115
% Passing #230			81.5

SHMP test

Standard ID	03/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	3.4
Weight of aliquot 5 (mg)	2.4
Average Weight (mg)	2.5

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	0	0 g	100.0	Gravel	
#5	4000	0	0	0 g	100.0	Gravel	
#10	2000	0	0	0 g	100.0	Gravel	
#18	1000	0	0.02	0.02 g	99.9	Sand	Coarse
#35	500	0	0.1754	0.1754 g	99.2	Sand	Medium
#60	250	0	1.7367	1.7367 g	92.2	Sand	Medium
#120	125	0	1.5481	1.5481 g	85.9	Sand	Fine
#230	63	0	1.0733	1.0733 g	81.5	Sand	Fine
				0 g	81.5	Sand	Fine
				0 g	81.5		
Remainder				0 g			

Number of aliquots SHMP used 1

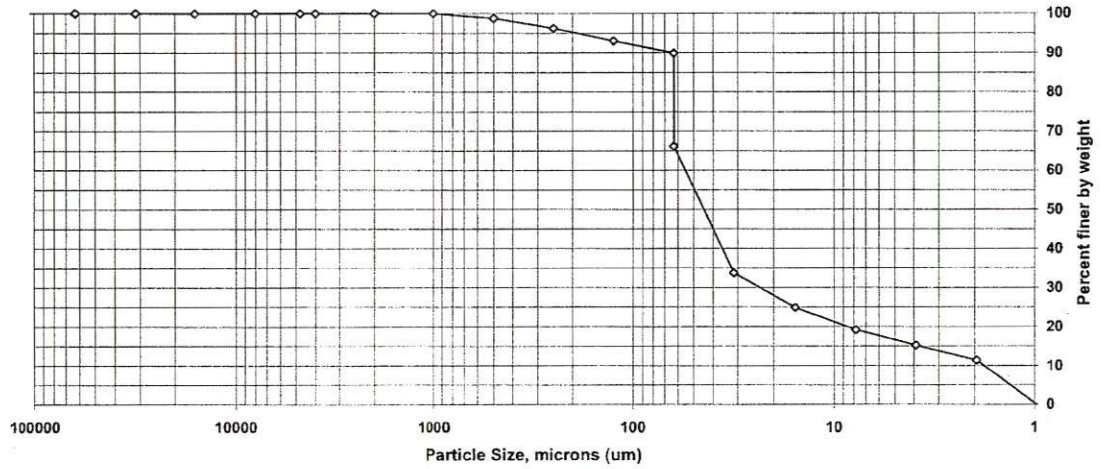
Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	51.9275	52.3323	0.4023	7.09	28.74110708	52.758893	Sand	Very Fine
5	31.42	20	00:01:54	10	55.6811	55.9441	0.2605	3.49	14.14759714	38.611296	Silt	Coarse
6	15.6	20	00:07:36	10	54.2087	54.4019	0.1907	2.8	11.35050773	27.260788	Silt	Medium
7	7.8	20	00:30:26	10	54.2271	54.3643	0.1347	1.54	6.242779253	21.018009	Silt	Fine
8	3.9	20	02:02:00	10	52.332	52.4384	0.1039	1.21	4.905040842	16.112968	Silt	Very Fine
9	1.95	20	08:06:00	10	54.9587	55.0409	0.0797	0.87	3.526764903	12.586203	Clay	Coarse
10	0.98	20	32:28:00	10	57.1246	57.1894	0.0623	3.115	12.62743985	-0.0412368	Clay	Medium
			not defined	10								

4-23-09

Particle Size of Sediments by PSEP/Plumb 1981

Client:	Anchor Environmental LLC			**Date Received:**	3/16/2009
Sample ID:	B1-S37-SS-A-090313	**Percent Solids:**	28.79446%	**Start Date:**	3/24/2009
Lab ID:	580-13052-A-11	**Specific Gravity:**	2.650	**End Date:**	4/1/2009



Sieve size	Particle size, um	Percent finer	Incremental percent
5 inch	125000	100.0	0.0
2.5 inch	63000	100.0	0.0
1.25 inch	31500	100.0	0.0
5/8 inch	16000	100.0	0.0
5/16 inch	8000	100.0	0.0
#4	4750	100.0	0.0
#5	4000	100.0	0.0
#10	2000	100.0	0.0
#18	1000	100.0	0.0
#35	500	98.8	1.2
#60	250	96.2	2.6
#120	125	93.0	3.2
#230	63	89.9	3.1
Phi Size 4	63	66.2	23.7
Phi Size 5	31.42	33.8	32.4
Phi Size 6	15.6	24.9	8.9
Phi Size 7	7.8	19.2	5.7
Phi Size 8	3.9	15.3	3.9
Phi Size 9	1.95	11.4	3.9
Phi Size 10	0.98	0.0	11.4
>Phi Size 10	<0.98		0.0

Soil Classification	Percent of Total Sample
Cobbles	**0.0**
Gravel	**0.0**
Sand	**33.8**
Very Coarse Sand	0.0
Coarse Sand	1.2
Medium Sand	2.6
Fine Sand	3.2
Very Fine Sand	26.8
Silt	**50.9**
Coarse Silt	32.4
Medium Silt	8.9
Fine Silt	5.7
Very Fine Silt	3.9
Clay	**15.3**
Coarse Clay	3.9
Medium Clay	11.4

8/04/09

Sediment Grain Size - SEF/DMEF/PSEP

Client	Anchor Environmental LLC	Date Receved	3/16/2009
Client Sample ID	B1-S37-SS-A-090313	Start Date	3/24/2009
Lab Sample ID	580-13052-A-11	End Date	4/1/2009

Dry Weight Determination

Tin Weight	0 g
Wet Sample + Tin	0 g
Dry Sample + Tin	0 g
% Moisture	71.20554 %

Default Soil Gravity 2.65

Sample Weights	Tare	Pan+Samp	Samp
Sample Weight (Wet)			101.8917
Sample Weight (dry)			28.1653

Sample Split	Tare	Pan+Samp	Samp
Sample >=#230			2.8763
Sample <#230			25.289
% Passing #230			89.8

SHMP test

Standard ID	3/27/2009
Weight of aliquot 1 (mg)	1.9
Weight of aliquot 2 (mg)	2.5
Weight of aliquot 3 (mg)	2.3
Weight of aliquot 4 (mg)	2.9
Weight of aliquot 5 (mg)	2.5
Average Weight (mg)	2.42

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare	Pan+Sample	Sample	% Finer	Classification	Sub Class
5 inch	125000	0	0	0 g	100.0	Cobbles	
2.5 inch	63000	0	0	0 g	100.0	Cobbles	
1.25 inch	31500	0	0	0 g	100.0	Gravel	
5/8 inch	16000	0	0	0 g	100.0	Gravel	
5/16 inch	8000	0	0	0 g	100.0	Gravel	
#4	4750	0	0	0 g	100.0	Gravel	
#5	4000	0	0	0 g	100.0	Gravel	
#10	2000	0	0.0026	0.0026 g	100.0	Gravel	
#18	1000	0	0.0122	0.0122 g	100.0	Sand	Coarse
#35	500	0	0.3506	0.3506 g	98.8	Sand	Medium
#60	250	0	0.7418	0.7418 g	96.2	Sand	Medium
#120	125	0	0.8899	0.8899 g	93.0	Sand	Fine
#230	63	0	0.8792	0.8792 g	89.9	Sand	Fine
				0 g	89.9	Sand	Fine
				0 g	89.9		
Remainder				0 g			

Number of aliquots SHMP used 1

Silt/Clay Fraction (Pipette Test)

Pipette Size (Phi)	Size (um)	Temp C	Withdrawal Time (hh:mm:ss)	Withdrawal Depth	Tare Weight	Tin + residue	Residue weight - SHMP	Phi Interval	% Phi Interval	% finer	Classification	Sub Class
4	63	20	00:00:20	20	55.044	55.5522	0.50578	6.65	23.61061306	66.189387	Sand	Very Fine
5	31.42	20	00:01:54	10	54.9437	55.3189	0.37278	9.135	32.43352636	33.755861	Silt	Coarse
6	15.6	20	00:07:36	10	56.1907	56.3832	0.19008	2.495	8.858417982	24.897443	Silt	Medium
7	7.8	20	00:30:26	10	56.3158	56.4584	0.14018	1.6	5.680749007	19.216694	Silt	Fine
8	3.9	20	02:02:00	10	53.7534	53.864	0.10818	1.11	3.941019623	15.275674	Silt	Very Fine
9	1.95	20	08:06:00	10	53.6587	53.7471	0.08598	1.085	3.85225792	11.423416	Clay	Coarse
10	0.98	20	32:28:00	10	57.4267	57.4934	0.06428	3.214	11.41120457	0.0122115	Clay	Medium
			not defined	10								

4/6/09

LDC #: 20577A6
SDG #: 580-13052-1
Laboratory: Test America

VALIDATION COMPLETENESS WORKSHEET
Level III/~~IV~~ dl

Date: 4/15/09
Page: 1 of 1
Reviewer: dl
2nd Reviewer: W

METHOD: (Analyte) Grain Size (PSEP Method), TOC (PSEP Method), ~~Percent (Method~~ Moisture Content (ASTM D2216-90), % Solids (Percent Moisture)

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 → 3/16/09
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS, SRM
VII.	Sample result verification	N	~~Not reviewed for Level III validation.~~
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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~~ dl
All sediment

1	PO-BA-24-SS-A-090313	11	B1-S37-SS-A-090313	21		31	
2	PO-BA-25-SS-A-090316	12	PO-BA-24-SS-A-090313MS	22		32	
3	PO-BA-26-SS-A-090316	13	PO-BA-24-SS-A-090313MSD	23		33	
4	PO-BA-27B-SS-A-090313	14	PO-BA-24-SS-A-090313DUP	24		34	
5	PO-UP-20-SS-A-090313** dl	15	PO-BA-25-SS-A-090316MS	25		35	
6	PO-UP-21-SS-A-090313	16	PO-BA-25-SS-A-090316MSD	26		36	
7	PO-UP-22-SS-A-090313	17	PO-BA-25-SS-A-090316DUP	27		37	
8	PO-UP-23B-SS-A-090313	18	B1-S37-SS-A-090313DUP	28		38	
9	PO-AM-28-SS-A-090313	19	PB	29		39	
10	B1-C16-SS-A-090313	20		30		40	

Notes:

LDC #: 20577A6
SDG #: Sm Cor

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 - 11	Sed	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN (TOC) CR^{6+} (Grain Size) (% solids) (Moisture Content)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
12 - 18	Sed	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN (TOC) CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

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

Anchor QEA, LLC
1423 3rd Avenue, Suite 300
Seattle, WA 98101-2226
ATTN: Ms. Joy Dunay

May 1, 2009

SUBJECT: Port of Olympia, Data Validation

Dear Ms. Dunay,

Enclosed is the final validation report for the fraction listed below. This SDG was received on April 9, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20586:

SDG #	Fraction
P1193	Dioxins/Dibenzofurans

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Diobenzofurans Data Review, September 2005

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

Sincerely,

Stella S. Cuenco
Data Validation Operations Manager/Senior Chemist

V:\LOGIN\Anchor\Olympia\20586COV.wpd

Attachment 1

EDD 474 Pages-EX 90/10

LDC #20586 (Anchor Environmental-Seattle WA / Port of Olympia)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Dioxins (1613B)																															
Matrix:	Waste/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	P1193	04/09/09	04/30/09	0	11																														
Total	T/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 III validation). These sample counts do not include MS, MSD, or DUP's.

Port of Olympia
Data Validation Reports
LDC# 20586

Dioxins/Dibenzofurans

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Port of Olympia
Collection Date:	March 13 through March 16, 2009
LDC Report Date:	April 28, 2009
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	Analytical Perspectives
Sample Delivery Group (SDG):	P1193

Sample Identification

PO-BA-24-SS-A-090313
PO-BA-25-SS-A-090316
PO-BA-26-SS-A-090316
PO-BA-27B-SS-A-090313
PO-UP-20-SS-A-090313
PO-UP-21-SS-A-090313
PO-UP-22-SS-A-090313
PO-UP-23B-SS-A-090313
PO-AM-28-SS-A-090313
B1-C16-SS-A-090313
B1-S37-SS-A-090313

Introduction

This data review covers 11 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

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.

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.

EMPC Estimated Maximum Possible Concentration

A Indicates the finding is based upon technical validation criteria.

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

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

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. HRGC/LRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

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 unlabeled compounds and less than or equal to 35.0% for labeled compounds.

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

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were within the QC limits.

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

V. Blanks

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

VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VII. Ongoing Precision Recovery (OPR)

Ongoing precision recovery samples were reviewed for each matrix as applicable. Percent recoveries (%R) 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

Raw data were not reviewed for this SDG.

XI. Compound Quantitation and CRQLs

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

Sample	Compound	Finding	Criteria	Flag	A or P
PO-UP-20-SS-A-090313 PO-UP-21-SS-A-090313	OCDD	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	P
PO-UP-20-SS-A-090313 PO-UP-21-SS-A-090313 PO-UP-22-SS-A-090313 PO-UP-23B-SS-A-090313 PO-AM-28-SS-A-090313 B1-C16-SS-A-090313 B1-S37-SS-A-090313	2,3,7,8-TCDF	2nd column confirmation was not performed for this compound.	All compounds must be confirmed on the 2nd column per the QAPP.	None	P

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method with the exception noted in Section XI. No data were qualified due to this laboratory oversight.

No results were rejected in this SDG.

Due to compound quantitation problems, OCDD was qualified as estimated in two samples.

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

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

Port of Olympia
Dioxins/Dibenzofurans - Data Qualification Summary - SDG P1193

SDG	Sample	Compound	Flag	A or P	Reason
P1193	PO-UP-20-SS-A-090313 PO-UP-21-SS-A-090313	OCDD	J (all detects)	P	Compound quantitation and CRQLs
P1193	PO-UP-20-SS-A-090313 PO-UP-21-SS-A-090313 PO-UP-22-SS-A-090313 PO-UP-23B-SS-A-090313 PO-AM-28-SS-A-090313 B1-C16-SS-A-090313 B1-S37-SS-A-090313	2,3,7,8-TCDF	None	P	Compound quantitation and CRQLs

Port of Olympia
Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG P1193

No Sample Data Qualified in this SDG

Sample ID: PO-BA-24-SS-A-090313

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.26 g	Sample ID:	P1193_6679_001	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	84.2 %	QC Batch No.:	6679	Date Analyzed:	25 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	17:40:33

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.0901			13C-2,3,7,8-TCDD	73.3	
1,2,3,7,8-PeCDD	ND	0.142			13C-1,2,3,7,8-PeCDD	69.1	
1,2,3,4,7,8-HxCDD	ND	0.22			13C-1,2,3,4,7,8-HxCDD	74.9	
1,2,3,6,7,8-HxCDD	ND	<0.244			13C-1,2,3,6,7,8-HxCDD	72.5	
1,2,3,7,8,9-HxCDD	ND	0.259			13C-1,2,3,7,8,9-HxCDD	73.4	
1,2,3,4,6,7,8-HpCDD	4.57				13C-1,2,3,4,6,7,8-HpCDD	72	
OCDD	43.1				13C-OCDD	61.1	
2,3,7,8-TCDF	ND	0.0577			13C-2,3,7,8-TCDF	85.5	
1,2,3,7,8-PeCDF	ND	0.138			13C-1,2,3,7,8-PeCDF	78.2	
2,3,4,7,8-PeCDF	ND	0.124			13C-2,3,4,7,8-PeCDF	78.2	
1,2,3,4,7,8-HxCDF	ND	0.0484			13C-1,2,3,4,7,8-HxCDF	73.5	
1,2,3,6,7,8-HxCDF	ND	0.0449			13C-1,2,3,6,7,8-HxCDF	72.5	
2,3,4,6,7,8-HxCDF	ND	<0.244			13C-2,3,4,6,7,8-HxCDF	75.8	
1,2,3,7,8,9-HxCDF	ND	0.0658			13C-1,2,3,7,8,9-HxCDF	71.1	
1,2,3,4,6,7,8-HpCDF	0.973			J	13C-1,2,3,4,6,7,8-HpCDF	70.9	
1,2,3,4,7,8,9-HpCDF	ND	<0.244			13C-1,2,3,4,7,8,9-HpCDF	70.8	
OCDF	1.8			J	13C-OCDF	63.3	
Totals						**CS Recoveries**	
TCDDs	0.161		0.256		37Cl-2,3,7,8-TCDD	77.9	
PeCDDs	ND	0.142			13C-1,2,3,4,7-PeCDD	76.3	
HxCDDs	2.01				13C-1,2,3,4,6-PeCDF	85.9	
HpCDDs	16.9				13C-1,2,3,4,6,9-HxCDF	82.9	
					13C-1,2,3,4,6,8,9-HpCDF	81	
TCDFs	ND	0.0577					
PeCDFs	ND		0.119			**AS Recoveries**	
HxCDFs	0.613		1.05		13C-1,3,6,8-TCDD	74.5	
HpCDFs	2.79				13C-1,3,6,8-TCDF	95.1	
Total PCDD/Fs	**67.4**		**68**				
ITEF TEQs							
TEQ: ND=0	0.1		0.1				
TEQ: ND=DL/2	0.276		0.276				
TEQ: ND=DL	0.451		0.451				

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Checkcode: 1408

AP 2008 Rev 4

ok 7 April 09

25/3/09

7 April 09

Reviewer .....

Date .....

Sample ID: PO-BA-25-SS-A-090316

Method 161

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.21 g	Sample ID:	P1193_6679_002	Date Extracted:	19 Mar 09
Date Collected:	16 Mar 09	% Solids:	86.6 %	QC Batch No.:	6679	Date Analyzed:	25 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	18:30:42

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.0343			13C-2,3,7,8-TCDD	78.4	
1,2,3,7,8-PeCDD	ND	0.168			13C-1,2,3,7,8-PeCDD	73.2	
1,2,3,4,7,8-HxCDD	ND	<0.245			13C-1,2,3,4,7,8-HxCDD	76.6	
1,2,3,6,7,8-HxCDD	0.776			J	13C-1,2,3,6,7,8-HxCDD	76.2	
1,2,3,7,8,9-HxCDD	0.566			J	13C-1,2,3,7,8,9-HxCDD	80	
1,2,3,4,6,7,8-HpCDD	26.1				13C-1,2,3,4,6,7,8-HpCDD	74.9	
OCDD	209				13C-OCDD	66.2	
2,3,7,8-TCDF	ND	0.0377			13C-2,3,7,8-TCDF	89.3	
1,2,3,7,8-PeCDF	ND	0.0607			13C-1,2,3,7,8-PeCDF	76.4	
2,3,4,7,8-PeCDF	ND	<0.245			13C-2,3,4,7,8-PeCDF	78.6	
1,2,3,4,7,8-HxCDF	ND	<0.245			13C-1,2,3,4,7,8-HxCDF	75.2	
1,2,3,6,7,8-HxCDF	ND	<0.245			13C-1,2,3,6,7,8-HxCDF	69	
2,3,4,6,7,8-HxCDF	ND	<0.245			13C-2,3,4,6,7,8-HxCDF	78.6	
1,2,3,7,8,9-HxCDF	ND	0.051			13C-1,2,3,7,8,9-HxCDF	74.4	
1,2,3,4,6,7,8-HpCDF	4.22				13C-1,2,3,4,6,7,8-HpCDF	71	
1,2,3,4,7,8,9-HpCDF	0.416			J	13C-1,2,3,4,7,8,9-HpCDF	72.4	
OCDF	16.6				13C-OCDF	68.1	
Totals						**CS Recoveries**	
TCDDs	ND		0.228		37Cl-2,3,7,8-TCDD	84	
PeCDDs	ND	0.168			13C-1,2,3,4,7-PeCDD	67.3	
HxCDDs	1.59		4.75		13C-1,2,3,4,6-PeCDF	83.1	
HpCDDs	55				13C-1,2,3,4,6,9-HxCDF	88.1	
					13C-1,2,3,4,6,8,9-HpCDF	83.6	
TCDFs	ND	0.0377					
PeCDFs	ND		0.366			**AS Recoveries**	
HxCDFs	3.19		3.69		13C-1,3,6,8-TCDD	71.1	
HpCDFs	13.9		14.1		13C-1,3,6,8-TCDF	89	
Total PCDD/Fs	**299**		**304**				
ITEF TEQs							
TEQ: ND=0	0.667		0.667				
TEQ: ND=DL/2	0.842		0.842				
TEQ: ND=DL	1.02		1.02				

Checkcode: 1692

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Reviewer ...
Date 7 Apr 09

Sample ID: PO-BA-26-SS-A-090316

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.48 g	Sample ID:	P1193_6679_003	Date Extracted:	19 Mar 09
Date Collected:	16 Mar 09	% Solids:	84.5 %	QC Batch No.:	6679	Date Analyzed:	25 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	19:20:51

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.102			13C-2,3,7,8-TCDD	75.1	
1,2,3,7,8-PeCDD	ND	0.1			13C-1,2,3,7,8-PeCDD	70.5	
1,2,3,4,7,8-HxCDD	ND	0.127			13C-1,2,3,4,7,8-HxCDD	71.6	
1,2,3,6,7,8-HxCDD	ND	0.151			13C-1,2,3,6,7,8-HxCDD	69.9	
1,2,3,7,8,9-HxCDD	ND	0.149			13C-1,2,3,7,8,9-HxCDD	72.9	
1,2,3,4,6,7,8-HpCDD	1.99			J	13C-1,2,3,4,6,7,8-HpCDD	69.4	
OCDD	19				13C-OCDD	56.2	
2,3,7,8-TCDF	ND	0.0323			13C-2,3,7,8-TCDF	85.9	
1,2,3,7,8-PeCDF	ND	0.0705			13C-1,2,3,7,8-PeCDF	79	
2,3,4,7,8-PeCDF	ND	0.0653			13C-2,3,4,7,8-PeCDF	77.4	
1,2,3,4,7,8-HxCDF	ND	0.122			13C-1,2,3,4,7,8-HxCDF	70.6	
1,2,3,6,7,8-HxCDF	ND	0.113			13C-1,2,3,6,7,8-HxCDF	69.9	
2,3,4,6,7,8-HxCDF	ND	0.12			13C-2,3,4,6,7,8-HxCDF	72.3	
1,2,3,7,8,9-HxCDF	ND	0.165			13C-1,2,3,7,8,9-HxCDF	68.8	
1,2,3,4,6,7,8-HpCDF	EMPC		0.325	J	13C-1,2,3,4,6,7,8-HpCDF	67.9	
1,2,3,4,7,8,9-HpCDF	ND	0.104			13C-1,2,3,4,7,8,9-HpCDF	67.4	
OCDF	EMPC		0.526	J	13C-OCDF	60.3	
Totals						**CS Recoveries**	
TCDDs	0.104		0.26		37Cl-2,3,7,8-TCDD	76.8	
PeCDDs	ND	0.1			13C-1,2,3,4,7-PeCDD	74.6	
HxCDDs	ND		0.663		13C-1,2,3,4,6-PeCDF	82.3	
HpCDDs	7.18				13C-1,2,3,4,6,9-HxCDF	76.6	
					13C-1,2,3,4,6,8,9-HpCDF	75.8	
TCDFs	0.0815		0.176				
PeCDFs	ND		0.0367			**AS Recoveries**	
HxCDFs	ND		0.311		13C-1,3,6,8-TCDD	69.1	
HpCDFs	0.598		0.924		13C-1,3,6,8-TCDF	87.5	
Total PCDD/Fs	**26.9**		**29**				
ITEF TEQs							
TEQ: ND=0	0.0389		0.0427				
TEQ: ND=DL/2	0.183		0.186				
TEQ: ND=DL	0.327		0.33				

Checkcode: 0702

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

AP 2008 Rev 8

4/24/09

7 April 09

Reviewer .....

Date .....

Sample ID: PO-BA-27B-SS-A-09031[illegible] Method 161

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.37 g	Sample ID:	P1193_6679_004	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	83.6 %	QC Batch No.:	6679	Date Analyzed:	25 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	20:11:01

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.0939			13C-2,3,7,8-TCDD	79.3	
1,2,3,7,8-PeCDD	ND	0.0594			13C-1,2,3,7,8-PeCDD	76.1	
1,2,3,4,7,8-HxCDD	ND	0.214			13C-1,2,3,4,7,8-HxCDD	78.1	
1,2,3,6,7,8-HxCDD	ND	<0.241			13C-1,2,3,6,7,8-HxCDD	76.9	
1,2,3,7,8,9-HxCDD	ND	0.23			13C-1,2,3,7,8,9-HxCDD	80.2	
1,2,3,4,6,7,8-HpCDD	2.77				13C-1,2,3,4,6,7,8-HpCDD	74.4	
OCDD	26				13C-OCDD	58.7	
2,3,7,8-TCDF	ND	0.0479			13C-2,3,7,8-TCDF	92.8	
1,2,3,7,8-PeCDF	ND	0.09			13C-1,2,3,7,8-PeCDF	77.3	
2,3,4,7,8-PeCDF	ND	0.0808			13C-2,3,4,7,8-PeCDF	81	
1,2,3,4,7,8-HxCDF	ND	<0.241			13C-1,2,3,4,7,8-HxCDF	76.7	
1,2,3,6,7,8-HxCDF	ND	0.0539			13C-1,2,3,6,7,8-HxCDF	66	
2,3,4,6,7,8-HxCDF	ND	0.05			13C-2,3,4,6,7,8-HxCDF	78.3	
1,2,3,7,8,9-HxCDF	ND	0.0694			13C-1,2,3,7,8,9-HxCDF	75	
1,2,3,4,6,7,8-HpCDF	0.651			J	13C-1,2,3,4,6,7,8-HpCDF	72.3	
1,2,3,4,7,8,9-HpCDF	ND	0.104			13C-1,2,3,4,7,8,9-HpCDF	71.9	
OCDF	2.23			J	13C-OCDF	63.7	
Totals						**CS Recoveries**	
TCDDs	ND		0.11		37Cl-2,3,7,8-TCDD	83.3	
PeCDDs	ND	0.0594			13C-1,2,3,4,7-PeCDD	62.5	
HxCDDs	0.324		0.802		13C-1,2,3,4,6-PeCDF	78	
HpCDDs	6.78				13C-1,2,3,4,6,9-HxCDF	85.2	
					13C-1,2,3,4,6,8,9-HpCDF	80.5	
TCDFs	ND	0.0479					
PeCDFs	ND		0.0627			**AS Recoveries**	
HxCDFs	0.396		0.758		13C-1,3,6,8-TCDD	75.1	
HpCDFs	2				13C-1,3,6,8-TCDF	94.3	
Total PCDD/Fs	**37.8**		**38.8**				
ITEF TEQs							
TEQ: ND=0	0.0625		0.0625				
TEQ: ND=DL/2	0.205		0.205				
TEQ: ND=DL	0.347		0.347				

Checkcode: 2383

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

AP 2008 Rev.

ok 7 April 09

DL 4/24/09

7 April 09

Reviewer
Date

Sample ID: PO-UP-20-SS-A-090313 — Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.07 g	Sample ID:	P1193_6679_005	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	26.7 %	QC Batch No.:	6679	Date Analyzed:	25 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	21:01:10

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.803	[Ra=0.749]			13C-2,3,7,8-TCDD	75.6	
1,2,3,7,8-PeCDD	4.39				13C-1,2,3,7,8-PeCDD	74.6	
1,2,3,4,7,8-HxCDD	9.63				13C-1,2,3,4,7,8-HxCDD	75.2	
1,2,3,6,7,8-HxCDD	39.2				13C-1,2,3,6,7,8-HxCDD	75.6	
1,2,3,7,8,9-HxCDD	18.3				13C-1,2,3,7,8,9-HxCDD	79	
1,2,3,4,6,7,8-HpCDD	1,440				13C-1,2,3,4,6,7,8-HpCDD	84.9	
OCDD	15,700	J20		*	13C-OCDD	93.1	
2,3,7,8-TCDF	2.67				13C-2,3,7,8-TCDF	93.6	
1,2,3,7,8-PeCDF	2.81				13C-1,2,3,7,8-PeCDF	89.3	
2,3,4,7,8-PeCDF	5.48				13C-2,3,4,7,8-PeCDF	85.2	
1,2,3,4,7,8-HxCDF	14.5				13C-1,2,3,4,7,8-HxCDF	77.7	
1,2,3,6,7,8-HxCDF	6.93				13C-1,2,3,6,7,8-HxCDF	73.8	
2,3,4,6,7,8-HxCDF	10.1				13C-2,3,4,6,7,8-HxCDF	76.7	
1,2,3,7,8,9-HxCDF	2.71				13C-1,2,3,7,8,9-HxCDF	74.4	
1,2,3,4,6,7,8-HpCDF	257				13C-1,2,3,4,6,7,8-HpCDF	72.1	
1,2,3,4,7,8,9-HpCDF	12				13C-1,2,3,4,7,8,9-HpCDF	77.2	
OCDF	842				13C-OCDF	77.9	
Totals						**CS Recoveries**	
TCDDs	26.8		28.9		37Cl-2,3,7,8-TCDD	81.8	
PeCDDs	57.2		58.1		13C-1,2,3,4,7-PeCDD	79.1	
HxCDDs	564				13C-1,2,3,4,6-PeCDF	96.4	
HpCDDs	6,420				13C-1,2,3,4,6,9-HxCDF	85.7	
					13C-1,2,3,4,6,8,9-HpCDF	92.7	
TCDFs	36.2		38				
PeCDFs	69.6		70.5			**AS Recoveries**	
HxCDFs	289		290		13C-1,3,6,8-TCDD	65.9	
HpCDFs	835				13C-1,3,6,8-TCDF	89	
Total PCDD/Fs	**24,800**		**24,900**				
ITEF TEQs							
TEQ: ND=0	49.9		49.9				
TEQ: ND=DL/2	49.9		49.9				
TEQ: ND=DL	49.9		49.9				

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Checkcode: 2775

AP 2008 Rev. 0

8/4/09

7 April 09

Reviewer .....

Date .....

7 April 09

Sample ID: PO-UP-21-SS-A-090313

Method 161

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.16 g	Sample ID:	P1193_6679_006	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	32.3 %	QC Batch No.:	6679	Date Analyzed:	25 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	21:51:19

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.712	[Ra=0.852]			13C-2,3,7,8-TCDD	84.8	
1,2,3,7,8-PeCDD	3.51				13C-1,2,3,7,8-PeCDD	81.6	
1,2,3,4,7,8-HxCDD	10.3				13C-1,2,3,4,7,8-HxCDD	73.7	
1,2,3,6,7,8-HxCDD	40.8				13C-1,2,3,6,7,8-HxCDD	76.2	
1,2,3,7,8,9-HxCDD	18				13C-1,2,3,7,8,9-HxCDD	77.5	
1,2,3,4,6,7,8-HpCDD	1,990				13C-1,2,3,4,6,7,8-HpCDD	86.1	
OCDD	23,100	J20		*	13C-OCDD	93.2	
2,3,7,8-TCDF	2.39				13C-2,3,7,8-TCDF	96	
1,2,3,7,8-PeCDF	2.36			J	13C-1,2,3,7,8-PeCDF	91	
2,3,4,7,8-PeCDF	5.25				13C-2,3,4,7,8-PeCDF	89	
1,2,3,4,7,8-HxCDF	14.1				13C-1,2,3,4,7,8-HxCDF	74.8	
1,2,3,6,7,8-HxCDF	6.24				13C-1,2,3,6,7,8-HxCDF	71.3	
2,3,4,6,7,8-HxCDF	9.46				13C-2,3,4,6,7,8-HxCDF	75.1	
1,2,3,7,8,9-HxCDF	2.62				13C-1,2,3,7,8,9-HxCDF	73.1	
1,2,3,4,6,7,8-HpCDF	258				13C-1,2,3,4,6,7,8-HpCDF	70.2	
1,2,3,4,7,8,9-HpCDF	11.9				13C-1,2,3,4,7,8,9-HpCDF	76	
OCDF	869				13C-OCDF	81.7	
Totals						**CS Recoveries**	
TCDDs	18.7		20.8		37Cl-2,3,7,8-TCDD	86.3	
PeCDDs	52.5				13C-1,2,3,4,7-PeCDD	79	
HxCDDs	860				13C-1,2,3,4,6-PeCDF	93.8	
HpCDDs	11,200				13C-1,2,3,4,6,9-HxCDF	81.5	
					13C-1,2,3,4,6,8,9-HpCDF	87.7	
TCDFs	32.5		34.5				
PeCDFs	63.9					**AS Recoveries**	
HxCDFs	287		288		13C-1,3,6,8-TCDD	74.4	
HpCDFs	879				13C-1,3,6,8-TCDF	95.4	
Total PCDD/Fs	**37,400**		**37,400**				
ITEF TEQs							
TEQ: ND=0	62.1		62.1				
TEQ: ND=DL/2	62.1		62.1				
TEQ: ND=DL	62.1		62.1				

ANALYTICAL PERSPECTIVES

2714 Exchange Drive
Wilmington, NC 28405
USA

Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919

info@ultratrace.com
www.ultratrace.com

Checkcode: 1387

AP 2008 Rev. 1

5/04/09

7 April 09

Reviewer .....

Date .....

Sample ID: PO-UP-22-SS-A-090313

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.04 g	Sample ID:	P1193_6679_007	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	26.3 %	QC Batch No.:	6679	Date Analyzed:	26 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	1:23:42

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.711	[Ra=0.814]			13C-2,3,7,8-TCDD	79.6	
1,2,3,7,8-PeCDD	4.44				13C-1,2,3,7,8-PeCDD	77.7	
1,2,3,4,7,8-HxCDD	9.18				13C-1,2,3,4,7,8-HxCDD	74.4	
1,2,3,6,7,8-HxCDD	37.8				13C-1,2,3,6,7,8-HxCDD	75.5	
1,2,3,7,8,9-HxCDD	17.4				13C-1,2,3,7,8,9-HxCDD	78.6	
1,2,3,4,6,7,8-HpCDD	944				13C-1,2,3,4,6,7,8-HpCDD	79.4	
OCDD	8,140				13C-OCDD	41.4	
2,3,7,8-TCDF	2.74				13C-2,3,7,8-TCDF	91.7	
1,2,3,7,8-PeCDF	3.03				13C-1,2,3,7,8-PeCDF	87.3	
2,3,4,7,8-PeCDF	6.21				13C-2,3,4,7,8-PeCDF	84.9	
1,2,3,4,7,8-HxCDF	16.6				13C-1,2,3,4,7,8-HxCDF	75.3	
1,2,3,6,7,8-HxCDF	7.26				13C-1,2,3,6,7,8-HxCDF	72.9	
2,3,4,6,7,8-HxCDF	10.4				13C-2,3,4,6,7,8-HxCDF	74.8	
1,2,3,7,8,9-HxCDF	EMPC		2.88		13C-1,2,3,7,8,9-HxCDF	73	
1,2,3,4,6,7,8-HpCDF	258				13C-1,2,3,4,6,7,8-HpCDF	67.4	
1,2,3,4,7,8,9-HpCDF	11.2				13C-1,2,3,4,7,8,9-HpCDF	73.1	
OCDF	669				13C-OCDF	46.2	
Totals						**CS Recoveries**	
TCDDs	27.6		28.9		37Cl-2,3,7,8-TCDD	79.6	
PeCDDs	57.1				13C-1,2,3,4,7-PeCDD	81	
HxCDDs	380				13C-1,2,3,4,6-PeCDF	90.3	
HpCDDs	2,710				13C-1,2,3,4,6,9-HxCDF	83	
					13C-1,2,3,4,6,8,9-HpCDF	81.9	
TCDFs	43.2		43.4				
PeCDFs	76.9		77.2			**AS Recoveries**	
HxCDFs	299		307		13C-1,3,6,8-TCDD	69.8	
HpCDFs	756				13C-1,3,6,8-TCDF	90.1	
Total PCDD/Fs	13,200		13,200				
ITEF TEQs							
TEQ: ND=0	37.3		37.6				
TEQ: ND=DL/2	37.3		37.6				
TEQ: ND=DL	37.3		37.6				

ANALYTICAL PERSPECTIVES

2714 Exchange Drive
Wilmington, NC 28405
USA

Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919

info@ultratrace.com
www.ultratrace.com

Checkcode: 5119

AP 2008 Rev. 1

ok 7 April 09

7 April 09

Reviewer .....

Date .....

Sample ID: PO-UP-23B-SS-A-090313 — Method 161

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.02 g	Sample ID:	P1193_6679_008	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	25.8 %	QC Batch No.:	6679	Date Analyzed:	26 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	2:13:51

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.791	[Ra=0.81]			13C-2,3,7,8-TCDD	80	
1,2,3,7,8-PeCDD	4.91				13C-1,2,3,7,8-PeCDD	80.8	
1,2,3,4,7,8-HxCDD	10.3				13C-1,2,3,4,7,8-HxCDD	74.2	
1,2,3,6,7,8-HxCDD	44.1				13C-1,2,3,6,7,8-HxCDD	75.3	
1,2,3,7,8,9-HxCDD	20.3				13C-1,2,3,7,8,9-HxCDD	78.5	
1,2,3,4,6,7,8-HpCDD	1,110				13C-1,2,3,4,6,7,8-HpCDD	82.6	
OCDD	9,630				13C-OCDD	82.9	
2,3,7,8-TCDF	3.21				13C-2,3,7,8-TCDF	96.1	
1,2,3,7,8-PeCDF	3.33				13C-1,2,3,7,8-PeCDF	93.1	
2,3,4,7,8-PeCDF	7.97				13C-2,3,4,7,8-PeCDF	90.1	
1,2,3,4,7,8-HxCDF	20.6				13C-1,2,3,4,7,8-HxCDF	74.7	
1,2,3,6,7,8-HxCDF	8.17				13C-1,2,3,6,7,8-HxCDF	70.9	
2,3,4,6,7,8-HxCDF	12.7				13C-2,3,4,6,7,8-HxCDF	75	
1,2,3,7,8,9-HxCDF	3.8				13C-1,2,3,7,8,9-HxCDF	74	
1,2,3,4,6,7,8-HpCDF	297				13C-1,2,3,4,6,7,8-HpCDF	72	
1,2,3,4,7,8,9-HpCDF	12.7				13C-1,2,3,4,7,8,9-HpCDF	75.2	
OCDF	787				13C-OCDF	73.3	
Totals						**CS Recoveries**	
TCDDs	27.2		28.2		37Cl-2,3,7,8-TCDD	79.6	
PeCDDs	52.2		57.7		13C-1,2,3,4,7-PeCDD	80.3	
HxCDDs	428				13C-1,2,3,4,6-PeCDF	90.8	
HpCDDs	3,120				13C-1,2,3,4,6,9-HxCDF	79.1	
					13C-1,2,3,4,6,8,9-HpCDF	83.9	
TCDFs	46.3		46.4				
PeCDFs	90.1		90.3			**AS Recoveries**	
HxCDFs	373		374		13C-1,3,6,8-TCDD	68.2	
HpCDFs	904				13C-1,3,6,8-TCDF	88.9	
Total PCDD/Fs	**15,500**		**15,500**				
ITEF TEQs							
TEQ: ND=0	44.3		44.3				
TEQ: ND=DL/2	44.3		44.3				
TEQ: ND=DL	44.3		44.3				

Checkcode: 5423

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

AP 2008 Rev. H

Reviewer
Date 7 April 09

Sample ID: PO-AM-28-SS-A-090313

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.02 g	Sample ID:	P1193_6679_009	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	25.9 %	QC Batch No.:	6679	Date Analyzed:	26 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	3:03:54

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.634	[Ra=0.711]			13C-2,3,7,8-TCDD	79.1	
1,2,3,7,8-PeCDD	3.28				13C-1,2,3,7,8-PeCDD	84.6	
1,2,3,4,7,8-HxCDD	6.3				13C-1,2,3,4,7,8-HxCDD	72.9	
1,2,3,6,7,8-HxCDD	28.7				13C-1,2,3,6,7,8-HxCDD	75.3	
1,2,3,7,8,9-HxCDD	12.6				13C-1,2,3,7,8,9-HxCDD	79	
1,2,3,4,6,7,8-HpCDD	635				13C-1,2,3,4,6,7,8-HpCDD	81.6	
OCDD	5,080				13C-OCDD	82.3	
2,3,7,8-TCDF	2.67				13C-2,3,7,8-TCDF	97	
1,2,3,7,8-PeCDF	2.44			J	13C-1,2,3,7,8-PeCDF	94.3	
2,3,4,7,8-PeCDF	5.01				13C-2,3,4,7,8-PeCDF	92.9	
1,2,3,4,7,8-HxCDF	12.1				13C-1,2,3,4,7,8-HxCDF	75	
1,2,3,6,7,8-HxCDF	5.49				13C-1,2,3,6,7,8-HxCDF	71.5	
2,3,4,6,7,8-HxCDF	7.96				13C-2,3,4,6,7,8-HxCDF	76.1	
1,2,3,7,8,9-HxCDF	2.25			J	13C-1,2,3,7,8,9-HxCDF	74.2	
1,2,3,4,6,7,8-HpCDF	195				13C-1,2,3,4,6,7,8-HpCDF	73	
1,2,3,4,7,8,9-HpCDF	7.19				13C-1,2,3,4,7,8,9-HpCDF	77	
OCDF	410				13C-OCDF	71.2	
Totals						**CS Recoveries**	
TCDDs	26.5		28.8		37Cl-2,3,7,8-TCDD	82.7	
PeCDDs	51.6				13C-1,2,3,4,7-PeCDD	83.9	
HxCDDs	282				13C-1,2,3,4,6-PeCDF	98.4	
HpCDDs	1,600				13C-1,2,3,4,6,9-HxCDF	81.1	
					13C-1,2,3,4,6,8,9-HpCDF	84.9	
TCDFs	35.7		38.9				
PeCDFs	62.9		63.3			**AS Recoveries**	
HxCDFs	240		242		13C-1,3,6,8-TCDD	70.3	
HpCDFs	535				13C-1,3,6,8-TCDF	93.4	
Total PCDD/Fs	**8,330**		**8,330**				
ITEF TEQs							
TEQ: ND=0	26.6		26.6				
TEQ: ND=DL/2	26.6		26.6				
TEQ: ND=DL	26.6		26.6				

ANALYTICAL PERSPECTIVES

2714 Exchange Drive
Wilmington, NC 28405
USA

Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919

info@ultratrace.com
www.ultratrace.com

Checkcode: 5672

AP 2008 Rev H

Reviewer .....

Date .....

Sample ID: B1-C16-SS-A-090313

Method 161

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.04 g	Sample ID:	P1193_6679_010	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	28.6 %	QC Batch No.:	6679	Date Analyzed:	26 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	3:54:17

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.575	[Ra=0.735]			13C-2,3,7,8-TCDD	91.8	
1,2,3,7,8-PeCDD	3.18				13C-1,2,3,7,8-PeCDD	87.4	
1,2,3,4,7,8-HxCDD	5.98				13C-1,2,3,4,7,8-HxCDD	84.3	
1,2,3,6,7,8-HxCDD	30.6				13C-1,2,3,6,7,8-HxCDD	84.1	
1,2,3,7,8,9-HxCDD	12.7				13C-1,2,3,7,8,9-HxCDD	86.5	
1,2,3,4,6,7,8-HpCDD	721				13C-1,2,3,4,6,7,8-HpCDD	93.6	
OCDD	6,590				13C-OCDD	94.1	
2,3,7,8-TCDF	2.64				13C-2,3,7,8-TCDF	108	
1,2,3,7,8-PeCDF	2.57				13C-1,2,3,7,8-PeCDF	103	
2,3,4,7,8-PeCDF	5.05				13C-2,3,4,7,8-PeCDF	101	
1,2,3,4,7,8-HxCDF	12				13C-1,2,3,4,7,8-HxCDF	83.9	
1,2,3,6,7,8-HxCDF	5.59				13C-1,2,3,6,7,8-HxCDF	79.9	
2,3,4,6,7,8-HxCDF	8.06				13C-2,3,4,6,7,8-HxCDF	83.4	
1,2,3,7,8,9-HxCDF	2.45			J	13C-1,2,3,7,8,9-HxCDF	81.6	
1,2,3,4,6,7,8-HpCDF	196				13C-1,2,3,4,6,7,8-HpCDF	81.9	
1,2,3,4,7,8,9-HpCDF	7.38				13C-1,2,3,4,7,8,9-HpCDF	85.3	
OCDF	363				13C-OCDF	82.6	
Totals						**CS Recoveries**	
TCDDs	25.1		26		37Cl-2,3,7,8-TCDD	95.3	
PeCDDs	51.3				13C-1,2,3,4,7-PeCDD	89.3	
HxCDDs	322				13C-1,2,3,4,6-PeCDF	108	
HpCDDs	2,350				13C-1,2,3,4,6,9-HxCDF	90.7	
					13C-1,2,3,4,6,8,9-HpCDF	94.4	
TCDFs	37.7						
PeCDFs	63		63.2			**AS Recoveries**	
HxCDFs	249		250		13C-1,3,6,8-TCDD	84.4	
HpCDFs	547				13C-1,3,6,8-TCDF	106	
Total PCDD/Fs	**10,600**		**10,600**				
ITEF TEQs							
TEQ: ND=0	29		29				
TEQ: ND=DL/2	29		29				
TEQ: ND=DL	29		29				

ANALYTICAL PERSPECTIVES

2714 Exchange Drive
Wilmington, NC 28405
USA

Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919

info@ultratrace.com
www.ultratrace.com

Checkcode: 5953

ok 7 April 09

8/24/2009

7 April 09 Reviewer

Date

Sample ID: B1-S37-SS-A-090313

Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P1193	Date Received:	17 Mar 09
Project ID:	080166-01	Weight/Volume:	10.15 g	Sample ID:	P1193_6679_011	Date Extracted:	19 Mar 09
Date Collected:	13 Mar 09	% Solids:	28.4 %	QC Batch No.:	6679	Date Analyzed:	26 Mar 09
		Split:	-	Dilution:	-	Time Analyzed:	4:44:41

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.717	[Ra=0.837]			13C-2,3,7,8-TCDD	79.4	
1,2,3,7,8-PeCDD	3.28				13C-1,2,3,7,8-PeCDD	81.2	
1,2,3,4,7,8-HxCDD	6.4				13C-1,2,3,4,7,8-HxCDD	80.1	
1,2,3,6,7,8-HxCDD	29.7				13C-1,2,3,6,7,8-HxCDD	78.3	
1,2,3,7,8,9-HxCDD	12.7				13C-1,2,3,7,8,9-HxCDD	80.9	
1,2,3,4,6,7,8-HpCDD	603				13C-1,2,3,4,6,7,8-HpCDD	90.4	
OCDD	4,490				13C-OCDD	94.3	
2,3,7,8-TCDF	3.05				13C-2,3,7,8-TCDF	99	
1,2,3,7,8-PeCDF	2.61				13C-1,2,3,7,8-PeCDF	99.5	
2,3,4,7,8-PeCDF	5.15				13C-2,3,4,7,8-PeCDF	94.5	
1,2,3,4,7,8-HxCDF	11.9				13C-1,2,3,4,7,8-HxCDF	82.8	
1,2,3,6,7,8-HxCDF	5.77				13C-1,2,3,6,7,8-HxCDF	78.2	
2,3,4,6,7,8-HxCDF	8.6				13C-2,3,4,6,7,8-HxCDF	81.9	
1,2,3,7,8,9-HxCDF	2.46			J	13C-1,2,3,7,8,9-HxCDF	79.4	
1,2,3,4,6,7,8-HpCDF	206				13C-1,2,3,4,6,7,8-HpCDF	83.3	
1,2,3,4,7,8,9-HpCDF	6.86				13C-1,2,3,4,7,8,9-HpCDF	86.5	
OCDF	346				13C-OCDF	81.7	
Totals						**CS Recoveries**	
TCDDs	29.2		30.2		37Cl-2,3,7,8-TCDD	81.2	
PeCDDs	57.6		58.7		13C-1,2,3,4,7-PeCDD	84.4	
HxCDDs	284		288		13C-1,2,3,4,6-PeCDF	107	
HpCDDs	1,420				13C-1,2,3,4,6,9-HxCDF	87.2	
					13C-1,2,3,4,6,8,9-HpCDF	95.3	
TCDFs	40.3		41.8				
PeCDFs	64.2					**AS Recoveries**	
HxCDFs	254		255		13C-1,3,6,8-TCDD	70	
HpCDFs	555				13C-1,3,6,8-TCDF	96.7	
Total PCDD/Fs	**7,540**		**7,550**				
ITEF TEQs							
TEQ: ND=0	26.1		26.1				
TEQ: ND=DL/2	26.1		26.1				
TEQ: ND=DL	26.1		26.1				

Checkcode: 0245

ANALYTICAL PERSPECTIVES
2714 Exchange Drive
Wilmington, NC 28405
USA
Tel: +1 910 794-1613; Toll-Free 866 846-8290
Fax: +1 910 794-3919
info@ultratrace.com
www.ultratrace.com

Reviewer

Date

LDC #: 20586A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 4/17/09
SDG #: P1193 Level III Page: 1 of 1
Laboratory: Analytical Perspectives Reviewer: B
2nd Reviewer: M

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: 3/13 – 3/16/09
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	20/35%
IV.	Routine calibration/ICV	A	ac limits
V.	Blanks	A	
VI.	Matrix spike/Matrix spike duplicates	N	CS
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitation and CRQLs	SW	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
V.	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:
~~SOIL~~ Sediment

1	PO-BA-24-SS-A-090313	11	B1-S37-SS-A-090313	21	6679-MB001	31	
2	PO-BA-25-SS-A-090316	12		22		32	
3	PO-BA-26-SS-A-090316	13		23		33	
4	PO-BA-27B-SS-A-090313	14		24		34	
5	PO-UP-20-SS-A-090313	15		25		35	
6	PO-UP-21-SS-A-090313	16		26		36	
7	PO-UP-22-SS-A-090313	17		27		37	
8	PO-UP-23B-SS-A-090313	18		28		38	
9	PO-AM-28-SS-A-090313	19		29		39	
10	B1-C16-SS-A-090313	20		30		40	

Notes:

LDC #: 20586A21
SDG #: see cover

VALIDATION FINDINGS WORKSHEET

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

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 1613B)

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 #: B6A21
SDG #: 2 covers

VALIDATION FIN GS WORKSHEET
Compound Quantita and Reported CRQLs

Re :
2nd Reviewer: n

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".

Y N N/A Were the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	~~Sample ID~~ compd	Finding	Associated Samples	Qualifications
		G	x'dil cal range	5, 6	J/P dil
		H	no second column confirmation was performed	5 → 11	none /P

Comments: See sample calculation verification worksheet for recalculations

ANCHOR QEA

1423 Third Avenue, Suite 300
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131

Data Validation Review Report – EPA Level 3

Project: Port of Olympia- Terminal Berths 2 & 3

Project Number: 080166-02

Date: April 1, 2009

Report # JD040109

This report summarizes the review of analytical results for 4 sediment samples collected on February 26th, 2009. Samples were collected by Anchor QEA and submitted to TestAmerica Laboratories (TA), in Tacoma, WA. Samples were analyzed for the following:

- Total Organic Carbon (TOC) by Puget Sound Estuary Protocols (PSEP) method 9060
- Grainsize by PSEP/Plumb 1981
- Total Solids (TS) by United States Environmental Protection Agency (USEPA) method 160.3
- Moisture Content (MC) by ASTM method D2216-90

TA sample data group (SDG) number 12857-1 was reviewed in this report. The samples reviewed in this report are presented in Table 1.

Table 1
Samples Reviewed

Sample ID	Lab ID	Matrix	Analyses Requested
PO-BA-24-SS-A090226	580-12857-1	Sed	TOC, Grainsize, TS, MC (not required in SAP)
PO-BA-25-SS-A090226	580-12857-2	Sed	TOC, Grainsize, TS, MC (not required in SAP)
PO-BA-26-SS-A090226	580-12857-3	Sed	TOC, Grainsize, TS, MC (not required in SAP)
PO-BA-27B-SS-A090226	580-12857-4	Sed	TOC, Grainsize, TS, MC (not required in SAP)

Data Validation and Qualifications

The following comments refer to the laboratory's performance in meeting the quality assurance/quality control (QA/QC) guidelines outlined in the analytical procedures and data quality objective section of the Sampling and Analysis Plan (SAP). Laboratory results were

reviewed following USEPA guidelines using *USEPA Contract Laboratory Program National Functional Guidelines for Inorganics Data Review (USEPA, 2004),* and *USEPA Contract Laboratory National Functional Guidelines for Organics Data Review (USEPA, 1999)* as guidelines, and applying laboratory and method QC criteria as stated in SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998. Unless noted in this report, laboratory results for the samples listed above were within QC criteria.

Field Documentation

Field documentation was checked for completeness and accuracy. The chain-of-custodies were signed by TA at the time of sample receipt; the samples were received in good condition at 7.8°C. Because the samples were delivered to the laboratory so quickly after collection they were still in the cooling process; data were not impacted by this discrepancy.

Holding Times and Sample Preservation

Samples were appropriately preserved and analyzed within holding times.

Initial Calibration

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

Calibration Verification

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

Laboratory Method Blanks

Laboratory method blanks were analyzed at the required frequencies. All method blanks were free of target analytes.

Field Quality Control

Field Blanks and Field Duplicates

Field blanks were not collected in association with this data set.

Sample Replicates

Sample replicates were analyzed at the required frequencies and resulted in all relative percent difference (RPD) values within 20%.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD)

MS and MSD samples were analyzed at the required frequency for TOC and resulted in recoveries within project control limits

Laboratory Control Sample (LCS) and Standard Reference Material (SRM)

An SRM was analyzed at the required frequency for TOC and resulted in a percent recovery within the SRM's published allowable range.

Method Reporting Limits

Reporting limits were deemed acceptable as reported. All values were reported using the laboratory's reporting limits.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical methods and all requested sample analyses were completed. Accuracy was generally acceptable, as demonstrated by the SRM, CCV and MS/MSD %R values. Precision was also acceptable as demonstrated by the laboratory replicates and MS/MSD RPD values. All data were deemed acceptable as reported.

REFERENCES

USEPA. 1983. Methods for Chemical Analysis of Water and Wastes. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. EPA-600/4-79-020.

USEPA. 1986. Test methods for Evaluating Solid Waste: Physical/Chemical Methods. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA-530/SW-846.

USEPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency, Office of Emergency Response. EPA 540/R-99/008. October.

USEPA. 2004. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation (OSRTI). EPA 540-R-04-004. October 2004.